



A Multi-Method Probe into the Effect of Self-Regulated Learning Strategies-Based Instruction on EFL Learners' Essay Writing Performance, Self-Regulated Strategies, and Academic Self-Efficacy

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This research delved into the impact of SRL strategies-based instruction on EFL students' L2 writing performance, academic self-efficacy, and use of SRL strategies. To this end, 50 Iranian EFL learners, including 25 males and 25 females, attended the study. The experimental group was provided with a four-month SRL strategies-based intervention which followed the Self-Regulated Strategy Development model adapted from Harris and Graham (1996), and the control group took the traditional writing course needed by the university curriculum with the same length. All the students were required to accomplish pre- and post-writing tests as well as self-report questionnaires, including the Writing Strategies for Self-Regulated Learning Questionnaire and the second Language Writer Self-Efficacy Scale, at the beginning and the end of the instruction. The outcomes showed that the experimental group outperformed the control group in the post-writing test. Experimental group's levels of linguistic self-efficacy and performance self-efficacy were remarkably higher than their counterparts in the control group. The study further implies that the instruction might contribute to the increased application of SRL strategies in EFL writing classes in a way that students might become more self-directed and self-regulated in their overall language performance in general and their written performances in particular.

این مطالعه شبه آزمایشی به بررسی تأثیر آموزش استراتژی محور بر عملکرد نوشتاری زبان آموزان ، خودکارآمدی تحصیلی و استفاده از استراتژی های پرداخته است . پنجاه زبان آموز که در حال تحصیل در رشته ادبیات انگلیسی در دانشگاه قم بودند در این تحقیق شرکت کردند. گروه آزمایشی چهار ماه تحت آموزش استراتژی محور قرار گرفت که طبق مدل توسعه راهبرد خودتنظیمی هریس و گراهام (1996) بود و دوره نوشتاری سنتی طبق برنامه درسی دانشگاه برای گروه کنترل به همان مدت چهار ماه ارائه شد. از همه دانشجویان خواسته شد تا پیش از موعود و پس از موعود های نوشتار و پرسشنامه های خودگزارش دهی شامل پرسشنامه استراتژی های نوشتار برای یادگیری خودتنظیمی و معیار خودکارآمدی نویسنده زبان دوم را انجام دهند. نتایج نشان داد که گروه آزمایشی عملکرد بهتری از گروه کنترل در پس از موعود نوشتار داشت. سطح خودکارآمدی زبانی و خودکارآمدی عملکردی گروه آزمایشی افزایش چشمگیری داشت. همچنین گزارش شد که استفاده از آموزش استراتژی محور باعث افزایش استفاده از استراتژی های و فعال تر شدن دانشجو در استفاده از استراتژی های مذکور شد. نتایج ما حاکی از این است که چنین آموزشی می تواند به زبان آموزان در اتکای بیشتر به یادگیری فردی بجای یادگیری از معلم کمک کرده و زبان آموز می تواند فرایند یادگیری خود را فعالتر ارزیابی کند.

Keywords: Self-regulated learning, Strategies-based writing, L2 writing performance, Academic self-efficacy



Introduction

Writing is necessary in many contexts including social, learning, and linguistic, and improves creative and critical thinking (Zhang & Guo, 2012). It embodies the overall linguistic competence of language learners and is a challenging process for students in every language (Anastasiou & Michail, 2013). Writing is frequently considered as the most demanding skill compared with other linguistic skills (Zhang & Guo, 2012), since less support is presented in its process in comparison with other areas of the pedagogical process (Bruning & Horn, 2000). Because of the detachment from its audience, writing has become a thought-challenging and arduous skill (Bruning et al., 2013). According to Iane et al., 2006; Cotteral, and Cohen, 2003, writing is an effective tool for gathering information, remembering, and sharing them; moreover, it helps explore and think about ideas. Within this framework, Graham (2008) argues the purpose of learning to write as: communicating with others, persuading others, giving information to others, learning content materials, entertaining others, thinking about self, and showing knowledge. Furthermore, writing is a compound and multi-dimensional process which entails some elements such as incentive, memory, task environment, and mental issues (Hayes, 2000).

Considering writing as a mental process (Bruning et al., 2013; Hays, 2002), it is normal to discover a conclusive correlation between writing ability and self-efficacy and self-regulation (Schunk & Zimmerman, 2007). The notion of self-efficacy was first defined by Bandura (1994). He described it as human's perception and ideas about their ability to succeed in a task. That means, people with higher self-efficacy have more mastery on what they do or what they feel; so, it can motivate them to action. In other words, officious people are often socially engaged in supporting their peers, family repetitive, and others (Bandura, 1994; Schwarzer & Luszczuska, 2003). The function of self-efficacy gets more salient as the tasks in different domains are hard and challenging. One kind of these domains is writing.

Writing self-efficacy, as the term implies, refers to the perception and judgments of learners of the extent to which they can perform well in a writing activity, modelled on their evaluation of different essays, syntax, grammatical structures, and punctuation (Pajares & Valiante, 2001). In other words, it is the extent to which students feel confident in accomplishing a writing task. According to Bong (2006), higher self-efficacy results in some positive outcomes, such as using more learning strategies, having lower anxiety, and setting higher goals. So, students with high self-efficacy find demanding writing tasks challenging and by using their cognitive strategies, they try to accomplish them (Lavalle, 2006). In sharp contrast, less efficacious learners avoid doing hard tasks, are unable to set goals for their learning, and believe in his/her ability to achieve learning goals (Ahmad & Safaria, 2013).

In the sphere of education, Zimmerman and Risemberg (1997a & b) have asserted that one of the main purposes of education is to train self-directed students, who are capable of actively managing and controlling their own learning by using different SRL strategies in their process of learning. Meanwhile, it is regarded as an effective tool for improving general learning, since a great deal of studies on self-regulation have shown its positive effect on students' learning (Kang, 2022; Yabukoshi, 2020; Zimmerman, 2013). Self-regulated learning has gained an ever-growing recognition to be effective in developing students who are autonomous, purposeful and self-reliant in learning (Csizér & Tankó, 2017; Kang, 2022; Yabukoshi, 2020; Zhang et al., 2019). Thus, SRL could be an essential factor in L2 learner's accomplishment of their goals, if used appropriately (Dörnyei & Ryan, 2015; Han & Hiver, 2018). This is why many researchers acknowledge instruction based on self-regulation in better learning (Gu, 2010; Harris & Graham, 2009). However, there is a scarcity of research about the impact of SRL strategies-based teaching on turning learners into self-directed writers.

Writing as a recursive process is believed to have some steps of strategic roles, namely metacognitive control (e.g., monitoring and assessment), mental processes (e.g., planning, drafting, rectifying, editing), and motivational regulation (e.g., interest development, as well as, goal-oriented control) (Harris & Graham, 2009; Teng & Zhang, 2018). Some investigators hold this belief that the use of SRL strategies to actively sustain various dimensions of SRL process is necessary for achieving writing goals (Han & Hiver, 2018; Teng & Zhang, 2016a). To actively develop SLR strategies, learners need to be apt in assessing their

competence with regard to their learning processes which requires academic self-efficacy beliefs as its prerequisite (Bruning et al., 2013; Schunk & Ertmer, 2000). Learners with higher self-efficacy are able to accomplish hard learning tasks and deploy different strategies actively to their learning process to sustain it and boost their readiness to acquire (Bernacki et al., 2015; Pajares, 2007; Teng et al., 2018). However, the main problem lies in the fact that many students might not possess the sufficient and necessary knowledge concerning the concept of self-efficacy and this lacking knowledge might be considered the root cause of either low self-efficacy or a total absence of self-efficacy among EFL learners. Therefore, the need to improve students' self-efficacy can be felt by almost all instructors who strive for better learning outcomes. It is further assumed that self-efficacy of students can be improved via receiving SRL strategies-based instruction. Hence, the main goal here is threefold. First, to explore whether SRL instruction had any impact on Iranian EFL students' writing performance. Second, to explore whether academic self-efficacy of the learners changed after SRL instruction. And finally, to investigate students' use of SRL strategies after applying SRL.

Literature Review

Self-Regulation

This notion in educational context implies the process of regulating learners' behavior and concentration (Boekaerts et al., 2000). However, the research on SR is not limited to this subject and goes beyond it. Findings of the meta-analysis research have proven that when learners use SRL strategies, they perform more effectively than the time they don't (Zimmerman & Martinez-Pons, 1988). Learners can take the advantages of SRL to improve their academic achievements (Schunk, 1984). In addition, SRL assisted learners with their academic achievement problems. It helped to alleviate problems to poor leaning and high levels of disappointment (Schmitz & Wiese, 2006). Research also confirmed that SRL strategies-based instruction can not only cause better academic performance, but also can improve motivation and strategic behavior (Dignath et al., 2008).

Empirical Studies

SRL strategies have a significant role in L1 writing where student was presented with effective strategies to be more self-reliant, thoughtful and autonomous (Graham & Harris, 2014). Literature in this area presents a plethora of studies with productive outcomes (Harris et al., 2011; Harris et al., 2008). According to Harris et al (2011), for developing successful writers, it is essential to recognize the function of SR in promoting writing; besides, it is important to understand the difficulties a student might face with SR in the process of writing, and useful pedagogic tasks which can develop competence in SR writing. Meanwhile, there is an increasing interest in using SRL strategies-based instruction in L2 context for improving learning outcomes, maximizing active engagement of the Ls, and strengthening the conceptual framework of the instruction (Ching, 2002; Lam, 2014). For instance, Ching (2002) carried out self-regulation and strategy instruction during a seven-week course of Technical English for engineering students. The instruction incorporated planning for writing, revising, evaluation of peers, explicit reflection the process of writing, and strategy use. This study found integrating SR with L2 strategy instruction instrumental for students to enhance self-awareness of their acquisition.

Lam (2014) explored how explicit strategies-based instruction can shape the learners' application of metacognitive knowledge and the stages that this knowledge can develop SRs in EFL writing. Four participants were chosen from a 2-year associate degree program class in Hong Kong. A writing course was held in 15 weeks. The data, entailing of students' interviews, text analysis, and stimulated recalls, was collected from the participants. The findings showed that students' knowledge of metacognitive was

improved by using the mentioned strategies and that the instruction made them more self-regulated and strategic in writing tasks.

Teng and Zhang (2018) investigated the impact of motivational RSs on EFL learners' performance of writing mediated by SR learning strategies. The subjects consisted of 512 undergraduate students in mainland China. They provided data through an English writing test and self-report questionnaires. The findings affirmed a full partial model through which motivational RSs affected learners' performance of writing both explicitly and implicitly, and remarkably correspond with their suggested used of self-regulated learning strategies including mind, metacognition, and community norms. Furthermore, just strategies of cognitive and metacognitive were reported to be important tools though it was not reported for social behavior strategies.

Teng and Huang (2018) inquired the predictive impacts of SRL strategies on students' writing ability. To meet this purpose, a number of 682 students enrolling in grades 1 to 6 at three secondary schools in China were selected in order to participate this study. To measure students' writing strategies, a writing SR scale was used and for gauging students' compositions, the National Matriculation English Test (NMET) was utilized. The findings confirmed that the writing strategies had a great influence on learner' writing outcomes. And, the validity of a higher model concentrating on motivational regulation, mind, metacognition, and social affair was supported by the results.

Tsiriou et al (2020) designed an explicit writing instruction based on the POW and WWW strategies in order to examine its effects on the length and quality of EFL learners' short story composing. 117 Greek grade 5 students were selected from two elementary schools as participants. Their level of writing was below average, average, and above average and they were assigned into two groups. The experimental group received direct instruction on narrative writing and the control group received no explicit teaching and received the traditional writing program. The results reported positive impact of the explicit instruction on learners' writing skills. Data analysis showed statistically significant different between performance of learners. That was, the experimental group outperformed the control group in the quality and length of their writings. Furthermore, the development of writing quality of the below average learners was obvious along with the average and above average learners, which supports the assumption that there was a general development regardless of the students' level.

Sun and Wang (2020) aimed at exploring how writing self-efficacy and SRL strategies of writing are connected to writing in EFL college students. In other words, they intended to scrutinize the connection between the studies' variables. To this end, they administered the two scales to 319 EFL Chinese trainees. The findings revealed that learners reported infrequent use of SRL strategies and a moderate level of self-efficacy in the writing course. In addition, the results showed a statistically significant positive correlation between SRL strategy use, writing self-efficacy, and writing performance.

Chen et. al. (2021) intended to show whether the SRSD promote EFL trainees' self-efficacy in case of text modification in writing at tertiary level. They carried out a quasi-experimental study by using two intact classes who were divided into either experimental or comparison groups. Both groups were given a self-efficacy scale to complete before and after the intervention, and six students from the experimental group participated in pre-test and post-test interviews. It was postulated that SRSD model instruction can enhance learners' self-efficacy for their ability to revise a text, however, the quantitative outcomes exhibited no meaningful differences between the groups, proposing that the SRSD instruction had no impact on self-efficacy of the learners for text revision. It was indicated that the subjects could have exaggerated their potentiality to revise affecting by receiving the SRSD instruction, so, any statistically significant changes were not revealed through the over-time contrast of students' ideas about the self-efficacy scale. Results suggest that learners might only be able to judge what they are able to do and these judgments bear little connection to their real performance. While the beneficial impact of SRL strategies-based teaching has been proven by various empirical studies, lack of reliable and valid instruments and some other issues in methodology of those studies regarding sample size or randomization, hinders the generalization of such a result.

Manchón et al. (2007) suggested that longitudinal studies are most useful to solve the uncertainty existed in strategy-based instruction in the case of language development. Plonsky (2011) also advocated selecting and using acquisition strategies modelled on pre-instruction assessments of procedure uses to conduct an individualized procedure of writing. That is why in this study, we are going to design a longitudinal intervention into SRL strategies using confidential instruments. As mentioned above, the number of research on SRL is abundant in the existing literature. However, less focus has been given to the effectiveness of SRL strategies to make self-regulated learners in writing. Moreover, exploring the impact of this treatment on students' self-efficacy and application of SRL strategies has been neglected. Therefore, the researchers proposed three questions to fill the above-mentioned gap:

1. Does SRL strategies-based instruction have any significant impact on EFL learners' essay writing performance?
2. Does SRL strategies-based instruction have any significant impact on academic self-efficacy of the learners?
3. Does SRL strategies-based instruction have any significant impact on students' use of self-regulated strategies?

Methodology

Participants

A total number of 50 (25 males and 25 females) Iranian EFL students at the University of Qom, Iran, enrolled in this study. Their age ranged between 19 to 25 years whose English proficiency level was upper-intermediate and advanced. Due to the administrative difficulties of random sampling, the learners were chosen by means of convenience sampling. They participated voluntarily and were allowed to withdraw from the research if they desired to do so. At the time of the research, none of the participants had experience in receiving any strategies-based instruction in writing. The subjects, then, were assigned to two groups; 25 participants were in the experimental group and 25 of them were in the control group. Furthermore, the Oxford Placement Test was run to determine the learners' English level.

Instrumentations

Oxford Placement Test

This is an instrument to place the learners in their actual level of language proficiency. It provides a reliable way to place students into the correct level English class. This test was employed to specify the level of the students before applying the instruction and to confirm the homogeneity of the participants. The OPT is comprised of two sections: use of English and use of listening. The use of English part is used for assessing learners' knowledge of the vocabulary and grammar, and the listening part assesses learners' overall listening ability. In this study we have used the first section of the test. The Oxford Placement Test numerical scale is as follows: the score 1-19 for beginner course level, 20-39 for elementary level, 40-50 for pre-intermediate level, 51-59 for intermediate level, 60-79 for upper-intermediate, 80-99 for advanced level, and the score 100 for proficiency course level.

Writing strategies for self-regulated learning questionnaire

The WSSRLQ adopted from Teng and Zhang (2016a) was used to measure students' four aspects of SRL strategies which included the cognitive, metacognitive, social behavioral, and motivational regulation

strategies. The questionnaire is designed in a 7-point Likert-scale whereby students graded from 1 (not at all true of me) to 7 (very true of me) about their use of SRL strategies. This instrument is attached as appendix A.

Second language writer self-efficacy scale

The present study utilized the L2WSS (Appendix B) in order to measure the self-efficacy of students in L2 writing (Teng et al., 2018). It is a 7-point Likert-scale questionnaire which is ranged from 1 (not at all true of me) to 7 (very true of me). It measures different facets of self-efficacy in writing, entailing linguistic, self-regulatory, and performance.

Pre- and post-writing tests

The samples of the two groups enrolled in two writing activities; one at the beginning and one at the end of the instruction. They inquired to produce an argumentative writing based on the given prompts (the topic and the giving data) within 60 min. The subjects were picked out from Test for English Majors (TEM) - band 4 (see appendix C). This test is a national assessment for students of English and is used to evaluate their proficiency in translation as well as three other abilities except speaking. TEM is culturally unbiased and tried to be close to the student's daily lives (Zheng & Cheng, 2008). Half of the participants in each group were presented with task A of the test while the rest were given task B for pre-test and this was reversed in the post-test to balance task difficulty. To gauge the quality of the essays, the analytic scoring rubric adopted from Jacobs (1981) was used. This rubric utilized a weighted scoring framework on a percentile scale which measures five writing dimensions; including content (30%, 13-30), language (25%, 5-25), organization (20%, 7-20), mechanics (5%, 2-5), and vocabulary (20%, 7-20). The aforementioned subcategories have four rating levels accordance to their numerical scale and also palpable indicators of the writing ability for every level.

Instructional materials

The researchers used four sorts of SRL strategies, including idea planning (strategies that learners use to pick an idea for writing), text processing (strategies that readers use to decode a text), peer learning (strategies learners use to learn from their peers), and goal-oriented monitoring which reflect cognition, metacognition, and social behavior dimensions of SRL. It should be noted that we did not include motivational strategies for some reasons. First, we assumed that these strategies are not directly related to the tasks presented in this course. Second, according to Teng and Zhang (2018), motivational strategies are not directly associated with linguistic performance.

Data Collection Procedure

The experimental group obtained SRL strategies-based instruction which followed the SRSD framework adapted from Harris and Graham (1996), and the control group underwent the traditional writing course needed by the university curriculum and received no strategies-based instruction. The quantitative data was gathered during pre- and post- tests through which the essays produced by the student were examined to determine the possible changes in the pupil's proficiency levels. To evaluate the student's academic self-efficacy and application of SRL strategies, two questionnaires of the L2WSS and WSSRL were administrated to the learners at the commence and the end of the investigation. Also, as pre-, post-test writing tasks based on given topics were collected from the students in three intervals, at the start and at the end of the class, to ascertain the effect of instruction in two groups. The experimental group received the strategies-based instruction, and the control group obtained usual academic writing course, needed by the university syllabus and curriculum. The treatment of this study was based on the SRSD model, taken

from Harris et al. (2008), which includes six stages: activation of background information, discuss strategies, model it, learnt it, scaffold it, and independent action.

Stage 1: The intervention was started by the teacher through giving students writing samples of different types of essays. Then the students were asked to critically look at the essays to recognize the types (e.g., argumentative, persuasive, and narration essays) and talk about the characteristics of each essay types by provoking their prior knowledge they had about them in groups with 3 to 4 members. Then, he concentrated on the characteristics of argumentative writing. He asked students some questions like their information about argumentative writing, what it means to be argumentative, how they can get persuaded when they are given a claim. These questions are critical since they can make students understand how to convince a reader to agree with an argument. The teacher, then, asked students to represent an arbitrary claim. Next, they were required to present facts as evidence to persuade the teacher. In that moment, the instructor wrote the facts and evidences on the board and discussed with students which of the given facts can make the claims more convincing to them. Then, he explained them that in an argumentative essay, they need to present reliable reasons and facts to support their argument, and it is not enough to rely only on their own personal ideas.

Stage 2: then the teacher introduced TREE and POW strategies (adopted from Harris & Graham, 2017a; Harris & Graham, 2017b; Harris et al., 2014) to students. According to Harris et al. (2008), POW and TREE are mnemonic devices. After introducing the strategies, the teacher explained that now they are going to learn to use them in writing tasks. He told them that the topic sentence is similar to trunk and the other sections are connected to it; the roots of this tree are the reasons and explanations; and the ending is equal to the earth since it holds the parts together. Then, the teacher along with students read several short essays in order to identify mentioned strategies in each. Next, they completed a graphic organizer for TREE (Appendix D) for each essay they read, to learn how to use the graphic organizer and also how to make notes on it. During this period, the teacher asked some critical questions like: “does the premise have been clearly explained? How is the utilization of transition vocabularies to bolster the argument? How can you make your claim more convincing? What are the indication and fact-based arguments you can provide in your essay? Are helping ideas presented to reinforce your argument?”. In addition, he talked about the application of various SRL strategies in writing process. Then, students examined their own previous writing (the first writing task they accomplished as pre-test) to see which parts it involves. A meticulous review of the strategies and the process of learning them is provided below:

POW

Pick an idea: first, the teacher made students read the question of the essay topic carefully and then start to jot down initial ideas. He asked them to think of different ways they can improve and approach the topic and include a broad range of focuses. Then, students needed to narrow down their initial ideas.

Organize my notes: next, students were required to use a graphic organizer (TREE) to buttress and classify their arguments. At this phase, the TREE (appendix E) strategy came in useful. Students were asked to sort their notes into TREE structure as soon as possible. Using a highlighter color, they highlighted and separated their notes onto different sections to structure their information.

Write and say more: this is the final section of POW. Students needed to write as in-depth as possible by using all parts of their paper and developing their argument. They had to explore every point in details with a lot of words. The teacher wanted them to keep asking themselves the question “can I say anything more about this?” while writing their essays.

TREE

Topic sentence: when it came to writing, the teacher helped students use TREE strategy. At this part, students formulated a topic sentence which expressed an opinion. They were told that their topic sentences should be as concise as possible so their essays will be stopped from getting off the track and it also helps the reader know precisely what the argument is.

Reasons: at this phase, students were required to prepare three or more causes and information to foster their topic sentences. If they were not able to think of the reasons, they had to change their topic sentences. Their reasons should include the evidence and quotes from their notes. For example, if their topic sentence was “along with positive effects, social media has some negative impacts”, then a statement from research such as “Nila Eslit (2017) states that one of the negative impacts of social media on communication is the bad sense of connectivity” would be a great supporting reason.

Explanation: here, students were asked to provide explanations and narrate more concerning each reason. Their explanations needed to be palpable to help and persuade the readers to agree with them. For example, if they used a statement as one of their reasons, they could explain the reader why they have chosen that statement for supporting their topic sentence.

Ending: finally, students were told to write a conclusion for the paragraphs of their essays. They learned that the goal of their conclusion is to sum up all the points they have composed.

Stage 3: here, a writing prompt was chosen and the instructor modeled how to use POW and TREE by using “thinking aloud” technique. He started by prompts of reading and writing and then remembered POW and TREE strategies. He, then, started talking to himself aloud by saying: “our topic is about planets in the solar system. I have to decide which one I think is the strangest in the universe. What are some important things I need to consider? I think that the earth is the strangest planet in solar system. I have some evidence that confirm my claim. According to a study by it has been reported that the earth is”. He also modeled the way to determine objectives for the writing tasks, self-reinforce, and self-monitor performance while modeling. In addition, the teacher used some strategies such as self-instruction for argument (I should write an argumentative essay with 8 parts), planning (first, I have to pick an idea), deployment of strategies (I know what to do, so I go to the first strategy step), self-evaluation (did I use all parts of the strategy?), coping (I can do it), and self-reinforcement (wow, this section of my essay is interesting. I like it) (Harris et al., 2011). While the teacher was modeling, students participated by helping him for planning and making notes on the graphic organizer, and as he was writing his first draft. The teacher together with students reread the first draft and made some modifications once it was written. At this stage, a sheet titled “my self-statement” was given to each student in order to write and share their suggestions that they say to themselves to help pick a good idea.

Stage 4: although memorizing begun in earlier stages, at this stage, students were asked to cooperate to test each other while the teacher monitored their performance to ensure they have memorized the strategies and the steps perfectly.





Stage 5: at initial stages, the teacher supported learners’ application of strategies as they were participating in activities such as small group practice, one-on-one instruction, or practice with peers. However, students gradually take responsibilities for their writing and use of strategies. Supports, interactions, and prompts were gradually faded and finally removed as students started to be independent in writing process. They were also able to help each other and shared their essays with their classmates and provided feedback on them.

Stage 6: at this point, students were capable to employ strategies independently and on their own. They were also asked to write 1 or 2 argumentative essays by using the learned strategies without support of the teacher or their peers. The educator provided constructive and positive feedback when felt and observed

their acting to remove any obstacles in their performance, as well. In order to maintain the strategies, booster sessions were held whereby the teacher incorporated the opportunities for students in order to use the strategies into new lessons.

It is worth to say that these stages were recursive, rather than linear. The instruction was based on the students' pace of development than just being time-based, and it was being individualized based on the needs and learning speed of each participant in the study. Thus, students could go to the next step whenever they met the yardstick of the existing stage.

TABLE 1
POW and TREE Strategies

Strategy	Activity
 <p>Pick a perspective or claim</p>	Make an idea and stated that idea explicitly.
 <p>Organize and create notes and concepts for each section of the TREE</p>	Organize notes by drawing a graphic organizer.
 <p>Topic sentence Reasons Explanation Ending</p>	<p>generate a topic sentence stating an idea. Present at least three issues to butress the topic sentence. Explain your justifications. Make a sentence to concise the topic sentence.</p>
 <p>Write and narrate more.</p>	Produce a complete paragraph. Follow the plan made employing TREE strategy.

Data analysis

A one-way analysis of covariance (one-way ANCOVA) was utilized to compare the experimental and control classes' means on post-tests after checking for the influence of pre-tests to examine the research questions.

Results

Testing Normality Assumption

Table 2 indicates the skewness and kurtosis indices and their ratios over the standard errors. Because the ratios of the aforementioned indices over their respective standard errors were less than +/- 1.96, it was drawn that the normality assumption was maintained. The particular assumptions pertinent with one-way ANCOVA will be discussed under each research question.

TABLE 2
Descriptive Statistics for Testing Normality Assumption

Group		N	Skewness			Kurtosis		
			Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio
Experimental	Pre-Self-Efficacy	32	.263	.414	0.64	-.747	.809	-0.92
	Post-Self-Efficacy	32	-.568	.414	-1.37	-.538	.809	-0.67
	Pre-Self-Regulated	32	-.064	.414	-0.15	-.944	.809	-1.17
	Post-Self-Regulated	32	-.760	.414	-1.84	-.260	.809	-0.32
	Pre-test	32	-.232	.414	-0.56	-.894	.809	-1.11
	Post-test	32	-.100	.414	-0.24	-.816	.809	-1.01
Control	Pre-Self-Efficacy	27	.132	.448	0.29	-.899	.872	-1.03
	Post-Self-Efficacy	27	.373	.448	0.83	-1.014	.872	-1.16
	Pre-Self-Regulated	27	.222	.448	0.50	.018	.872	0.02
	Post-Self-Regulated	27	.767	.448	1.71	1.018	.872	1.17
	Pre-test	27	-.131	.448	-0.29	-1.357	.872	-1.56
	Post-test	27	-.125	.448	-0.28	-1.216	.872	-1.39

Inter-Rater Reliability of Pre-test and Post-test of Writing

Table 3 shows the outcomes of the Pearson correlations to calculate the inter-rater reliability of the two raters who evaluated the students' writing pre-test and post-test. Modelled on the outcomes there existed remarkable agreements between the two raters on;

- Pre-test of writing ($r(38) = .863$, indicating a great effect size, $p < .05$), and
- Post-test of writing ($r(38) = .910$, indicating a great effect size, $p < .05$).

TABLE 3
Pearson Correlations for Inter-Rater Reliability of Pre-test and Post-test of Writing

		Pre-Rater2	Post-Rater2
Pre-Rater1	Pearson Correlation	.863**	
	Sig. (2-tailed)	.000	
	N	59	
Post-Rater1	Pearson Correlation		.910**
	Sig. (2-tailed)		.000
	N		59

Reliability Indices of Self-Efficacy and SR Strategies

Table 4 illustrates the descriptive statistics for the pre-tests and post-tests of self-efficacy, and application of SR strategies. Since these instruments had a maximum score of seven, their variances were rather low; thus KR-21 reliability indices did not yield acceptable results.

TABLE 4
Descriptive Statistics for Pre-tests and Post-tests of Self-Efficacy and Self-Regulated Strategies

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	KR-21
Pre-Self-Efficacy	59	1	6	2.73	1.311	1.718	0.04
Post-Self-Efficacy	59	1	7	4.15	1.910	3.649	0.63
Pre-Self-Regulated	59	1	5	2.85	1.080	1.166	-0.52
Post-Self-Regulated	59	1	7	4.14	1.898	3.602	0.62

The Pearson correlations were computed between self-efficacy and SR strategies in both pre and post-tests in order to calculate their reliability indices through the test-retest method. Modelled on the analysis in Table 5, there existed meaningful correlations between pre-test and post-test of self-efficacy ($r(57) = .705$, showing a great effect size, $p < .05$); and pre-test and post-test of use of self-regulated strategies ($r(57) = .810$, indicating a great effect size, $p < .05$). The statistics demonstrates that the aforementioned variables enjoyed significant reliability indices.

TABLE 5
Pearson Correlations for Pre-tests and Post-tests of Self-Efficacy and Self-Regulated Strategies

		Post-Self-Efficacy	Post-Self-Regulated
Pre-Self-Efficacy	Pearson Correlation	.705**	
	Sig. (2-tailed)	.000	
	N	59	
Pre-Self-Regulated	Pearson Correlation		.810**
	Sig. (2-tailed)		.000
	N		59

Exploring the First Research Question

This question aimed at exploring the influence of SRL strategies-based teaching on EFL students' writing. A one-way ANCOVA was used to compare the experimental and control groups' means on post-test of writing accomplishment after keeping the pre-test effect in check. One-way ANCOVA surmises that there exists a linear correlation between dependent variable (post-test of writing) and covariate (pre-test). That is to say, it requires that there should be a linear relationship between writing pre-test and post-test. Table 6 displays the outcomes of the linearity test. The significant results ($F(1, 58) = 1175.37$, $p < .05$, $\eta^2 = .980$ showing a large effect size) demonstrated that there existed a linear correlation between pre-test and post-test of writing performance.

TABLE 6
Testing Linearity of Relationship between Pre-test and Post-test of Writing Performance

			Sum of Squares	df	Mean Square	F	Sig.
Post-test * Pre-test	Between Groups	(Combined) Linearity	16992.222	33	514.916	37.196	.000
		Deviation	16271.058	1	16271.058	1175.371	.000
		Linearity from	721.163	32	22.536	1.628	.106
	Within Groups	Total	346.083	25	13.843		
Eta Squared			17338.305	58			
			.980				

Second; one-way ANCOVA surmises that the linear relationships between pre-test and post-test are approximately equal across all groups; homogeneity of regression slopes. Thus, the correlations between pre-test and post-test of writing performance should be linear for each of the experimental and control groups. The unremarkable connection (Table 7) between covariate (pre-test) and independent variable (sorts of instruction); i.e. ($F(1, 55) = .022$, $p > .05$, Partial $\eta^2 = .001$ illustrating a weak effect size)

represented there existed linear connections between pre-test and post-test of writing performance across both groups.

TABLE 7
Testing Homogeneity of Regression Slopes for Writing Performance

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Squared	Eta
Group	67.073	1	67.073	15.541	.000	.220	
Pre-test	14761.631	1	14761.631	3420.282	.000	.984	
Group * Pre-test	.093	1	.093	.022	.884	.001	
Error	237.375	55	4.316				
Total	207891.000	59					

Furthermore, one-way ANCOVA expected that the groups enjoy homogeneous variances. The meaningful outcomes of the Levene's test (Table 8) demonstrated that the assumption of homogeneity of variances was not maintained on writing performance ($F(1, 57) = 4.10, p < .05$). A simple solution is to reduce the alpha level from .05 to .01.

TABLE 8
Levene's Test of Equality of Error Variances for Post-test of Writing Performance

F	df1	df2	Sig.
4.107	1	57	.047

Table 9 shows the descriptive statistics for the experimental and control groups on post-test of writing performance after curbing for the impact of pre-test. The outcomes revealed that the experimental group ($M = 60.29, SE = .365$) possessed a greater mean than the control group ($M = 52.72, SE = .398$).

TABLE 9
Descriptive Statistics for Post-test of Writing Performance by Groups with Pre-test

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Experimental	60.295 ^a	.365	59.564	61.026
Control	52.725 ^a	.398	51.928	53.521

Table 10 exhibits the outcomes of one-way ANCOVA. The outcomes ($F(1, 56) = 195.67, p < .05$, partial $\eta^2 = .777$ revealing a great effect size) illustrated that the experimental group, after receiving SRL strategies-based instruction, remarkably outperformed the control group on the post-test of writing.

TABLE 10
Tests of Between-Subjects Effects for Post-test of Writing Performance by Groups with Pre-test

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Squared	Eta
Pre-test	15321.439	1	15321.439	3613.119	.000	.985	
Group	829.779	1	829.779	195.679	.000	.777	
Error	237.468	56	4.241				
Total	207891.000	59					

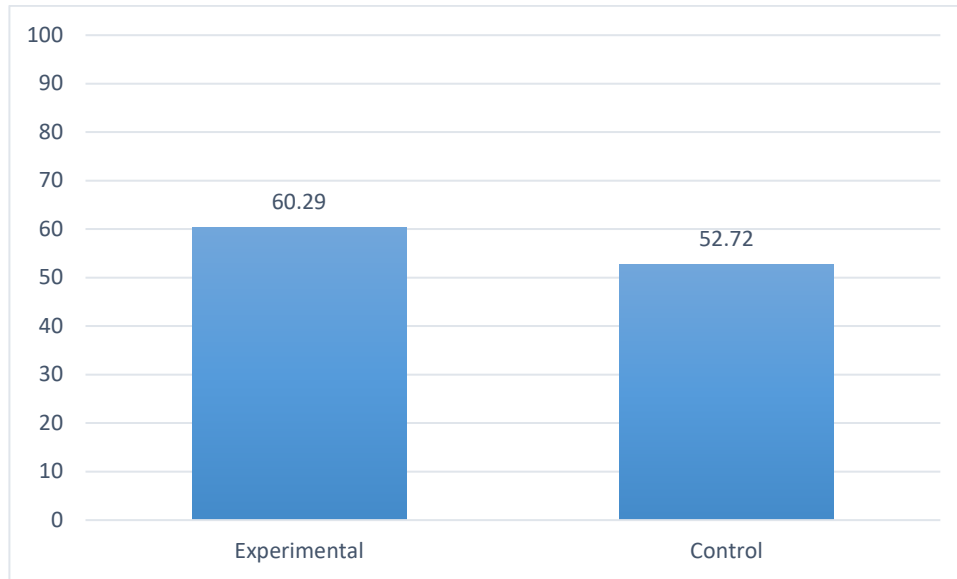


Figure 1. Means on post-test of writing performance by groups with pre-test.

Exploring the Second Research Question

This question scrutinized the effect of SRL strategies-based teaching on EFL learners' academic self-efficacy. A one-way (ANCOVA) was used to compare the groups' means on post-test of academic self-efficacy after checking for the effect of pre-test. The outcomes ($F(1, 58) = 54.12, p < .05, \eta^2 = .513$ exhibiting a large effect size) demonstrated that there existed a linear correlation between pre-test and post-test of academic self-efficacy.

TABLE 11

Testing Linearity of Relationship between Pre-test and Post-test of Academic Self-Efficacy

			Sum of Squares	df	Mean Square	F	Sig.
Post-test * Pre-test	Between Groups	(Combined)	108.520	5	21.704	11.156	.000
		Linearity	105.298	1	105.298	54.126	.000
		Deviation Linearity	3.222	4	.806	.414	.798
	Within Groups		103.107	53	1.945		
	Total		211.627	58			
Eta Squared			.513				

The connection (Table 12) between covariate (pre-test) and independent variable (sorts of instruction); i.e. ($F(1, 55) = .662, p > .05, \text{Partial } \eta^2 = .012$ showing a weak effect size) demonstrated there were linear interactions between pre-test and post-test of academic self-efficacy across the two groups.

TABLE 12
Testing Homogeneity of Regression Slopes for Academic Self-Efficacy

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Squared	Eta
Group	15.756	1	15.756	19.638	.000	.263	
Pre-test	39.611	1	39.611	49.369	.000	.473	
Group * Pre-test	.531	1	.531	.662	.419	.012	
Error	44.129	55	.802				
Total	1229.000	59					

Then; one-way ANCOVA surmises that the groups enjoy homogeneous variances. The non-significant outcomes of the Levene’s test (Table 12) exhibited that the assumption of homogeneity of variances was maintained on academic self-efficacy ($F(1, 57) = 2.32, p > .05$).

TABLE 13
Levene's Test of Equality of Error Variances for Post-test of Academic Self-Efficacy

F	df1	df2	Sig.
2.398	1	57	.127

Table 14 demonstrates the descriptive statistics for the two groups on post-test of academic self-efficacy after checking for the impact of pre-test. The findings revealed that the experimental group ($M = 5.15, SE = .163$) possessed a higher mean than the control group ($M = 2.96, SE = .179$).

TABLE 14
Descriptive Statistics for Post-test of Academic Self-Efficacy by Groups with Pre-test

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Experimental	5.158 ^a	.163	4.832	5.485
Control	2.961 ^a	.179	2.603	3.318

Table 15 represents the prime findings of one-way ANCOVA. The outcomes ($F(1, 56) = 77.32, p < .05$, partial $\eta^2 = .580$ revealing a large effect size) demonstrated that the experimental group, after receiving SRL strategies-based instruction, outperformed the control group on the post-test of academic self-efficacy.

TABLE 15
Tests of Between-Subjects Effects for Post-test of Academic Self-Efficacy by Groups with Pre-test

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Squared	Eta
Pre-test	45.827	1	45.827	57.463	.000	.506	
Group	61.669	1	61.669	77.327	.000	.580	
Error	44.660	56	.798				
Total	1229.000	59					

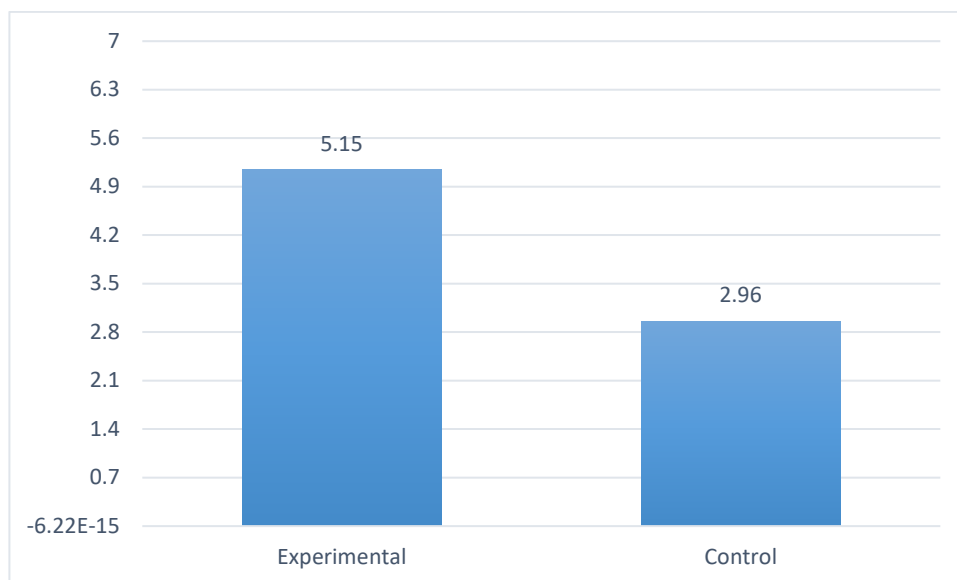


Figure 2. Means on post-test of academic self-efficacy by groups with pre-test.

Exploring the Third Research Question

This question investigated the impact of SRL strategies-based teaching on students' use of SR strategies. A one-way ANCOVA was employed to compare the two groups' means on post-test of use of SR strategies after handling the pre-test impact. The outcomes ($F(1, 58) = 115.50, p < .05, \eta^2 = .694$ indicating a large effect size) exhibited that there existed a linear correlation between pre-test and post-test of use of SR strategies.

TABLE 16

Testing Linearity of Relationship between Pre-test and Post-test of Use of SR Strategies

			Sum of Squares	Df	Mean Square	F	Sig.
Post-test* Pre-test	Between Groups	(Combined)	144.913	4	36.228	30.566	.000
		Linearity	136.903	1	136.903	115.508	.000
		Deviation from Linearity	8.010	3	2.670	2.253	.093
	Within Groups		64.002	54	1.185		
	Total		208.915	58			
Eta Squared					.694		

The unremarkable relationship (Table 17) between covariate (pre-test) and independent variable (sorts of instruction); i.e. ($F(1, 55) = 2.60, p > .05, \text{Partial } \eta^2 = .045$ showing minor effect size) demonstrated that there were linear interactions between pre-test and post-test of use of SRL strategies between groups.

TABLE 17

Testing Homogeneity of Regression Slopes for Use of Self-Regulated Strategies

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Squared	Eta Squared
Group	9.492	1	9.492	18.021	.000	.247	
Pre-test	55.646	1	55.646	105.641	.000	.658	
Group * Pre-test	1.371	1	1.371	2.602	.112	.045	
Error	28.971	55	.527				
Total	1218.000	59					

Then, one-way ANCOVA surmises that the groups enjoy homogeneous variances. The unremarkable outcomes of the Levene’s test (Table 18) showed that the assumption of homogeneity of variances was maintained on use of SR strategies ($F(1, 57) = .962, p > .05$).

TABLE 18
Levene's Test of Equality of Error Variances for Post-test of Use of Self-Regulated Strategies

<i>F</i>	<i>df1</i>	<i>df2</i>	<i>Sig.</i>
.962	1	57	.331

Table 19 illustrates the descriptive statistics for the two groups on post-test of use of SR strategies after curbing for the impact of pre-test. The results revealed that the experimental group ($M = 4.95, SE = .134$) had a higher mean than the control group ($M = 3.16, SE = .147$).

TABLE 19
Descriptive Statistics for Post-test of Use of Self-Regulated Strategies by Groups with Pre-test

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Experimental	4.958 ^a	.134	4.690	5.227
Control	3.161 ^a	.147	2.866	3.455

Table 20 depicts the major outcomes of one-way ANCOVA. The findings ($F(1, 56) = 76.90, p < .05$, partial $\eta^2 = .579$ showing a large effect size) demonstrated that the experimental group, after receiving SRL strategies-based instruction, outperformed the control group on the post-test of use of SR strategies.

TABLE 20
Tests of Between-Subjects Effect for Post-test of Use of Self-Regulated Strategies by Groups with Pre-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Squared	Eta
Pre-test	76.506	1	76.506	141.202	.000	.716	
Group	41.670	1	41.670	76.907	.000	.579	
Error	30.342	56	.542				
Total	1218.000	59					

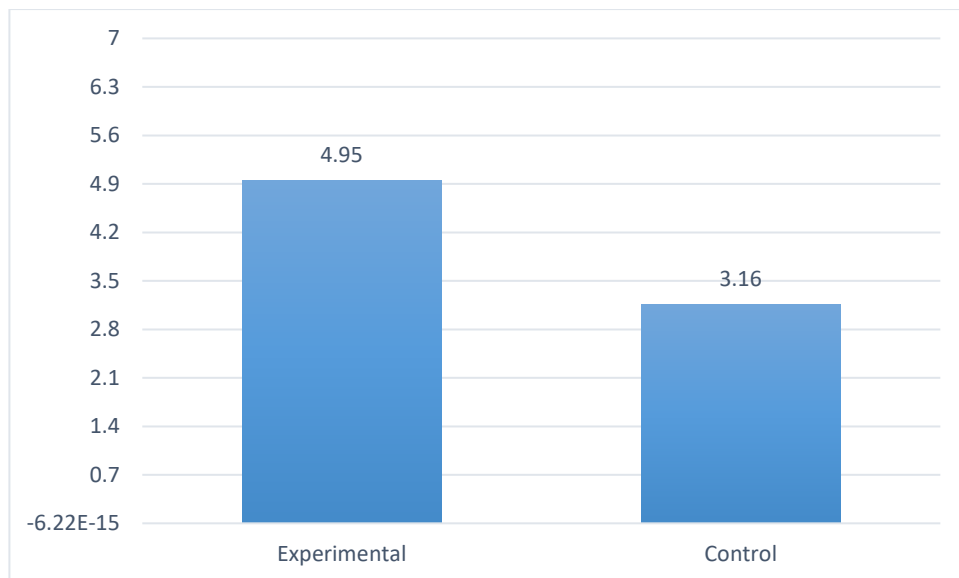


Figure 3. Means on post-test of use of self-regulated strategies by groups with pre-test.

Discussion

In this investigation, the effect of SRL strategies-based teaching was investigated and some positive and useful outcomes were discovered concerning L2 writing performance, academic self-efficacy, and using SRL strategies. Generally speaking, the experimental group had a better performance than the control group in writing. Students from the experimental also showed to be more self-efficacious in writing, besides developing positive self-efficacy. They get more active in employing and developing SRL procedure in their writing texts, as well. The learners in experimental group outperformed their counterparts with a great effect size. The suggested practicality of our instruction was in line with the findings of (Ching, 2002; Lam, 2014; Tsiriotakis et al, 2020), in that employing SRL strategies into the writing instruction make students more aware and reflective of their learning processes and control them better, and this provides better academic outcomes for the students who received SRL strategies-based instruction than those who didn't.

One possible explanation for the pivotal role of SRL strategies instruction on enhancing writing performance is the explicit teaching of SRL strategies beside guided practice in these strategies. Learners' strategic competence might have been promoted by such strategies to organize, activate and manage writing processes, thereby improving quality of the text. For instance, by using planning strategies, learners might have been enabled to pay great focus on language formulation. Or evaluation and observing strategies could have enabled them to determine their strengths and problems in writing. Teng (2019) acknowledged that students who enrolled in SRL strategy intervention for promoting knowledge, encoding information, and transferring skills for succeeding writings, they might have taken advantage of the schema of checking and assessing as a clue to promote their essay writing. According to Bruning and Horn (2000), special attention to motivational conditions is greatly required for writing performance. So, for performing better in a writing task, we need to be motivated; and the second justification might be that self-regulated learning is motivational in nature, in some senses. First, a goal is selected to pursue. Second, the way of operationalization of the pursuit of goals is chosen. Third, there is a decision on how long to pursue a goal which has not yet been reached. When learners take these motivational related choices into consideration, they experience affective reactions and formulate attributions for outcomes (Winne, 2015).

Another reason for promoting writing might be the application of the thinking aloud procedure. For instance, self-instruction helps students involve and utilize self-regulation; planning helps them set a plan and focus on the writing task; and self-evaluation allows learners to test their performance and generate high-quality writing (Harris & Graham, 1996). In sum, this process can improve self-regulation and self-awareness, and finally boost up writing (Hartman, 2001).

The other possible justification might be as follows: one of the essential cognitive processes needed for successful writing is to be able to scheme (i.e., setting objectives and procedures); and also skilled writing is a task which is goal-oriented and involves significant planning (Hayes & Flower, 1980). And the students who set more specific and elaborated goals can produce high quality writings (Newell et al., 2011). It has also been stated that writing processes involves recursive components. For generating an effective text, coordination of writing means requires a focused control and SR. And SRSD, in the process of writing, promotes self-editing, self-revising, self-organizing and self-regulating, and finally develops writing quality (Garcia & Fidalgo, 2006).

As it turned out, the SRSD impacted students' self-efficacy positively. In other words, as a result of the instruction the experimental group received, they gained more confidence in accomplishing the writing tasks and employed more complex linguistic and cohesive devices to generate well-written texts compared to their counterpart in the control group. According to Graham and Harris (1997), in writing, students' motivational engagement in a task, regarding feelings, value, and interest towards writing, as well as their cognitive engagement are needed. It has also been stated that there existed a conclusive connection between self-efficacy, cognitive engagement, and use of SRL strategies. Therefore, one logical justification for the overall better performance of students in the experimental group compared to their peers in the control group can be ascribed to their more successful cognitive engagement with the writing tasks. Focusing on the metacognitive aspect of the writing leads to some positive outcomes, including helping students have

control over their writing and fostering their critical thinking abilities. Therefore, it may be considered that by fostering critical thinking abilities, students might gain independence and become more self-efficacious (Bagheri Nevisi, et al., 2019)

The other plausible justification, from a sociocultural point of view, could be attributed to instructor support. As Mason et al. (2009) put it, within the SRSD framework, educators' make responsibility for procedural application of the writing by normally altering from teacher to student-led SR. This shifting might have fostered learners' independence, self-confidence, and efficiency in their writing production. Our findings, thus, support (Lantolf & Poehner, 2008; Zhang et al., 2016) assertion that scaffolding helps students improve their mind capacity and manage their learning more easily.

The other explanation might be the use of positive affirmation, self-controlling, and self-questioning throughout the instruction. These strategies help students handle their learning process and might better inform them about the quality of their own learning. Students, who use SRL strategies more, are capable to create a proper learning ambience for better learning, evolve their academic efficacy, and then showing a great extent of self-efficacy. The findings were incongruent with the outcomes of (Chen et al., 2021; Graham et al., 2005) who found no clear correlation between SRL strategies intervention and self-efficacy of the students. Chen et al. (2021), who explored whether the SRSD instruction make any significant difference on the level of students' self-efficacy for text revision, found a minimal variance in ratings of self-efficacy of the students after the instruction; which according to Dornyei and Ushida (2011) it might be due to the students' psychological aspects like incentive perspectives and self-efficacy which may need more time to evolve than what was available in their instruction.

However, related investigations in L1 writing have confirmed the positive impact of SRL strategies intervention on the self-efficacy stages; such as Fidalgo et al. (2008), who described planning and revising writing strategies-based instruction as a significant factor for improving self-efficacy of their participants in expository writing. Kim and Nor (2019) also reported that SRL strategies have a significant effect on pre-school children's self-efficacy. Regarding the impacts on SRL strategies, students' use of SRL strategies appeared to be raised after the instruction. Put it differently, learners who received SRL strategies-based intervention showed that they were able to promote and use better amount of SRL strategies than those who didn't receive SRL instruction.

One probable explanation is that, when students find themselves in a situation where certain strategies are used frequently, it is obvious that the use of those strategies will increase in the future. In the current research, students in the experimental group enrolled in strategies-based instruction wherein SRL strategies were taught to them within SRSD model. Furthermore, students and the teacher worked collaboratively for identifying the situations where SRL strategies have opportunities to be used and how they can be modified in new tasks or settings which resulted in strategy generalization. Findings are partially consistent with Sun (2020), who claimed that there exists a significantly positive connection between writing proficiency and application of SRL strategies. Learners' writing proficiency increased by undertaking SRL strategies-based instruction; and this increased proficiency might have been the offshoot of the SRL strategies.

Conclusion

This study discerned the effect of SRL strategies-based treatment on EFL students' writing, self-efficacy, and use of SR strategies. The results pointed to the mandatory function strategies-based instruction as a means of promoting academic outcomes. It proposed that this type of intervention was helpful in fostering learners' proactive use of SRL procedures, improving their level of cognitive engagement, and developing their writing self-efficacy. The intervention represents a sociocognitive facet of individuals which views them as agents who decide to activate and keep mind, behavior, and affect to attain acquiring reasons. The stages of the intervention are compatible with the evolution of SRL, that is to say, the stages move from observation to control, and ultimately to regulate (Winne & Hadwin, 2010).

Findings might have some significant pedagogical implications for EFL course and curriculum designers, teachers, learners, practitioners, and material developers which are explained in this section. The outcomes can benefit course and syllabus designer. Findings propose that by implementing SRL strategies into traditional writing instruction, students' learning will be enhanced, so specific SRL writing strategies modelled on the writing tasks, demands of the class, or outcomes of learners' reported application of SRL strategies can be selected by writing teachers. As for language learners, the study suggests that before carrying out any SRL strategies intervention, diagnosis of students' affective conditions, like performance self-efficacy, and application of SRL strategies, is necessary as well as their language proficiency. This will probably increase the efficacy in writing courses and then arouse students' incentive in the process of perceiving to write. EFL practitioners can also use the outcomes of this research. Considering diagnosis information of students as forerunner of every writing instruction, EFL practitioners may find the opportunity to modify their educational aims to improve the effect of their strategies-based instruction. Instructors may also be stimulated to keep implementing and adjusting multi-dimensional strategies intervention, in which motivational regulation and social behavioral strategies are integrated, as well as concentrating on cognitive and metacognitive evaluation. The study can be beneficial for EFL learners. The results suggest that by implementing SRL strategies into traditional writing courses, we can develop self-regulated learners who are less dependent on their teachers, more reliant on their learning attempts, and more significantly, have the potentiality to actively evaluate their own process of learning.

This investigation has some limitations and drawbacks. The first limitation was the restriction of time. The study took place for four months and this limited time might have been insufficient for SRL strategies and writing abilities to be developed. So, further longitudinal studies can be administered over longer period of time. The sampling procedure could have undermined the generalizability of the findings as well. And finally, this study merely included second-year English major students from a university in Iran were participated. Other research can examine variations in areas and participants from differing levels of language proficiency.

Since the study delimited itself to four SRL strategies from the three dimensions of SRL, which were cognitive, metacognitive, and social behavioral, whereas motivational SR, which is the other significant component of SRL, was excluded. As a result, this important component could be accounted for in further studies on designing writing instructions to promote SR writers (Schwinger & Otterpohl, 2017). And the second delimitation concerned with the participants which was limited to 50 EFL learners; other research with larger sample size would be conducted to augment and boost the generalizability of findings to other pedagogical contexts.

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