



The Instruction of Self-Regulatory Strategies and its Impact on L2 Reading Comprehension and Self-Regulated Learning

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ABSTRACT

The aim of this study was to examine the effect of instruction of self-regulatory strategies on the L2 reading comprehension of Iranian EFL learners on the one hand and improve the students' self-regulated learning on the other hand. In this research, the experimental group (N=35) received instruction on self-regulatory strategies whereas the control group (N=35) only received traditional instruction. At first, the participants completed the reading section of an IELTS test, in order to assess their homogeneity in regards to their reading proficiency. They also completed a reading test based on the course book prior to and after the course. The participants also completed the LASSI prior to and after the completion of the course. Paired sample t-tests were run to see whether a significant difference existed between the pre-tests and post-test among the participants in the experimental and the control groups regarding L2 reading and self-regulated learning. The results indicated the students in both groups significantly improved in their L2 reading comprehension, this improvement being much more significant in the experimental group. As for self-regulated learning, only students in the experimental group showed significant improvement on the LASSI indicating the positive impact of the instruction of self-regulatory strategies.

INTRODUCTION

Even though there is agreement on the importance of self-regulated learning (SRL) skills in and beyond higher education, it is often assumed that university students have already developed these skills (Bjork et al., 2013; Nugent et al., 2019). As a matter of fact, most students need help from their instructors to learn better and to learn to self-regulate their learning (Räsänen et al., 2016). And the number of college students needing academic support services continues to increase (Smith, Szelest, & Downy, 2004; Sufka, 2011; Tinto, 2012). Tsuda and Nakata (2013) suggested that language teachers should activate learners' metacognition, enhance their self-efficacy beliefs and self-motivation, and cultivate their intrinsic value for language learning in addition to focusing on learning strategies and instructional strategies. Research shows that SRL processes are highly predictive of academic learning and performance (Bembenutty, Cleary, & Kitsantas, 2013; Zimmerman & Schunk, 2001). In fact, across virtually all academic skill areas and content domains—such as reading, mathematics, writing, and science—the research literature has established SRL processes as key determinants of students' achievement (e.g., De Corte et al., 2011; Graham, Harris, & Mason, 2005; Guthrie, Wigfield, & VonSecker, 2000). Fortunately, there is evidence to suggest that SRL processes can be taught. Because many students exhibit poor motivation in school and struggle to effectively manage and

control their learning, effective instruction needs to not only increase learning, but also help to nurture the motivation, strategic behaviors, and metacognitive skills of students, particularly as they progress through the upper grades (e.g., Vaughn et al., 2000).

LITERATURE REVIEW

According to Rohwer (1984), teachers have historically devoted little attention to teaching needed study skills, note taking, or test preparation. Following Rohwer's (1984) call for examining different processes students use to learn, models were introduced focusing on SRL processes. Zimmerman was of the first SRL authors (e.g. Zimmerman, 1986). According to Zimmerman (1998), self-regulation can be defined as "self-generated thoughts, feelings, and actions for attaining academic goals" (p. 73). Zimmerman's work is framed in a socio-cognitive theory. According to socio-cognitive theory, individuals acquire knowledge by observing others and social interaction. From among Zimmerman's three models of SRL (Triadic Model, Cyclical Phases Model, and Multi-Level Model), this study adopts Zimmerman's (2000) cyclical phases model including the sub-processes. This model is organized into three phases: forethought, performance and self-reflection. In the forethought phase, the students analyze the task, set goals, plan how to reach them and motivational beliefs including: self-efficacy, outcome-expectation, task interest/value, and goal-orientation. In the performance phase, the students execute the task and monitor their progress. At the end, in the self-reflection phase, students assess how they have performed the task, making attributions about their success or failure. It should be noted that these phases are cyclical in that feedback from previous performances is used to make adjustments during future learning efforts and attempts (Zimmerman, 2000). In sum, there are 10 self-regulatory processes: goal-setting, task strategies, imagery, self-instruction, time-management, self-monitoring, self-evaluation, self-consequence, environmental-structuring, and help seeking (Zimmerman, 1998).

In second language (L2) and foreign language classrooms across the world, reading in another language is important. Providing plenty of linguistic and cultural learning opportunities is key to learners' L2 development. Reading is a crucial skill and probably the most important one for L2/EFL learners because it can enhance not only language proficiency but also other related content learning (Nunan, 2003). However, most learners find L2/EFL reading a complicated and demanding task (Grabe, 2009; Grabe & Jiang, 2013) that can be handled through self-regulation of L2/EFL reading (Chamot, 2014). Hence, it can be concluded that like in first language (L1) reading, in which SRL can complement considerably the positive effect of strategy use on reading comprehension (e.g., Schunk & Rice, 1987; Souvignier & Mokhlesgerami, 2006), self-regulatory skills may lead to proficient L2/EFL reading as well. The application of self-regulatory strategies in reading forms part of those higher level processes, which contribute not only to reading outcomes per se but also to ensuring that learners engage in enough reading to become more proficient at it rather than giving up in the face of difficulty. These strategies thus help learners to "engage in reading, to expend effort, to persist in reading without distraction" (Grabe & Jiang, 2013, P. 4) and hence perhaps under take more extensive reading, with the possibility of longer term benefits for reading proficiency.

While self-regulated learning is important for all aspects of language learning, it may be particularly so for the complex task of reading, especially at the beginner stage (Graham et al., 2016), and even more so where linguistic development is slow because of limited exposure to the

L2 inside or outside the classroom such as the foreign context. Being able to read in the foreign language potentially has value for learners, not only as a rich source of input but also from a motivational perspective. Confident and self-regulated beginner learners could, in the longer term, engage in extensive reading, believed to support young learners' L2 reading motivation (Briggs & Walter, 2013) and L2 reading proficiency (Jeon & Day, 2016).

A number of brief training studies using SRL principles have also shown effectiveness in improving reading comprehension (e.g., Antoniou & Souvignier, 2007; Berkeley, Mastropieri, & Scruggs, 2011; Kang, 2010; Mason, 2013; Miranda, Villaescusa, & Vidal-Abraca, 1997; McGee & Johnson, 2003; Orhan, 2007; Zentall & Lee, 2012). The fact that good readers self-regulate their reading by using strategies, for example, making inferences and mental images, and summarizing emphasizes the necessity of self-regulatory skills in reading (Butler, 2002). To promote self-regulated learning, teachers need to provide ample opportunities for working on cognitively challenging tasks, which make students choose, use, combine, and coordinate different learning strategies (Boekaerts, 1997). Students also need some degree of external regulation while working on a learning activity (Boekaerts, 1999; Vermunt & Verloop, 1999). According to Butler (2002), self-regulated learners analyze a task and they activate and use their prior-knowledge when they want to read a text. Butler (2002) believes task-analysis is critical to effective self-regulation because it sets the context for further learning. Students base later decisions (e.g. about strategies to use) on their perception of task demands. In other words, self-regulated learners select, adapt, and invent strategic approaches to achieve task objectives. SRL behaviors are important for reading comprehension because it is a goal-directed behavior (e.g., extracting meaning from text) that requires effort. Schunk and Rice (1991) conducted numerous studies analyzing the effects of the explicit instruction of self-regulated learning strategies and the modeling of SRL strategies on reading comprehension. The researchers found that orienting students toward a process or product goal resulted in greater increases in reading comprehension and self-efficacy than general goals, and combining process goals with verbal feedback further increased reading comprehension and self-efficacy (Schunk & Rice, 1991). They also found that specific strategy instruction when combined with modeling SRL strategies increased comprehension more than modeling or explicit strategy alone (Schunk & Rice, 1987). These findings were supported and extended when researchers (Souvignier & Mokhlesgerami, 2006) found that SRL strategy instruction combined with reading strategy instruction resulted in positive, long-term effects in reading comprehension that were significantly different from control groups. For example, when reading for meaning is disrupted, self-regulation can help because it enables learners to become more self-sufficient through metacognition (Reed, Schaller, & Deithloff, 2002).

A number of instruments were developed during the 1980s that assessed SRL as a metacognitive, motivational, and behavioral construct from among which the Learning and Study Strategies Inventory (LASSI) (Weinstein, Schulte & Palmer, 1987) was adopted in this study. LASSI is an 80-item self-report inventory of students' strategies for enhancing their study practices. The LASSI was developed to measure students' usage of study skills and learning strategies in college. The LASSI was also designed to yield diagnostic information about students' self-perceptions of their study skills and learning techniques. In addition, the LASSI was designed to yield information that aids in the prediction of academic achievement (Mealey, 1988). The LASSI involves 10 scales that assess skill, will, and self-regulation strategies—a classification system that corresponds with a metacognitive, motivational, and behavioral

definition of self-regulation. Scales classified as skill (or metacognition) include Concentration, Selecting Main Ideas, and Information Processing. Scales classified as will (or motivation) include Motivation, Attitude, and Anxiety. Scales classified as self-regulation (or behavior) include Time Management, Study Aids, Self-Testing, and Test Strategies. Many colleges and universities are using LASSI to assist students who are experiencing academic difficulty. Sexton (2012) described the usefulness of the instrument at her community college for not only designing individualized interventions but also for evaluating the strengths and weaknesses of the program itself. Though researchers have questioned the exact nature of constructs measured by the LASSI (Cano, 2006; Melancon, 2002; Ning & Downing, 2010), several studies have found the scales to be useful in predicting various measures of academic performance (Cano, 2006; Marrs, Sigler, & Hayes, 2009; Seabi, 2011; West & Sadoski, 2011). According to Flowers, Bridges, and Moore (2012), the LASSI can be administered at the beginning and end of an academic support program in order to measure the “increased gains in study skills and study behaviors” (p. 156).

Current research suggests that self-regulated learning can be improved when instructional methods and environmental conditions support the use of a set of strategies. Furthermore, it is well documented in the research literature on learning that active engagement in the learning process produces increases in academic performance. As such, teaching self-regulatory strategies is important for students in academic settings and is necessary for overcoming problems in learning such as L2 reading (Chamot, 2014). Since reading is a crucial skill for L2/EFL learners, and at the same time it is a complex skill, especially for those with limited exposure to English, this study examines the effect of instruction of the self-regulatory strategies: goal-setting, task strategies, imagery, self-instruction, time-management, self-evaluation, self-consequence, environmental-structuring, and help-seeking (Zimmerman, 1998) on L2 reading comprehension and self-regulated learning. In other words, the research presented here investigated the importance of self-regulated learning, as a general construct, for reading development and the effect of the instruction of self-regulatory strategies on L2 reading comprehension and self-regulated learning. As such, the following research questions were examined:

1. Does the instruction of self-regulatory strategies improve English learners' L2 reading comprehension?
2. Does the instruction of self-regulatory strategies improve self-regulated learning in L2 reading?

METHODOLOGY

Participants

Two intact groups of Iranian EFL learners, both enrolled in an ESP course at the Art University of Isfahan, took part in this study. The students in the experimental group (N=35) received L2 reading comprehension instruction along with the instruction of self-regulatory strategies based on Zimmerman's (2000) model whereas the students in the control group (N=35) only received traditional instruction on L2 reading comprehension. The participants ranged in age between 20 to 24 with a mean age of 22.5. All the participants were native speakers of Persian. They were all freshman female students majoring in Architecture.

Instrument

The reading section of the IELTS test was administered to the students in both experimental and control groups in order to evaluate their reading proficiency level. In addition, the LASSI questionnaire was administered to the students in both experimental and control groups both prior to and after the course in order to assess self-regulated learning. Students had to respond to the items using a 5-point rating scale from 1 to 5, ranging from not at all typical of me (1) to very much typical of me (5). Furthermore, a reading test based on the course book was developed by the researcher herself and administered to the students in both groups as a pre-test and post-test. The format of the researcher-made reading test was similar to the IELTS reading section. In order to examine the reliability of the reading test, test-retest reliability was assessed. The students in the pilot study took the reading test with a two-week interval in the summer holidays before the start of fall-semester.

Data collection

The reading section of the IELTS test was administered to the students one week prior to the start of the course in order to evaluate their reading proficiency. The students were familiarized with the IELTS reading test and they were told that the reading test lasted 60 minutes. On the first and last session of the course, the students in both the experimental and control groups were asked to complete a reading test (researcher-made) and the LASSI. They were informed that there was no right or wrong answer on the questionnaire. They had to choose the best response that matched them, not the responses they felt were appropriate. At the end, they were told a bonus mark would be dedicated to their final exam as a token of the researcher's appreciation. All the students were reassured that the information gathered would remain confidential. All the students completed a consent form.

Data analysis

The quantitative data obtained from the IELTS test, L2 reading comprehension test, and the LASSI were analyzed and examined. Paired sample t-tests were run in order to examine whether there was an improvement in the overall performance of the participants in the experimental and control groups regarding their L2 reading comprehension and self-regulated learning assessed by the LASSI. ANCOVA was also examined in order to see the effect of self-regulatory strategy instruction on the performance of the students' L2 reading comprehension and self-regulated learning assessed by LASSI in both groups.

Procedure

This investigation was implemented in a 16-week semester, two ESP courses, each course being held once a week, each session lasting 120 minutes. The researcher was the instructor of the experimental group and the control group was instructed by another professor so as to maintain validity since having the same instructor for both conditions may have influenced the results. In the experimental group, self-regulatory strategies were instructed in addition to the course book. In the control group, the course book was only instructed without anything being mentioned or taught regarding self-regulatory strategies.

In the experimental group, the sub-processes of the forethought, performance, and self-reflection phases of Zimmerman's (2000) model were taught and practiced during the course. As for the instruction model to work with, this study adopted the traditional present-practice-

produce (3Ps) model by John Anderson (1982). Instruction typically involves, first, observation of the teacher, who models the strategy or strategies in question. Learners then follow what has been observed through deliberate and focused practice (coupled with support and feedback from the teacher and/or peers and input on how and when to use which strategy). More autonomous execution of the task and self-regulatory use of the taught strategies then follow, in which the learner aims to select the most effective strategies for the task at hand (Graham et al., 2020).

Furthermore, declarative, procedural, and conditional knowledge of the sub-processes were considered here. This study extends the aforementioned knowledge types beyond strategic competence to self-regulated learning sub-processes. According to Gu (2019), direct and explicit instruction is most suited to declarative knowledge. Multiple practice opportunities would be a must for the gradual development of procedural knowledge. For conditional knowledge of any strategy to develop, there has to be situated and contextualized instruction with ample exposure to the completion of the same task.

Each session in the experimental group followed the same itinerary. The only thing that changed from one session to the next was the self-regulated learning sub-processes planned to be instructed on the intended session along with the course book. At the beginning of each session, the students were presented with explicit definitions and explanations of the self-regulated learning sub-processes (e.g. goal-setting, strategic planning, etc.) in order for them to know ‘what’ each sub-process was. According to Gu (2019), direct and explicit instruction is most suited to declarative knowledge. The first part of class helped the students build their declarative knowledge regarding the SRL sub-processes. After they were familiarized with ‘what’ the strategy was, the teacher who was the researcher herself moved on to procedural knowledge. Explicitly telling the students ‘how’ to execute a sub-process in the context of a particular task is not enough. Multiple practice opportunities would be a must for the gradual development of procedural knowledge. The students had the opportunity to practice each and every strategy in class. As for conditional knowledge, contextualized instruction with ample exposure to the completion of the same task was provided so that the students knew ‘when’ and ‘why’ each strategy should be used. As such, each session started off with the *presentation* of ‘what’ the sub-process was, moving on to the *practice* stage in which the students became familiar with ‘how’ it was used, and finally the *production* stage in which they realize ‘when’ and ‘why’ each sub-process should or should not be used (3Ps).

On the first session, the students in both groups completed the researcher-made reading test (pre-test) and the LASSI questionnaire (pre-test). Goal-setting, strategic planning, and goal-orientation were instructed on the second, third, and fourth sessions. Self-efficacy, outcome expectation, task interest, and value were instructed on the fifth, sixth, and seventh sessions. Task-strategies, self-instruction, and imagery were instructed on the eighth, ninth, and tenth sessions. Time-management, environmental structuring, and help seeking were instructed on the eleventh and twelfth sessions. Interest incentives and self-consequences were instructed on the thirteenth session. Metacognitive strategies were instructed on the fourteenth session. The self-reflection phase was instructed on the fifteenth session. On the final session of the course, the reading test (post-test) and the LASSI (post-test) were completed once more by the students in both experimental and control groups.

On the second session, as for the first sub-process in the forethought phase, the teacher told the students ‘what’ goal-setting was. It is when students select a goal they want to reach

after completing a task. Hence, prior to a task, the students must think of their goals. In case of reading, there goal should be to read a text in such a way that they could comprehend a text, understand the meaning of the words, be able to provide a summary after reading a text, and finally, to be able to answer the related comprehension questions. After the students understood ‘what’ goal-setting was, the teacher asked them to practice setting a goal for the reading passage allocated to the first session. The students worked in pairs setting goals for the passage they were to read. Examples of their goals were: “try to read the text in such a way that we can answer the questions”, “read the text and understand it so that we can provide a summary for the text”, and “reading the text in such a way that we can comprehend it and learn new vocabulary from the text”. At this point, they knew ‘how’ to use the sub-process. Then, the teacher told the students goal-setting should be used prior to starting any task (‘when’) in order to have a specific purpose and aim when completing the task.

On the third session, strategic planning was explained. The teacher told the students that prior to starting a task, they should think about the strategies they want to use during a task. Furthermore, by paying attention to the title of the passage students could activate their prior knowledge about the topic. After students learned ‘what’ strategic planning was, they were given a chance to work in pairs to know ‘how’ to plan strategically. The students brainstormed about the topic based on the title of the passage and the teacher wrote them on the board. In addition, some students mentioned reading the comprehension questions before reading the passage could be a good technique. As for the final stage, the teacher told them strategic planning should always be used prior to initializing a task. The reason this strategy should be used is for the task to be structured and well-implemented.

On the fourth session, goal-orientation was presented. The teacher told the students that each and every task is completed in class for a specific reason. Moving towards a goal and aim. By knowing what the task is and what is wanted, students can move towards the goal. They practiced this sub-process by writing goals for the reading passage. The students’ goals were: “pronouncing the words of the text correctly, memorizing the definition of the new vocabulary, being able to answer the comprehension questions, etc.” Again, they were told that goal-orientation should be taken into consideration before any task so that completing a task is purposeful and rewarding.

On the fifth session, the students were familiarized with “what” self-efficacy was. They were told that self-efficacy was believing in oneself and one’s capabilities. As for “how”, the students were told to believe in themselves and keep on reminding themselves that they can do it, they can read in English, they can comprehend a text, and they can complete follow-up activities. After that, the teacher told the students if they did not have self-efficacy they could not complete a task (“why”).

On the sixth session, the students were told “what” outcome expectation was. The students had to know what they should expect of themselves after taking part in an English course. In order to know “how” to achieve it, they were told to write down what you expect of yourselves and how to reach those expectations. Finally, the teacher told them that the reason this sub-process is important is that if a student does not know what to expect of him or herself, how is he or she going to strive to be the best at it.

On the seventh session, they were told “what” task interest/value were. Students should try to be interested in the reading topic and reading class in general. They should know that

reading texts in English will help them improve their vocabulary knowledge, grammar, and even speaking. In order to know “how” they can become interested in reading texts in English, the teacher told them by knowing that when you improve your reading in English, you could read articles, magazines, and whatever information you need on the Internet. Students were told if they are not interested in reading in English, they would not be eager to listen in class.

On the eighth session, the students were told “what” language learning strategies were based on Oxford’s (1990) classification. After that, the students were told “how to use the strategies while reading a text. After that, they were told “why” and “when” each strategy was to be used. For example, they were told guessing means to try to find out what the meaning of an unknown word is by taking into consideration the meaning of the surrounding words and also by relating the unknown word to the root of the word. For instance, the word visual, was unknown to most students. The teacher told them what they thought this word meant or what this word reminded them of. Most of the students said television, and then they said –al is a suffix, and finally they guessed the meaning of the word. The students were told that most of the time the meaning of the word can be guessed and there is no need to check the meaning of every single unknown word in the dictionary.

On the ninth session, self-instruction was instructed. It refers to “overt or sub-vocal verbalization to guide performance” (Zimmerman, 1998, p. 77). One way for self-instruction is to write down all the negative reactions and replace each with a positive one (Loehr, 1991). It could be used anytime during the completion of a task.

On the tenth session, imagery was focused on. As for imagery, they were told ‘what’ imagery was and to create or recall vivid mental images to assist learning (Zimmerman, 1998).

On the eleventh session, the students were told “what” time-management was, “how” they were to manage time, and finally, “why” and “when” they were to manage their time. They were told that they should not spend too much time on figuring out the meaning of every single word. They should spend their time on comprehending the text as a whole.

On the twelfth session, environmental structuring and help seeking were introduced. They were told that environmental structuring was choosing an appropriate space for studying and that asking for help was when they asked a friend, a classmate, or even the teacher for help. They were given an opportunity to ask questions regarding incomprehensible words or phrases in the text. They could apply these sub-processes whenever they were completing a task or reading.

On the thirteenth session, the students were told “what” interest incentives and self-consequences were. As for “how” to apply them, guidelines in Panadero and Alonso-Tapia (2014) and Wolters et al. (2014) were adopted. That is, students were told they should tell themselves they could understand a text by solving their own problems or they would not get distracted. The students were told to promise themselves if they reached an achievement in reading, to award themselves with a prize. They were told to use these sub-processes during reading.

On the fourteenth session, metacognitive strategies were instructed. The students were told “what” metacognitive strategies were. Metacognitive strategies are used by the learner to coordinate the learning process, such as planning, monitoring, and evaluating. As for “how”, they were told to use metacognitive strategies prior to a task. They should plan how they are

going to approach the reading task (e.g. reading the reading comprehension questions prior to reading the text in order to have an idea about the questions and read in more goal-oriented way). As for monitoring, students were told to check their reading process and finally, evaluate the outcome. In other words, observe and track their own performance and outcomes (Zimmerman, 1998). These strategies help them monitor their own performance anytime they are performing a task.

On the fifteenth session the self-reflection phase was instructed with a focus on self-evaluation and self-judgement. Students were told that they should assess their own performance. In order to self-evaluate and self-judge themselves, they were told to set standards and then judge themselves based on them since it is known that self-regulated learners regularly check their work (Zimmerman & Martinez-Pons, 1986). Then, they were given an opportunity to evaluate their performance over the course and judge themselves with the standards. Furthermore, they were asked to evaluate their achievements in comparison to the first session. They were told that this sub-process could be helpful for them to set new goals and raise their expectations. As such, self-regulatory learning is a cycle that continues on and on.

On the sixteenth session (last session), the students in both groups completed the reading test and the LASSI questionnaire once more.

RESULTS

The mean score on the IELTS reading section was 23.69 ± 4.96 for the students in the experimental group and 23.46 ± 4.58 for the students in the control group. The result of the independent T-test indicated that a significant difference did not exist among the two groups ($p=0.842$) regarding their reading proficiency level (Table 1). As such, it could be stated that all the participants who took part in this study were homogenous in terms of their L2 reading proficiency.

Table 1. IELTS Reading Section.

Level	N	Mean	Standard Deviation	T	df	Sig
Experimental Group	35	23.69	4.96	.200	68	.842
Control Group	35	23.46	4.58			

In order to check the normality, the Shapiro-Wilk test was examined at the significant value of .05. The significant values of the pre-test and post-test of the two groups was greater than .05. Hence, the sample was not significantly deviated from normality. The homogeneity of variance among the two groups was checked by adopting the Leven test. Furthermore, the assumption of homogeneity of regression slopes (assumption for ANCOVA) was checked and all of them were met.

A paired sample t-test was conducted to compare the reading scores of the students on the pre-test and post-test in both experimental and control groups (Tables 2 and 3). In the control group, the students had an average difference of 0.914 (SE = 0.126) from the pre-test to the post-test of their reading scores, and there was a significant difference between the reading scores for pre-test (M= 24.77, SD= 4.63) and post-test (M=25.69, SD=4.37); $t(34)=7.285$, $p<.001$. In the

experimental group, the students had an average difference of 2.371 (SE = 0.260) from the pre-test to the post-test of their reading scores, and there was a significant difference between the reading scores for pre-test (M= 24.46, SD= 4.12) and post-test (M=26.83, SD=3.80); $t(34)=9.136$, $p<.001$.

A paired sample t-test was conducted to compare the LASSI scores of the students on the pre-test and post-test in both experimental and control groups (Tables 2 and 3). In the control group, the students had an average difference of -.314 (SE = 0.200) from the pre-test to the post-test of their LASSI scores, and a significant difference did not exist between the LASSI scores for pre-test (M= 236.09, SD= 20.11) and post-test (M=236.40, SD=20.42); $t(34)=-1.572$, $p=.125$. In the experimental group, the students had an average difference of 19.429 (SE = 2.453) from the pre-test to the post-test of their LASSI scores, and a significant difference existed between the LASSI scores for pre-test (M= 228.43, SD= 21.52) and post-test (M=247.86, SD=20.76); $t(34)=7.920$, $p<.001$.

Table 2. Means Scores Gained by the Two Groups on the Pre-test and Post-test.

Variable	Group	N	Pre test		Post test		Pre-test-post-test gain
			M	SD	M	SD	
Reading	experimental	35	24.46	4.12	26.83	3.80	2.371
	control	35	24.77	4.63	25.69	4.37	.914
LASSI	experimental	35	228.43	21.52	247.86	20.76	19.429
	control	35	236.09	20.11	236.40	20.42	1.143

Table 3. Results of Paired Sample T-test.

Variable	Group	N	Mean Differences	Std. Error	t	df	Sig.
Reading	experimental	35	2.371	.260	9.136	34	<.001
	control	35	.914	.126	7.285	34	<.001
LASSI	experimental	35	19.429	2.453	7.920	34	<.001
	control	35	-.314	.200	-1.572	34	.125

A one-way analysis of covariance (ANCOVA) was conducted to determine a statistically significant difference between the two groups on the post-test of the reading scores controlling for pre-test scores. There was a significant effect of treatment (group) on the reading scores after controlling for the pre-test reading scores, $F(1,67)=27.835$, $p<.001$. Hence, the reading scores in the experimental group were significantly higher than the control group. As for the scores obtained on LASSI, the results of ANCOVA showed that a significant effect of treatment (group) on LASSI score after controlling for the pre-test of LASSI scores, $F(1,67)=55.506$, $p<.001$. Thus, LASSI scores in the experimental group were significantly higher than the control group.

Table 4. Results of ANCOVA.

Groups Variables	Control group		Experimental group		Effect p-value	
	Pretest	Posttest	Pretest	Posttest	Pretest	Group
Reading Scores	24.77±4.63	25.69±4.37	24.46±4.12	26.83±3.80	<.001	<.001
LASSI	236.09±20.11	236.40±20.42	228.43±21.52	247.86±20.76	<.001	<.001

DISCUSSION, CONCLUSION, AND LIMITATION

This study examined the effect of self-regulatory strategy instruction on the L2 reading comprehension and self-regulated learning of a group of English learners. The results of this investigation indicated that the students in both groups improved in their L2 reading comprehension after the completion of the course. However, the performance of the students in the experimental group who received self-regulatory strategy instruction was much better. The fact that both groups improved on their L2 reading performance is definitely irresistible since the students in both groups received instruction related to the course book. However, the rewarding point to focus on is the fact that the improvement of L2 reading in the experimental groups who received self-regulatory strategy instruction was much more. This highlights the importance of self-regulatory strategy instruction in the academic field in our case L2 reading. In regards to self-regulated learning assessed by the LASSI questionnaire, only the students in the experimental group had a significant improvement from the pre-test to the post-test. There was no significant difference in self-regulated learning of the students in the control group.

Thus, this research reinforces empirically the place of learner strategy instruction within models of self-regulation such as that of Zimmerman (2013), stating that self-regulatory strategies, developed through instruction that encourages learners to evaluate their effectiveness and to view them as tools to achieve better outcomes, are helpful. The findings of this investigation also support Nugent et al.'s (2019) study, indicating that a self-regulated learner actively engages with learning through goal-setting, planning, use of task strategies and time management, reflecting on the effectiveness of self-regulatory strategy instruction. The findings of our study support previous findings emphasizing the need for instructors to teach self-regulatory strategies to learners (Raisanen et al., 2016) and that self-regulated learning processes are related to academic achievement and learning (Cirino, et al. 2017; Russell, et al. 2020). Supporting Morshedian et al. (2017), the results revealed that EFL readers could be successfully trained in the target self-regulated learning model and become able to self-regulate their reading in English. The findings of this study also support those of Magogwe & Oliver (2007), suggesting that strategy development can act as a protective factor for lower proficiency learners who might otherwise withdraw from language learning through lack of confidence, giving them a tool by which they can regulate their performance. In line with the findings by Dill et al. (2014), the present study also emphasizes the value of using the LASSI as an evaluative tool. As an evaluative tool, it can help determine whether a program has positively impacted students'

knowledge and attitude regarding self-regulated learning. In addition, it can serve to help evaluate weaknesses and strengths within the program itself (Dill et al., 2014).

Two research questions were addressed in this study. First, whether or not the instruction of self-regulatory strategies improves English learners' L2 reading comprehension was examined. As the findings indicated, even though the students in both the experimental and control groups improved in their L2 reading, the improvement of the students in the experimental group who received instruction on self-regulatory strategies was much more significant than the control group. Second, the effect of self-regulatory strategy instruction on self-regulated learning assessed by the LASSI was examined. The findings indicated that the students in the experimental group who received instruction on the self-regulatory strategies significantly improved in self-regulated learning, whereas the students in the control group who did not receive any instruction on the self-regulatory strategies did not improve in self-regulated learning. Hence, it could be strongly claimed that the instruction of self-regulatory strategies could be helpful and useful in the academic setting for better learning. Furthermore, the findings in this study challenges educators around the world in various disciplines not just English instruction to implement self-regulatory strategy instruction in their classes.

There are limitations to this study. The findings are not extensive as the study was conducted with a small number of participants, at only one university, in one country. The number of participants limits the generalizability of the results. In order to increase the validity and generalizability of the findings of this study, a further study can include more undergraduates in other universities identified by stratified sampling. Further research should be conducted in various fields in different countries with different teaching contexts. The participants in this study were only female, future studies could compare female and male students. Another limitation relates to the fact that the Mean score of the students in the control group on LASSI was a bit higher on the pre-test in comparison to the students in the experimental group. Unfortunately, since the two groups were intact, the researcher could not do anything about that. The data related to self-regulated learning were only gathered through the LASSI questionnaire. Future studies could complement their data with interviews and even observations. The sub-scales of LASSI were not examined separately. Later research could take this into consideration. And finally, the students in this study were involved with this research for only one semester. Longitudinal research could be conducted to see whether the effect of these instructions would continue and whether the students use them in other disciplines.

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