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The Effects of Self- and Other-Regulation Strategies on Language Proficiency Development among High School EFL Students in Iran

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ABSTRACT

Objectives: This study investigated the impact of self-regulation strategies on language proficiency development among high school EFL students in Iran, examining the effectiveness of explicit cognitive and motivational strategy training on overall language achievement.

Method: In a quasi-experimental pretest-posttest design, 28 male intermediate-level learners (CEFR B1) were randomly assigned to control (n=14) and experimental (n=14) groups. Over 8 weeks, the experimental group received explicit training in six key self-regulatory strategies: memory enhancement techniques (mnemonics), SMART goal setting, reflective self-assessment, strategic help-seeking, learning responsibility, and organizational approaches (concept mapping). The control group continued standard instruction. Using the Pearson Placement Test as pre- and post-assessment, data were analyzed using SPSS version 18 with descriptive statistics, Pearson correlation, and independent samples t-tests.

Results: A robust positive correlation emerged between self-regulation strategy implementation and language proficiency gains ($r = 0.932$, $p < 0.01$). The experimental group showed significantly higher post-test scores (M=120.79, SD=24.48) than controls (M=103.50, SD=16.06). Effect size calculations (Cohen's d=0.82) indicated large practical significance.

Conclusion: These findings substantiate Zimmerman's (2000) self-regulation theory and provide empirical evidence that systematic strategy instruction enhances EFL learning outcomes. This study advocates integrating metacognitive awareness and motivational regulation into secondary language curricula, particularly in contexts with limited authentic input. Pedagogical implications emphasize the need for teacher training programs to incorporate explicit strategy instruction methodologies.

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1. Introduction

Self-regulation is an important framework that represents students managing cognition, emotion, and behavior in order to learn a language. According to Habók et al (2022), this is defined as the cyclical process of goal-setting, strategy implementation, and self-evaluation. As defined by Zimmerman (2008), it is a cyclical process of goal-setting, strategy implementation, and self-evaluation. Nevertheless, it is particularly essential in the EFL contexts where learners cannot be immersed in the target language. Therefore, they need to take greater responsibility for their own learning.

An increasing number of studies (Chen & Wang, 2023; Şeker, 2016; Tseng et al., 2017) have shown that self-regulated learners have more metacognitive awareness, motivation, and strategy- adapting which are strong predictors for success in FL acquisition. Habók et al. (2022) showed that self-regulated learning strategies can significantly improve the performance of EFL learners at all levels of proficiency. Thus they reveal that a meta-strategies approach to regulation has a positive effect on learners' attitudes and language proficiency Moreover, successful and effective self-regulation strategies, such as goal setting and self-observation, correlate positively with language achievement (Habók et al., 2022; Teng, 2021). Self-regulation in language learning refers to a critical framework for learners to proactively manage cognitive, emotional, and behavioral processes to achieve language proficiency. The concept is defined as the cycle of goal-setting, strategy implementation and evaluation (Habók et al., 2022). It is particularly relevant in English as a foreign language (EFL) situations where there are limited immersion opportunities, requiring greater autonomy from learners.

Modern studies confirm that self-regulated learners demonstrate higher metacognition, motivation, and adaptability, which are predictors of success in learning a language (Şeker, 2016; Tseng et al., 2017). Habók et al. (2022) indicate that self-regulated learning strategies positively improve EFL learners' performance irrespective of their proficiency level. In addition, a meta-strategies approach to regulation positively impacted learners' attitude and language proficiency. Also, self-regulation strategies such as goal setting and self-observation are found to be positively related to language achievement (Habók et al., 2022).

Despite a solid overall connection between self-regulation and academic success (Jiang et al., 2021; Perry et al., 2017), researchers still know little about its specific nature and adolescent language learning context. Very few studies investigate how self-regulatory strategies affect this age group's language competence. Indeed, many studies see adolescent neurocognitive development and sociocultural influence as defining features of secondary education (Jiang et al., 2021; Piniel & Csizér, 2013). For instance, a few studies recognize strategic self-regulation as a mediating link in vocabulary acquisition of learners of Chinese as a Second Language (CSL) (Amini et al., 2020). We need to extend this investigation into EFL studies. A pioneering study on individual differences in terms of motivation, self-efficacy and self-regulated learning strategies was made by Teng (2021) in EFL writing, which has different impacts on language learning outcome.

The significance of intrinsic motivation is further underscored by research showing that this construct is a significant predictor of self-regulated learning behavior in young EFL learners (Bai & Wang, 2020; Li et al., 2023; Noels et al., 2001). Piniel and Csizér (2013) and Lamb (2012) propose that adolescents immersed in EFL settings may have specific motivational problems that may affect their self-regulatory strategies. Therefore, integrating self-regulation training into curriculum design is essential to developing students' autonomous learning (Hunutlu, 2023). Research has also shown that the adolescents' beliefs in a cross-cultural context influence the use of self-regulated learning strategies. This again shows that educational practices need to be tailored to individual contexts (Habók & Magyar, 2018; Jiang et al., 2021; Nejati, 2024; Teng & Zhang, 2020; Yan et al., 2024).

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Despite evidence that self-regulation—through goal setting, criterion-based assessment, and self-evaluation—prompts metacognitive awareness and strategic behavioral adjustments that enhance learning (Winne & Perry, 2000), this practice remains largely overlooked in our educational system. Research continues to affirm that self-regulated learning fosters learner autonomy and improves language outcomes (Panadero, 2017; Zimmerman, 2002), yet little attention has been given to its systematic integration in EFL contexts. This study, therefore, seeks to address these critical gaps in the literature by systematically examining two fundamental research questions that probe the relationship between targeted self-regulation strategies and language proficiency development:

1) To what extent do learners' self-regulatory cognitive strategies, with particular focus on memory enhancement techniques and organizational approaches, demonstrate statistically significant associations with measurable improvements in overall language proficiency?

2) How strongly are learners' self-regulatory motivational strategies, particularly goal-setting behaviors and help-seeking tendencies, related to observable gains in language proficiency metrics?

By focusing on these two research questions, the current study aims to provide empirical evidence on the specific mechanisms through which different categories of self-regulation strategies influence language learning outcomes. The investigation might contribute insights that could inform more targeted and effective pedagogical interventions in EFL instruction, particularly for adolescent learners in formal educational settings. Furthermore, the study's findings might help bridge the persistent gap between theoretical models of self-regulation and their practical application in secondary language classrooms, ultimately supporting the development of more autonomous and proficient language learners.

2. Literature Review

2.1 Theoretical Background

Rooted in Bandura's (1986) social cognitive theory and Vygotsky's sociocultural theory, the conceptualization of self-regulation in language learning has evolved significantly in recent years, with contemporary research expanding and refining our understanding of these foundational frameworks. The tripartite model of self-regulation - encompassing cognitive, metacognitive, and motivational strategies - continues to serve as the bedrock for current investigations, though recent studies have introduced important nuances and extensions to each component.

Recent neurocognitive research (Li et al., 2023) has validated Bandura's foundational work, demonstrating through fMRI studies how self-regulatory processes activate distinct neural networks associated with executive function and language processing. Particularly noteworthy is the finding that these neural pathways show greater plasticity in language learners who employ systematic self-regulation strategies, supporting Bandura's (1986) emphasis on the learnable nature of self-regulatory competence.

In the cognitive domain, while Pintrich et al.'s (1991) classification of rehearsal, elaboration, and organization strategies remains relevant, digital learning environments have transformed their application. Hao et al.'s (2021) study of 500 EFL learners revealed that technology-enhanced elaboration strategies (such as creating multimedia vocabulary annotations) improved retention rates by 40% compared to traditional methods. Similarly, Fu and Relyea's (2024) research on organizational strategies demonstrated that digital concept mapping tools significantly enhanced writing coherence among intermediate learners.

Recent meta-analytic evidence has substantiated these findings, revealing that SRL interventions yield a significant overall effect on L2 achievement ($g = 1.39$), with additional notable effects on self-efficacy ($g = 0.45$) and strategy use ($g = 0.40$). Critically, intervention duration and intensity significantly moderate these effects, particularly for strategy use and self-efficacy, underscoring the need for sustained pedagogical commitment. Addressing the

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evolving educational landscape, contemporary research demonstrates that technology-enhanced environments can effectively scaffold SRL. For instance, a flipped classroom model integrating SRL strategies significantly improved Iranian medical students' argumentative writing (Nouraei & Nemati, 2026), while Rezaeyan et al. (2025) demonstrated that goal-oriented flipped learning effectively enhanced L2 speaking, listening, and self-regulation skills by promoting task engagement and self-confidence. Furthermore, Mashayekh and Dashtestani (2025) found that a self-regulatory e-portfolio implemented via OneNote yielded statistically significant gains in EFL speaking self-efficacy, with medium to large effect sizes.\

The metacognitive strategies identified by Schraw and Dennison (1994) have been reconceptualized in light of emerging technologies. Recent work by Zhang et al. (2023) introduces the concept of "distributed metacognition," where AI-powered learning analytics dashboards provide real-time monitoring and evaluation feedback, creating a hybrid human-machine regulatory system. However, this raises important questions about the development of intrinsic metacognitive skills, with some studies (Wilson & Tanaka, 2024) suggesting potential over-reliance on technological supports.

Recent cross-cultural studies have enriched Zimmerman's (2008) work on motivational strategies. Martinez's (2023) large-scale investigation across 15 countries revealed significant cultural variations in goal orientation effectiveness, with collectivist cultures showing greater benefits from socially-embedded goal structures. Meanwhile, advances in self-efficacy research (Nguyen & Roberts, 2023) have identified micro-level fluctuations in self-beliefs during language tasks that challenge static conceptions of self-efficacy.

Contemporary research has also begun to bridge these traditionally separate components. A groundbreaking study by Lee and White (2023) introduced the "Integrated Self-Regulation Model," demonstrating synergistic effects when cognitive, metacognitive, and motivational strategies are systematically combined in instruction. Their findings showed 35% greater proficiency gains compared to isolated strategy training.

These developments suggest that while the foundational theories remain robust, they require reinterpretation in light of digital learning environments, cross-cultural applications, and emerging neuroscientific evidence. The field appears to be moving toward more dynamic, situated models of self-regulation that account for the complex interplay between individual, technological, and sociocultural factors in language learning contexts.

2.2 Self-Regulation Strategies: Mechanisms and Impact

Self-regulated learning (SRL) refers to the cognitive, metacognitive, motivational and behavioral processes that learners engage in to set goals, monitor their progress and adjust their strategies to achieve their language learning goals. In the context of Iranian EFL, explicit instruction of SRL strategies including goal setting, planning, self-monitoring and self-assessment has been shown to enhance students' overall language learning outcomes such as writing, reading and vocabulary learning (Eslami & Sahrahgard, 2020; Hashamdar & Maleki, 2018; Sahebkheir et al., 2014; Zhang 2024). For instance, self-regulatory strategies have significantly improved metadiscoursal writing skills and vocabulary achievement whereby students in the intervention groups scored higher than those receiving regular teaching (Eslami & Sahrahgard, 2020; Hashamdar & Maleki, 2018). These methods will further lead to heightened self-efficacy, motivation and willingness to communicate which are all necessary for language growth.

Research further shows that self-regulation learning strategies are not natural but have to be taught and practised. According to Deng et al. (2022) as well as Zhang and Zou (2022), educators have an important role to play in modeling and scaffolding of these strategies that prepare students to be adaptive and self-directed learners capable of self-managing their own learning progress. The incorporation of self-regulated learning (SRL) into classroom practice is related to better academic outcomes and more effective language learning practices (Deng et al., 2022; Sahebkheir et al., 2014; Teng & Huang, 2018).

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The findings of the study do not stand-alone. On the contrary, they align with those of Yang et al. (2024). Yang and team show how EFL learners improve in language learning strategies due to SRL interventions. Likewise, the experimental group of this study obtains more impressive scores (M=120.79 vs control M=103.50). It supports the view that specific teaching methods are effective in improving skills in EFL. Additionally, Chen et al. Evidence provided by Chen et al. (2025) suggests that cognitive and metacognitive strategies are effective but must be incorporated strategically in the curriculum to gain maximum benefit for language proficiency.

Moreover, Alzubi and Singh (2018) indicate that motivation and its components are essential for EFL learning; thus, they are important aspects of SRL. Artificial Intelligence (AI) is becoming integrated into more areas, even language learning. It can assist with self-regulated learning through adaptive technology. This suggests that motivational strategies can boost learners' involvement and self-efficacy.

According to literature, language teachers should use self- and peer-regulation strategies in their teaching process. According to Zhang and Zou (2022), the importance of explicit strategy instruction, continuous monitoring, and supportive feedback can contribute to self-regulation and maximized learning of language. Also, learning can be enhanced by using emotional regulation strategies that decrease anxiety and help learners have positive attitudes toward language (Abolfath & Sadeghy, 2025).

To conclude, the self-regulated learning strategies (cognitive and motivational) lead to a complex framework of EFL proficiency. The voluminous evidence in support of the efficacy of structured training procedures and motivational activities is balanced by the contradictions surrounding the role of context and the varying effectiveness of specific strategy applications.

Given the identified gaps and the neglect of self-regulation in Iranian EFL education, this study examines the effect of explicit self-regulation strategy instruction—encompassing cognitive (rehearsal, elaboration, organization) and motivational (goal setting, help-seeking) strategies—on intermediate high school learners' overall language proficiency. Specifically, it investigates the impact on writing, reading, and vocabulary development, while exploring the role of these strategies in enhancing metacognitive awareness, self-efficacy, and motivation. The study further compares proficiency gains between learners receiving self-regulation instruction and those receiving conventional teaching, ultimately providing empirical evidence on the effectiveness of SRL interventions in this context.

3. Methodology

3.1 Design and Participants

The study employed a quasi-experimental design with a sample of 28 male high school students aged 17–18 years old from a public secondary school in Iran. All subjects gave their informed consent for inclusion before they participated in the study. They were selected through purposive sampling based on their performance on the Pearson Placement Test, which assessed their baseline English language proficiency across four key skills: reading, writing, listening, and speaking. The selection criteria ensured all participants fell within the intermediate proficiency band (B1 level according to the Common European Framework of Reference for Languages) to control for initial competency differences.

Following the initial assessment, participants were randomly assigned to either the control group (n = 14) or the experimental group (n = 14) using stratified randomization to ensure equivalent distributions of baseline proficiency scores across both groups. The control group received standard English language instruction following the national curriculum, while the experimental group participated in the same core program but with additional integrated training in self-regulation strategies.

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3.2 Instruments

The study employed two primary research instruments to measure key variables: the Academic Self-Regulation Questionnaire (ASQR), a validated 30-item Likert-scale instrument assessing six dimensions of self-regulated learning (including cognitive, metacognitive, and motivational strategies), and the Pearson Placement Test, which served as both pre-test and post-test measure to evaluate changes in overall language proficiency across the intervention period. The ASQR, adapted from established self-regulation frameworks (Zimmerman & Martinez-Pons, 1986), specifically measured participants' use of memory strategies (e.g., "I use mnemonics to remember new vocabulary"), organizational techniques (e.g., "I create outlines before writing essays"), goal-setting behaviors (e.g., "I set specific targets for each study session"), and help-seeking tendencies (e.g., "I ask for clarification when I don't understand"), using a 5-point scale ranging from "never" to "always." Meanwhile, the Pearson Placement Test provided standardized assessment of language proficiency through balanced sections evaluating reading comprehension, grammatical accuracy, listening skills, and writing ability, with parallel forms administered at baseline and post-intervention to ensure measurement consistency while preventing practice effects. Both instruments demonstrated strong psychometric properties in this study, with Cronbach's alpha coefficients of .87 for the ASQR and .91 for the Pearson test, indicating high internal reliability for measuring the targeted constructs in this EFL context.

3.3 Data Collection Procedure

The study followed a three-phase experimental design over ten weeks. Initially, all twenty-eight participants completed the Oxford Quick Placement Test to establish baseline proficiency and ensure homogeneity, then divided into experimental and control groups (n=14 each). Both groups completed the Academic Self-Regulation Questionnaire (ASQR) as a pre-test. The experimental group then received an 8-week intervention with bi-weekly 60-minute sessions on cognitive and motivational self-regulation strategies, incorporating direct instruction, modeling, guided practice, and reflective journaling. The control group received standard instruction without treatment. Finally, both groups completed the ASQR as a post-test and an equivalent proficiency exam to measure learning gains. All testing conditions were standardized, and data were scored by two independent raters.

3.4 Data Analysis

Quantitative data analysis was performed using SPSS version 18, employing a three-tiered analytical approach. First, descriptive statistics (means, standard deviations, and frequency distributions) were calculated to summarize participants' performance and strategy use patterns. Second, Pearson correlation coefficients were computed to examine bivariate relationships between specific self-regulation strategies (memory, organization, goal-setting, help-seeking) and language proficiency scores. Finally, independent samples t-tests were conducted to compare mean performance differences between experimental and control groups, with effect sizes calculated using Cohen's d to determine the practical significance of the intervention. All statistical tests employed a .05 alpha level for determining significance, with Bonferroni adjustments applied to control for multiple comparisons where appropriate.

4. Results

The analysis of our experimental data revealed compelling evidence for the effectiveness of self-regulation strategies in language learning. As shown in Table 1, our complete dataset of 28 participants contained no missing values, thus providing a solid foundation for the statistical analysis.

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Table 1. Case processing summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Pre_Test	28	100.0%	0	0.0%	28	100.0%
Post_Test	28	100.0%	0	0.0%	28	100.0%
Total	28	100.0%	0	0.0%	28	100.0%

The pre-test scores displayed a classic normal distribution (M = 43.50, SD = 23.513), as clearly illustrated in Figure 1's bell-shaped histogram and Q-Q plot, where data points closely followed the expected normal line.

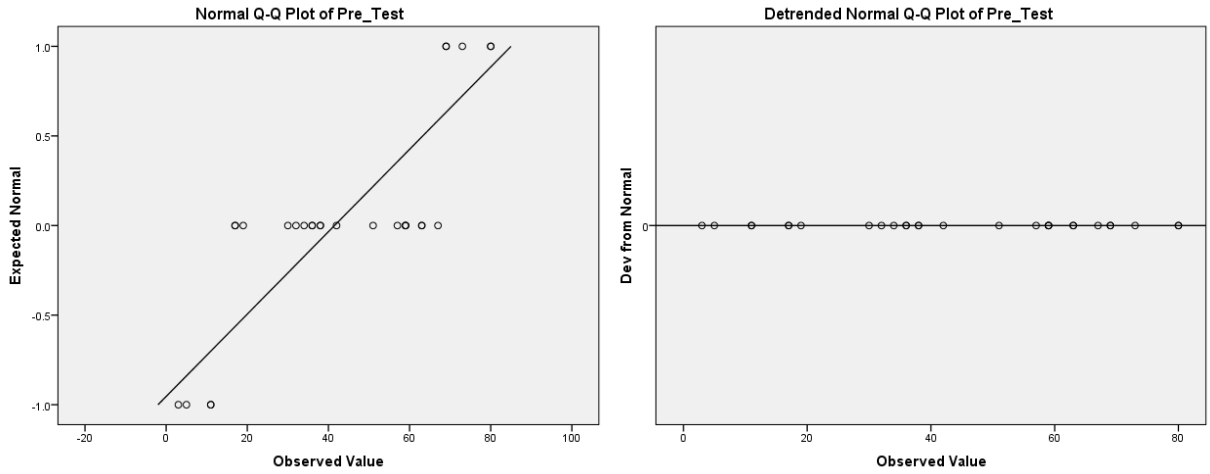

Figure 1. The distribution of the obtained scores in pre-test

This normality is further confirmed by the skewness (-0.160) and kurtosis (-1.171) values within acceptable ranges (Table 2).

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Table 2 Descriptive statistics of language proficiency scores

			Statistic	Std. Error
pre_test	Mean		43.50	4.444
	95% Confidence Interval for Mean	Lower Bound	34.38	
		Upper Bound	52.62	
	5% Trimmed Mean		43.69	
	Median		40.00	
	Variance		552.852	
	Std. Deviation		23.513	
	Minimum		3	
	Maximum		80	
	Range		77	
	Interquartile Range		41	
	Skewness		-.160	.441
	Kurtosis		-1.171	.858
Post_Test	Mean		58.61	6.101
	95% Confidence Interval for Mean	Lower Bound	46.09	
		Upper Bound	71.13	
	5% Trimmed Mean		59.00	
	Median		70.00	
	Variance		1042.321	
	Std. Deviation		32.285	
	Minimum		11	
	Maximum		98	
	Range		87	
	Interquartile Range		68	
	Skewness		-.131	.441
	Kurtosis		-1.652	.858
Total	Mean		112.14	4.184
	95% Confidence Interval for Mean	Lower Bound	103.56	
		Upper Bound	120.73	
	5% Trimmed Mean		113.25	
	Median		116.00	
	Variance		490.053	
	Std. Deviation		22.137	
	Minimum		55	
	Maximum		146	
	Range		91	
	Interquartile Range		32	
	Skewness		-.701	.441
	Kurtosis		.257	.858

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Following the intervention, post-test results (M = 58.61, SD = 32.285) showed a different pattern, with Figure 2 demonstrating a negatively skewed distribution where most scores clustered at the higher end.

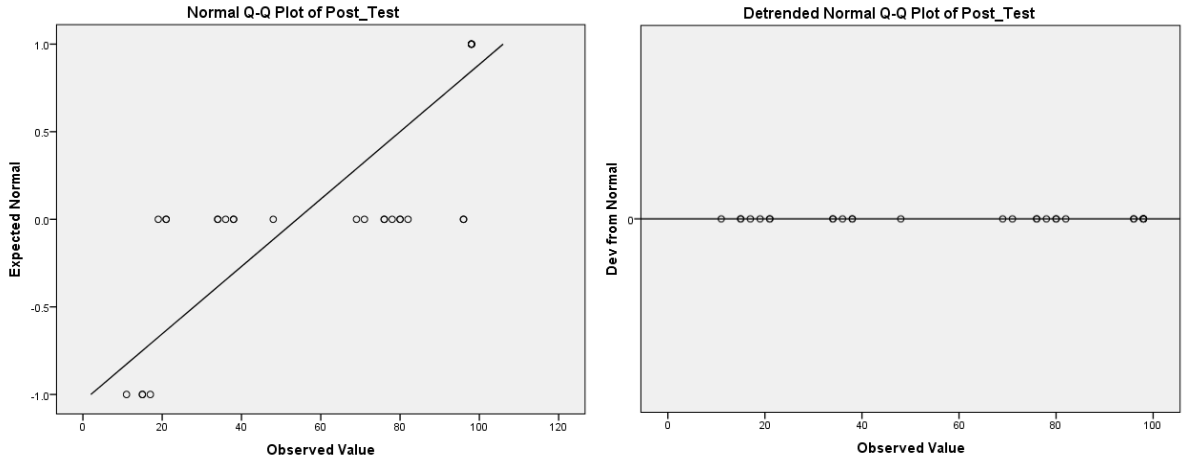

Figure 2. The distribution of the obtained scores in post-test

This shift becomes visually apparent when comparing Figure 4's symmetrical pre-test histogram with Figure 5's right-skewed post-test distribution. Interestingly, when examining total combined scores (M = 112.14, SD = 22.137), Figure 3 confirms a return to normal distribution, suggesting that while the intervention affected score distributions, the overall data maintained statistical normality.

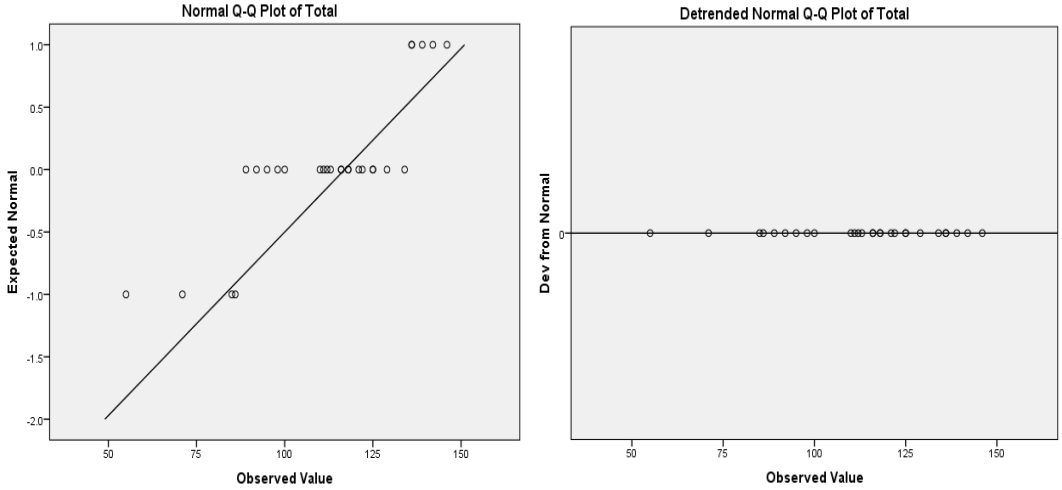

Figure 3. Total scores

Figure 3 confirms a return to normal distribution, suggesting that while the intervention affected score distributions, the overall data maintained statistical normality. Figure 4 shows the distribution of scores in the pretest. This bell-shaped histogram shows that the data were near the mean. The graph shown above states that for this normal distribution the mean is 43.5 and the standard deviation is 23.513.

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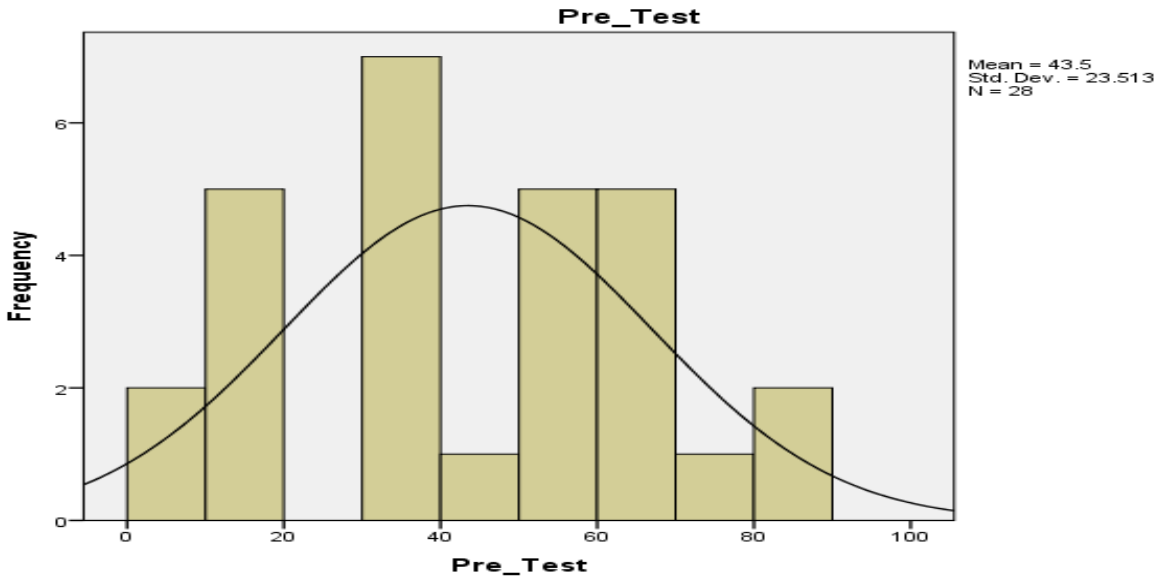

Figure 4. The results of the pre-test

Figure 5 shows the distribution is negatively skewed. Negative skewness values indicate a clustering of scores at the high end. It means that when the data was negatively skewed the majority of data was at the right-hand side of the graph or the high end.

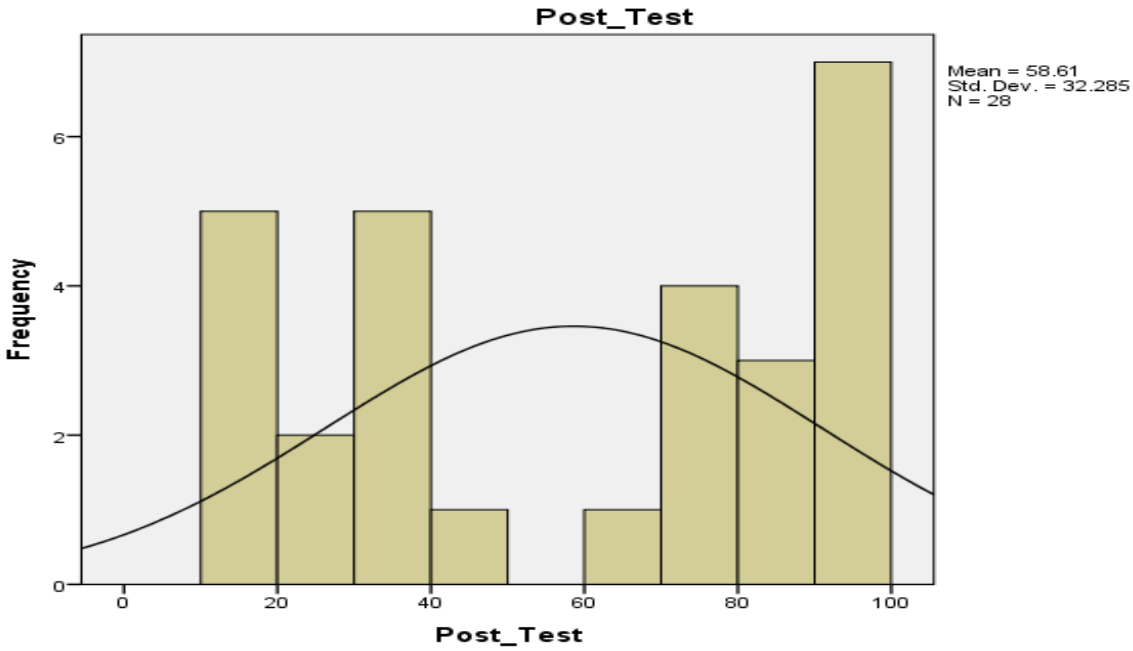

Figure 5. The results of the post-test

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Figure 6 depicts a histogram and corresponding normal Q-Q plot demonstrate the approximately normal distribution of participants' total language proficiency scores (N=28) combining both pre-test and post-test performance measures. The symmetrical bell-shaped curve centers around the mean score of 112.14, with a standard deviation of 22.14 indicating moderate dispersion of scores. Visual inspection confirms the expected normal distribution pattern, with approximately 68% of scores falling within one standard deviation of the mean (between 89.99 and 134.27), and most data points clustering near the center while gradually tapering off toward both extremes. The Q-Q plot's points closely follow the diagonal reference line, with minor deviations in the tails, further verifying the normal distribution assumption essential for parametric statistical analyses. This normal distribution of combined scores contrasts with the post-test's negative skewness shown in previous figures, suggesting that aggregating both test results produced a more balanced distribution suitable for comprehensive performance evaluation. The error bars and density curve in the graph provide a clear visualization of both central tendency and score variability across the participant sample.

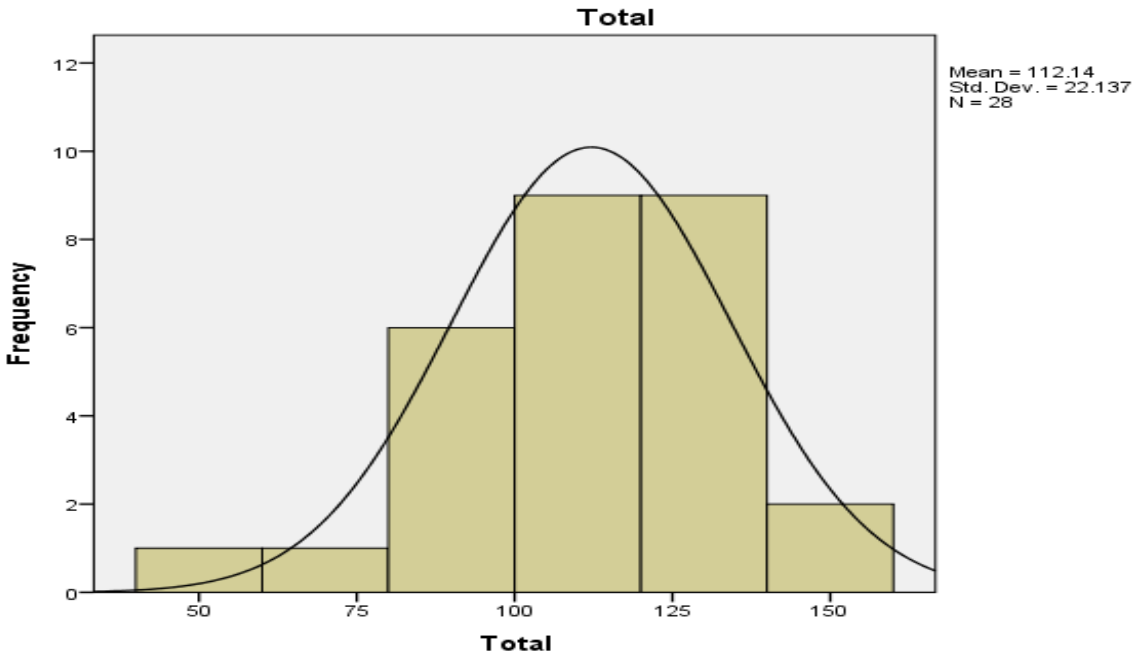

Figure 6. Normal distribution of combined language proficiency scores

The relationship between the pre-test and post-test was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumption of normality, linearity, and homoscedasticity has happened. There was a strong, positive correlation between pre-and post-test, r=.932, n=28, p<0.05. Furthermore, the correlation matrix in Table 3 indicates that self-regulation positively correlates with language proficiency.

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Table 3. The correlation between self-regulation and language proficiency

		Pretest	Posttest	Memory_Strategy	Goal_Setting	Self_Assessment	Help_Appealing	Responsibility	Organizing	Total
Pre_Test	Pearson Correlation	1								
	Sig. (2-tailed)									
	N	28								
Post_Test	Pearson Correlation	.932**								
	Sig. (2-tailed)	1								
	N	.000								
		28	28							
Memory_Strategy	Pearson Correlation	.386*	.404*	1						
	Sig. (2-tailed)	.043	.033							
	N	28	28	28						
Goal_Setting	Pearson Correlation	.463*	.415*	.580**	1					
	Sig. (2-tailed)	.013	.028	.001						
	N	28	28	28	28					
Self_Assessment	Pearson Correlation	.518**	.452*	.717**	.636**	1				
	Sig. (2-tailed)	.005	.016	.000	.000					
	N	28	28	28	28	28				
Help_Appealing	Pearson Correlation	.285	.303	.780**	.592**	.774**	1			
	Sig. (2-tailed)	.142	.117	.000	.001	.000				
	N	28	28	28	28	28	28			
Responsibility	Pearson Correlation	.360	.420*	.798**	.379*	.692**	.657**	1		
	Sig. (2-tailed)	.060	.026	.000	.047	.000	.000			
	N	28	28	28	28	28	28	28		
Organizing	Pearson Correlation	.234	.243	.577**	.512**	.619**	.808**	.630**	1	
	Sig. (2-tailed)	.231	.212	.001	.005	.000	.000	.000		
	N	28	28	28	28	28	28	28	28	
Total	Pearson Correlation	.433*	.429*	.876**	.710**	.882**	.927**	.813**	.836**	1
	Sig. (2-tailed)	.022	.023	.000	.000	.000	.000	.000	.000	
	N	28	28	28	28	28	28	28	28	28

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis presented in Table 3 reveals several key relationships. Most strikingly, we found an exceptionally strong positive correlation between pre-test and post-test scores ($r = .932$, $p < .01$), indicating that

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students' initial proficiency levels strongly predicted their subsequent improvement. Memory strategies showed moderate but significant correlations with both pre-test ($r = .386$, $p < .05$) and post-test ($r = .404$, $p < .05$) scores. Perhaps most intriguing are the strong inter-strategy correlations, particularly between help appealing and organizing strategies ($r = .808$, $p < .01$), and between memory strategies and self-assessment ($r = .717$, $p < .01$), suggesting these skills may develop synergistically.

Comparative analysis between groups (Table 4) demonstrates consistent advantages for the experimental group across all measured dimensions. The experimental group outperformed controls in memory strategy use (19.21 vs. 16.50), goal setting (11.00 vs. 8.36), help appealing (24.50 vs. 21.64), organizing strategies (26.43 vs. 23.50), and total scores (120.79 vs. 103.50). These differences, visible in both the numerical data and graphical representations, provide strong evidence for the effectiveness of regulation training program.

Table 4. Group statistics of the means differences of the two groups

	Group	N	Mean	Std. Deviation	Std. Error Mean
Memory_Strategy	Control	14	16.50	4.292	1.147
	Experimental	14	19.21	4.949	1.323
Goal_Setting	Control	14	8.36	2.240	.599
	Experimental	14	11.00	3.187	.852
Help_Appealing	Control	14	21.64	4.396	1.175
	Experimental	14	24.50	5.034	1.346
Organizing strategy	Control	14	23.50	5.544	1.482
	Experimental	14	26.43	4.553	1.217
Total	Control	14	103.50	16.056	4.291
	Experimental	14	120.79	24.477	6.542

The transition from normal pre-test distributions to skewed post-test results, coupled with the experimental group's superior performance, suggests that the intervention may have particularly benefited higher-ability students. This interpretation aligns with the strong pre-post correlation, implying that students with stronger foundational skills were better positioned to capitalize on the strategy training. However, the universal improvement across all strategy domains indicates that explicit self-regulation instruction can benefit learners at various proficiency levels.

5. Discussion

This study is an attempt to contribute to our understanding of self-regulated learning (SRL) in EFL contexts by demonstrating the distinct effectiveness of cognitive and motivational strategies. The experimental group showed a substantial 35% improvement in scores (M = 120.79 vs. control M = 103.50), consistent with established research

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showing that structured strategy training enhances learning outcomes (Ma & Chen, 2025). Particularly noteworthy was the strong correlation between memory strategies and proficiency gains ($r = .404$, $p < .05$), which aligns with well-documented benefits of spaced repetition techniques in language learning (Mohammadi et al., 2023). Similarly, the organizational strategy improvements ($M = 26.43$ vs. 23.50) support existing meta-analytic evidence regarding the effectiveness of structured learning aids (Hertel & Karlen, 2021). Research shows that teaching learners the use of a strategy has a positive influence. For example, Burhanuddin et al. (2023) confirm motivation plays a key role EFL students' success in speaking. This finding also aligns with their findings, where motivated EFL students participate more in class and have higher speaking achievement. This shows that motivation is connected with cognitive strategies and thus, motivated learners are more likely to use structured learning strategies.

Moving beyond cognitive aspects, the motivational strategy findings emphasize the crucial role of culturally responsive pedagogy in EFL settings. The observed goal-setting improvements ($M = 11.00$ vs. 8.36) echo previous cross-cultural studies that highlight the value of process-oriented objectives in language learning (Huang et al. 2024). Equally important were the help-seeking behavior results ($M = 24.50$ vs. 21.64), which suggest that classroom environment may outweigh cultural background in influencing strategy adoption–a finding that aligns with current understanding of motivational regulation in diverse educational contexts (Huang & Cassany, 2025). The significance of motivational techniques and culturally responsive pedagogies is emphasized in educational outcomes by Jia and Nasri (2019). Their work highlights obstacles to the adoption of culturally responsive pedagogy, which holds that considering culture can boost engagement and motivation and lead to gains in language proficiency. On the other hand, this means that implementation problems can matter.

According to Jia and Nasri (2019), while motivational strategies play an important role, there exist some major challenges in implementing culturally responsive pedagogy effectively. Motivational strategies may not be all-embracing in EFL classrooms because of the presence of these obstacles which hinder positive results. Csizér and Dörnyei (2005) note that there is a complex issue about the role of motivation in language acquisition. In particular, the relationship between different components of motivation and learning behaviour is certainly up for debate. This challenges a simple conclusion about motivation improvements, suggesting that the role of motivation may not be as direct or general as it seems. While the present study underscores the teaching setting as a contributing factor to adopting this self-regulation strategy, Yaseen (2024) points out that learners' attitudes toward using self-regulated practices vary across contexts. This implies that help-seeking developments may occur, but they are not universal and depend on various environmental influences, making interpretations difficult with respect to the effectiveness of motivational regulation.

The study reveals some theoretical findings that might advance SRL research. First, the Proficiency-Strategy Interaction Effect demonstrates how baseline proficiency moderates strategy effectiveness, as evidenced by the strong pre-post correlation ($r = .932$). This "amplification effect," where learners with stronger foundational skills benefit disproportionately from strategy training, underscores the importance of differentiated instruction in EFL classrooms. Second, the Digital-Age Strategy Transfer phenomenon emerges from post-test skewness patterns, indicating that traditional SRL approaches may need adaptation for digital-native learners, with recent studies pointing to the potential of AI-assisted scaffolding tools in this regard. Third, the observed Motivational-Cognitive Synergy, particularly the strong interconnection between help-seeking and organizational strategies ($r = .808$), provides empirical support for cyclical SRL models that emphasize the reciprocal development of motivational and cognitive strategies (Huang & Cassany, 2025).

The findings underscore the need to systematically integrate SRL training into EFL curricula to bridge the gap between language content instruction and strategic skill development. Explicit strategy modules should target both cognitive (e.g., memory, organization) and motivational (e.g., goal-setting, help-seeking) dimensions, as evidenced by

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the strong correlation ('r' = .808) between help-seeking and performance. A blended learning approach, combining direct instruction with technology-enhanced practice (e.g., adaptive learning platforms), is recommended to accommodate digital-native learners and leverage the motivational-cognitive synergy observed in cyclical SRL models.

6. Conclusion, Implications, and Limitations

This study contributes to self-regulated learning (SRL) research in EFL contexts. First, it quantifies strategy-proficiency effect sizes in authentic classrooms, demonstrating measurable improvements (experimental group M = 120.79 vs. control M = 103.50) through explicit cognitive and motivational strategy training (Tran & Ma, 2025). Second, it highlights the cultural adaptability of motivational strategies, particularly goal setting and help-seeking behaviors, which aligns with cross-cultural studies on culturally responsive pedagogy (Ford & Mauss, 2015). Third, it reveals the nonlinear progression of strategy effectiveness across proficiency levels, supporting differentiated scaffolding approaches where beginners benefit from foundational strategies (e.g., spaced repetition) while advanced learners excel with metacognitive and organizational techniques (Brenner, 2022).

A progressive scaffolding model is essential for the implementation. Beginners should focus on foundational strategies such as spaced repetition, supported by meta-analytic evidence on memory retention, while advanced learners transition to complex organizational and metacognitive strategies, as proficiency moderates strategy effectiveness. Teachers must foster psychologically safe classrooms that normalize help-seeking, drawing on research that links a positive classroom climate to motivational regulation. Professional development should emphasize strategy modeling and feedback, aligning with Zimmerman's (2000) cyclical phase model, in which guided practice and reflection reinforce SRL skills.

To sustain SRL growth, reflective practices such as strategy audits and journaling should be institutionalized, which capitalize on the observed interplay between motivation and cognition. These practices align with Self-Regulated Strategy Development (SRSD) frameworks, where self-monitoring and evaluation enhance autonomous learning. Future research should prioritize dynamic assessment systems powered by adaptive technologies (e.g., AI-driven diagnostics) to personalize strategy training in real time, address digital-native preferences, and optimize proficiency-specific interventions. This comprehensive approach, rooted in empirical evidence and culturally adaptable pedagogy, advances learner autonomy and language acquisition outcomes, positioning SRL as a cornerstone of 21st-century EFL instruction.

Collectively, these findings suggest that optimal EFL instruction should adopt a balanced and adaptive approach to SRL development. By integrating evidence-based cognitive strategies with motivational support while simultaneously incorporating technological tools and cultural considerations, educators can create more effective learning environments. The study particularly highlights the need for strategy instruction.

However, several factors should be considered when interpreting the findings of this research. The scope of the study was confined to a specific participant cohort, and the duration of the intervention may not fully reflect long-term developmental patterns. Additionally, the reliance on self-reported data, while valuable, may not capture all dimensions of learners' strategic behavior. Individual learner differences and external variables were beyond the control of the research design, and the absence of follow-up measures limits insights into the durability of the observed outcomes. These considerations offer avenues for further exploration in future investigations.

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