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Reclaiming the Translator's Agency in AI-Assisted Training: An Approach Based on Self-Regulated Learning

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Abstract This study investigated the impact of integrating self-regulated learning strategies into AI-based translation training. Twenty-one undergraduate translation students were divided into control and experimental groups. While both groups used ChatGPT for doing translation tasks, only the experimental group received instruction based on SRL principles. Targeted weekly feedback also played a critical role in guiding students' learning processes. Translation performance was assessed through pre and posttests using Waddington's model, and SRL development was measured using the MSLQ and weekly reflective journals. The results showed significant improvement in the experimental group's translation quality and self-regulatory behaviors. Thematic analysis of journals indicated a shift from dependence on AI to empowered decision-making. These findings suggest that SRL-based instruction, when paired with structured feedback, enhances not only the students' interaction with AI tools but also their autonomy, critical thinking and engagement. The study highlights the value of pedagogically grounded use of AI in translator education.

Keywords: *Translator's Agency, AI, Translator Training, Self-Regulated Learning, Feedback*

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1. Introduction

The integration of AI into translation education, in recent years, has transformed both the way translation tasks are performed and the way students engage with learning. Although the new technology is efficient, it has pedagogical challenges for sure. For example, overreliance on technology can encourage surface-level engagement and diminish learners' sense of responsibility; besides, in some cases, it facilitates unethical practices such as plagiarism, outsourcing of assignments, or unquestioning acceptance of technology outputs (Williams, 2007; Howard & Davies, 2009; Awdry, 2021). Part of this overreliance is due to shifts in the behavior of university students these days. Generation Z students, who currently populate most higher education classrooms, have grown up with technology which seems to be an integral part of their lives (Johnston et al., 2024). It is therefore unrealistic to expect students to refrain from using readily accessible technological tools that make their academic tasks easier (Szymkowiak et al., 2021). Research showed that this generation, due to their limited attention span, prefers to grasp the key points as soon as they start studying; this makes traditional assignment completion tedious and unappealing (Poláková & Klímová, 2019). Moreover, many of these students have been conditioned to focus primarily on achieving results and not engaging with the learning process itself (Johnston et al., 2024). In addition to what was said, factors such as the difficulty level of the course content, lack of discipline and time management, procrastination, and physical and mental health challenges that may impair concentration further contribute to their reliance on technology (Amigud & Lancaster, 2019; Amigud & Lancaster, 2020). Such conditions push students toward the use of technology that helps them complete their tasks with minimal stress, time, and mental effort. While instructors from older generations may consider this behavior as straightforward academic dishonesty, today's students often do not perceive it as such. Compounding this problem is a broader societal shift in which such behavior, though once stigmatized, is gradually becoming more tolerated, turning to a socially accepted norm, if not implicitly accepted, as a necessary adaptation to systemic pressures (Brimble, 2016; Flom et al., 2021). This situation, where traditional instruction has become less prominent (Pishghadam & Ebrahimi, 2024), highlights the need for pedagogical frameworks that not only make use

of the affordances of AI but also improve students' capacity for critical engagement, ethical decision-making, and proactive learning (Johnston et al. 2024), since learners' excessive reliance on AI may diminish their capacity for learning independently and wear away their creativity and critical thinking (Wogu et al., 2018). In fact, in line with technological advancements, the adoption of innovative instructional approaches can further enhance the quality of teaching and learning (Khazaie et al., 2020). Besides, there might be a need to re-examine the concept of cheating and assignment outsourcing (Evering & Moorman, 2012).

In the context of translation education, certain AI-powered tools, including those based on generative AI, are capable of producing high-quality, and at times even acceptable, translations. This development has the potential to undermine the very logic of translation pedagogy and classroom practice if students are allowed to rely solely on the output generated by such tools. Furthermore, studies show that while AI-produced translations may initially appear seamless and highly accurate, entirely fabricated words or expressions might have been inserted there; in other words, the usability and reliability of AI-based translation tools are disputable (Alkodimi et al., 2024). This is yet another red flag that highlights the risks of uncritically accepting AI-produced translations.

Notwithstanding the challenges posed by the integration of AI into translation education, the benefits of its application in this domain are so substantial that its utilization cannot be overlooked. AI offers numerous advantages such as bridging linguistic and cultural gaps by facilitating communication through features such as speech recognition and machine translation, saving time and costs by automating repetitive tasks, and optimizing decision-making processes, which means human translators can save their creativity and human ingenuity for more complicated translation tasks (Tavares et al., 2023; Wang, 2023). That is why, according to Yu (2023), rather than prohibiting the use of AI, instructors should teach learners how to make optimal use of it; if this is the aim, research grounded in experiences and conceptualizations of both instructors and learners regarding the use of AI in real-world classrooms should be carried out (Lameras & Arnab, 2022).

Also, learners, as key stakeholders, and their needs must be considered in the process of changing policies toward AI (Johnstone et al., 2024).

One effective way to address the growing presence of AI in translation education is by integrating an approach based on self-regulated learning (SRL). SRL encompasses a range of skills and dispositions that help learners develop internal motivation to take ownership of their learning, a process which can reduce passive reliance on technology. In effect, this approach, as it applies to postsecondary education, emphasizes learning through experience and self-reflection (Pintrich, 1995).

Hence, the purpose of the present study is to explore the impact of integrating SRL strategies into AI-based translation instruction in an undergraduate context. Accordingly, it is to investigate whether students who receive SRL-informed instruction demonstrate enhanced engagement with translation learning and more responsible use of AI technologies.

2. Review of Literature

2.1. Thematic analysis of AI-based approaches in translation studies

Most recent studies addressing AI in the context of translation studies have primarily focused on one of the following themes: the impact of AI on translation education (see Yuxiu, 2024; Koka, 2024; Zaghlool & Khasawneh, 2024; Alkodimi et al., 2024); these studies described the influence of AI on the translation education sector in general terms, but did not offer concrete pedagogical strategies which could be implemented. The evolving role of AI in professional translation sector (see Ameri, 2024; Majeed & Taha, 2024, Pym, 2024; Elkins, 2024; Zayed & Nuirat, 2024; Al Sawi & Allam, 2024; Moneus & Sahari, 2024; Fu & Liu, 2024; Puppel & Borg, 2025); though these studies tried to clarify how AI is transforming the professional translation sector, they provide limited guidance for optimal use of AI which is a prerequisite for entering the professional market these days. Another line of inquiry has examined shifts in paradigms, theoretical bases and research methods due to the appearance of the new technology (see King Lee (2023); Soysal (2023); Ali & Ali (2023); Asscher (2023); Kaifang & Chunlei (2023); Yu & Liu (2024)); these studies primarily focus on conceptual and methodological transformations and do not directly address practical training

approaches. As it can be seen, although these studies have significantly advanced our understanding of how AI is reshaping translation education, the professional market, and theoretical foundations, they fail to provide a critical perspective on how current pedagogical practices can make use of AI-tools effectively. In response to this gap, Khalili (2025) developed an innovative framework which is grounded in learning theories. The framework aims at evaluating and selecting AI-powered translation tools with the purpose of facilitating their effective integration into translation training courses. Also, Khalili (in press) investigated whether applying the principles of connectivism, as a digital-age learning theory, can help students make optimal use of AI-powered translation tools.

As previously discussed, the integration of AI-powered tools into translator education can pose significant challenges such as academic dishonesty including plagiarism and outsourcing of assignments (Awdry, 2021). Besides, the high-quality AI- produced translations may lead learners to ponder if there is a need at all to develop translation skills because they assume that technology can handle the task much better. If left unaddressed, such perception could undermine the very logic behind translator training programs; therefore, it is essential to develop a sense of agency and responsibility among learners. As it was mentioned before, one promising approach can be the application of SRL strategies which can help students see themselves as active managers of their own learning process. The following section provides an overview of SRL and its pedagogical potentials.

2.2. SRL in higher education: implications for AI-based translator training

Learners are expected to be more independent, and in charge of their own learning process when they are admitted to the higher education level (Zimmerman, 2005). This means that learners have to be involved actively in planning learning paths, setting goals, monitoring their progress, reflecting on outcomes, and making necessary adjustments (Carter Jr et al., 2020). There are a lot of studies that have shown that incorporating SRL strategies can enable learners to develop these capabilities, leading to improved academic performance, greater motivation, and long-term achievements (see

Zimmerman, 1989; Zimmerman, 2002; Zimmerman, 2005; Dent & Koenka, 2016; Chen, 2022; Greenquist-Marlett et al., 2024). The ability to self-regulate becomes even more crucial in today's digital era. Research supports how SRL is effective in technology-enhanced environments; it shows that SRL can encourage meaningful engagement, improve digital competence, and facilitate academic success both in autonomous and blended learning settings (see Barnard-Brak et al., 2010; Cho & Heron, 2015; Jaramillo et al., 2022; Buot, 2023; Caixia et al., 2025; Simón-Grábalos et al., 2025; Faza & Lestari, 2025). Since translation training typically takes place in higher education, the implementation of SRL strategies with the purpose of enhancing learners' autonomy and responsibility is clearly relevant, especially in the context of AI-based translation training, where learners may face challenges such as academic dishonesty or over-reliance on AI-produced translations. However, although SRL can influence learners' performance positively, its effectiveness must not be considered the same across all educational contexts because several factors might be at work. For example, consider the learning objectives and outcome expectations in a translation training program which differ from those in a mathematics course due to the fact that students are expected to improve across different dimensions in each of these courses; or consider the instructor's patience and level of expertise in implementing SRL strategies as well as learners' willingness and motivation to develop SRL-related competencies which might differ from one learning context to another.

Overall, the existing literature demonstrates that SRL can substantially enhance learner autonomy, adaptability, and responsibility. Nevertheless, its potential in addressing the specific challenges raised by AI-powered translation tools such as academic dishonesty, over-reliance on AI outputs, and the erosion of motivation to acquire translation skills remains underexplored. This gap underscores the relevance of the present study, which seeks to connect the advances in AI-driven translation education with SRL-based pedagogical practices.

2.3. Theoretical framework

SRL is a set of skills that can be taught and cultivated in a variety of educational contexts (Pintrich, 1995); in effect, it is an approach that provides a comprehensive framework for understanding how learners can take control of their learning processes. According to Pintrich (1995) and Zimmerman (2002), SRL involves a cyclical model with three interrelated phases of forethought, performance, and self-reflection. In the forethought phase, learners engage in goal-setting and strategic planning; in the performance phase, they monitor their cognitive and behavioral engagement; and in the reflection phase, they evaluate outcomes and make necessary adjustments to their learning strategies. It is said that consistent self-monitoring and self-reflection enhance self-efficacy and intrinsic motivation, ultimately leading to better academic outcomes (Zimmerman & Paulsen, 1995; Zimmerman, 2002). Also, feedback, which is crucial to the development of SRL, acts as a mediator between performance and adjustment. As Zimmerman and Paulsen (1995) argue, feedback allows learners to evaluate their performance in relation to their goals and make very prompt modifications. Studies have shown that feedback, if it is well-designed and formative, can enhance SRL to a great extent by improving learners' independence, metacognitive awareness, and engagement (see Nicol & Macfarlane-Dick, 2006; Panadero et al., 2017; Zawacki-Richter et al., 2019; Wang, 2024; Campos, 2025).

In the context of translator education, while integrating AI-powered translation tools is beneficial, it can lead learners to adopt a passive role due to overreliance on AI output. Thus, instructional designs are needed to equip students with strategies that can help them critically assess, manage, and optimize their learning processes. This is where SRL gains significance. SRL can help learners reposition themselves as active agents rather than passive recipients of AI outputs by promoting intentional planning, active monitoring, and critical reflection.

For this study, Zimmerman's (2002) cyclical model of SRL was adopted as the theoretical foundation. This model guided both the instructional design and the research methodology. Particular attention was given to how learners set short-term translation goals, monitored their progress through interaction with AI, and reflected on the quality and limitations of its outputs. Through

this lens, this study explored whether developing SRL-related skills can enhance trainees' autonomy, decision-making, and translation performance in an AI-based setting.

2. Method

This study is an applied, experimental research that aims to examine the impact of integrating SRL strategies into AI-based translation training; here, the focus is on undergraduate students' translation performance and their learning behavior as well.

3.1. Participants

The participants were twenty-one undergraduate students who were to take 'Translating Scientific and Technical Texts', an undergraduate translation course, at the University of Mazandaran. Students were assigned into two equal groups, control and experimental, based on their pretest scores using a matched-pair random assignment method. All participants had a similar academic background and prior exposure to ChatGPT, the AI tool used in the project.

3.2. Procedure

The project was conducted for both groups, control and experimental, over 12 sessions, each session lasting 90 minutes per week, yet the two groups received different instructional approaches:

A) The control group was taught using the conventional method of translation instruction.

B) The experimental group, in contrast, was trained on the basis of a self-regulating approach that included goal setting, self-monitoring, self-reflection, and critical evaluation of AI outputs. Students were encouraged to document their decision-making processes, reflect on their use of AI tools, and identify areas for improvement after each task.

3.3. Instruments

To evaluate the outcomes, the following instruments were used:

Translation performance tests: A pretest and posttest were administered to both groups. Translations were evaluated using Waddington's (2001) model, which combines both an error analysis and a holistic approach considering the accuracy and appropriateness of the translations. It is worth noting that all translations, in both the pretest and posttest phases, were evaluated anonymously, which is one of the most effective methods to reduce implicit bias and discrimination in evaluation (Saul, 2013; Bygren, 2022).

The next two sections (MSLQ[1] and reflective journals) are specific to the experimental group. This is because these two instruments were employed within the framework of SRL in order to assess learners' progress. Accordingly, applying them to the control group which did not receive SRL-based instruction would lack pedagogical justification, and was therefore not necessary.

Motivated Strategies for Learning Questionnaire (experimental group only): this questionnaire[2], designed by Pintrich and DeGroot (1990), is based on a 7-point Likert scale[3]. It was administered pre- and post-intervention to assess students' in-depth opinions on the use of SRL strategies during the translation course. Given the comprehensive and domain-general design of the MSLQ, encompassing two broad domains of motivation (with respective subscales of value components, expectancy components, and affective components) and learning strategies (with respective subscales of cognitive and metacognitive strategies, and resource management strategies), which allows for applicability across various academic disciplines, the original version of the questionnaire was used with only a couple of slight modifications[4].

Reflective Journals (experimental group only): Students in the experimental group wrote short weekly reflective journals in order to record, and report

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[1]. Motivated Strategies for Learning Questionnaire
[2]. See appendix 1
[3]. 1 = Not at all true of me, 2 = Mostly not true of me, 3 = Somewhat not true of me, 4 = Neutral, 5 = Somewhat true of me, 6 = Mostly true of me, 7 = Very true of me
[4]. See appendix 2

later, their learning behaviors and interactions with AI tools. The purpose was to allow students to express their thoughts, struggles, and strategies in their own words which was more akin to stream-of-consciousness reflection or freewriting exercises.

3.4. Instructional model

The instructional model developed for this study was grounded in the theoretical framework of SRL (Zimmerman, 2002) and the importance of feedback in promoting effective learning (Zimmerman & Paulsen, 1995). Structured feedback was incorporated into the model at two levels:

- Feedback on translation strategies: Students received targeted feedback on the appropriateness of their translation strategies and the quality of their translations so that they could have deeper reflection on strategic decisions.
- Feedback on learning processes: Students were provided with feedback regarding their use of SRL strategies, including goal setting, self-monitoring, and self-evaluation to help them identify areas for improvement.

It must be mentioned that all the quantitative data collected in this study were subjected to statistical analysis using SPSS (version 26), and the significance level for all descriptive statistics as well as inferential tests was set at $p < .05$.

4. Results

4.1. Translation performance tests

After marking the papers using Waddington's (2001) evaluation model and determining the mean scores and standard deviations, participants' pretest scores were used to randomly assign students to the experimental and control groups to guarantee a baseline equivalence and a balanced comparison. In order to do so, participants' pretest scores were first ranked from the highest to the lowest. Then, students with similar scores were paired together based on their adjacent ranking positions. Within each pair, one student was randomly assigned to the experimental group and the other to the control

group. This matched-pair random assignment method helped control for initial differences in translation performance. Moreover, in order to double-check the homogeneity of the two groups prior to the intervention, an independent samples t-test was conducted on the participants' pretest scores. The results, as shown in Table 1, indicated no significant difference between the two groups, confirming their comparability at the outset of the study.

Table 1. Independent samples test (Checking the homogeneity of the experimental and control groups)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pretest scores	Equal variances assumed	.24	.62	1.49	19	.15	1.23	.82	-.49	2.97
	Equal variances not assumed			1.49	18.75	.15	1.23	.82	-.50	2.97

Following the completion of the training period, a posttest was administered to the students, and translations were evaluated using Waddington's (2001) model. Scores from both groups were then inputted into SPSS to determine the statistical significance in the posttest performance between the two groups with the aim of assessing the impact of the teaching approach which was based on SRL.

First of all, the Shapiro-Wilk test was used, covering both pretest and posttest, to determine the normal distribution of the data. The aim was to examine whether the assumptions for conducting parametric tests were met. As shown in Table 2, the Sig. values for all variables were above .05. This suggests that the distribution of students' scores in both groups approximates a normal curve, with most scores clustering around the mean. Based on this

result, it was deemed appropriate to apply parametric tests including paired samples t-test for the statistical analysis.

Table 2. Tests of normality

Group		Shapiro-Wilk		
		Statistic	Df	Sig.
Experimental	pretest_score	.889	10	.166
	posttest_score	.891	10	.172
Control	pretest_score	.934	11	.448
	posttest_score	.935	11	.467

The paired t-test is used to compare the mean scores of the same participants before and after an intervention, assessing whether any observed changes are statistically significant. Here, this test was employed to determine whether each group (experimental and control) showed significant improvement in their translation performance from the pretest to the posttest. The results are presented in Table 3.

Table 3. Paired T-Test (Comparing pretest and posttest scores within each group)

Translation performance	Group	Pretest (mean ± standard deviation)	Posttest (mean ± standard deviation)	T	Sig
	Experimental	16.60 ± 1.91	18.50 ± 1.43	7.42	< .001*
	Control	15.36 ± 1.88	16.04 ± 1.76	4.89	.001*

* Indicates significant difference ($p < .05$)

The results indicate that although both groups experienced statistically significant improvements in their posttest scores compared to their pretest scores, the experimental group showed a more notable increase in their translation performance ($p < .001$). These findings suggest that although both instructional methods were effective to some extent, the intervention (translation teaching based on SRL) which was applied to the experimental group led to greater achievements in performance.

Also, the one-way analysis of covariance (ANCOVA) was conducted to examine the effectiveness of the instructional intervention by comparing the posttest scores of the experimental and control groups while controlling for the participants' pretest scores. The rationale behind using ANCOVA was to account for any initial differences between the two groups and provide a more

accurate estimation of the effect of the intervention. This approach ensures that the post-intervention differences are not merely due to pre-existing disparities in performance. The results of this test are provided in Table 4, below.

Table 4. The One-Way ANCOVA results for posttest scores with pretest as covariate

Translation performance	Group	Pretest (mean ± standard deviation)	Posttest (mean ± standard deviation)	F	Sig	Effect size
	Experimental	16.60 ± 1.91	18.50 ± 1.43	33.17	< .001*	.648[a]
	Control	15.36 ± 1.88	16.04 ± 1.76			

* Indicates significant difference ($p < .05$)
[a] Indicates large effect size

As it can be seen, after adjusting for the pretest scores, the ANCOVA revealed a statistically significant difference between the two groups on the posttest scores, $F= 33.17$, $p < .001$, indicating a strong effect of the intervention. The partial eta squared value suggests a large effect size, meaning that approximately 65% of the variance in posttest scores can be explained by the group membership (experimental vs. control). These results strongly support the conclusion that the instructional program had a substantial and statistically significant impact on students' translation performance.

4.2. MSLQ

To assess the potential impact of the instructional intervention on students' use of SRL strategies, the MSLQ (Motivated Strategies for Learning Questionnaire) was administered to the experimental group, once at the beginning of the course, prior to the implementation of the instructional model, and again at the end of the course, after the intervention had been completed. Since the control group did not receive any treatment, the questionnaire, which is specific to SRL, was not administered to them. This pre/post design aimed to measure any meaningful changes in students' motivation and learning strategies that could be attributed to their participation in the AI-based translation training program focusing on a self-regulating approach; this was to identify whether the intervention had

contributed to the development of more autonomous and effective learning behaviors.

The MSLQ consists of two major components: motivation scales and learning strategies scales. The Motivation section has three subscales of value components, expectancy components, and affective components; they measure students' goals, beliefs, and emotional responses related to learning. The learning strategies section comprises two subscales of cognitive and metacognitive strategies, and resource management strategies; they assess learners' planning, monitoring, and use of resources during learning tasks. To examine changes over time, paired samples t-tests were conducted for each subscale, comparing students' pre- and post-intervention scores.

4.2.1. Motivation scales

4.2.1.1. Value components

This subscale measures the degree to which students value the learning task and perceive it as useful and interesting. The results of the analysis are presented in Table 5.

Table 5. Paired T-Test (Comparing pre/post value components scores within experimental group)

MSLQ	Group	Value components-pre (mean ± standard deviation)	Value components-post (mean ± standard deviation)	T	Sig
	Experimental	44.10 ± 1.79	61.60 ± 4.35	12.09	< .001*

* Indicates significant difference (p < .05)

Students' scores on the value components subscale significantly increased from pretest (M = 44.10, SD = 1.79) to posttest (M = 61.60, SD = 4.35) with $p < .001$. This suggests that by the end of the course, learners placed significantly higher importance on and perceived greater usefulness in the translation tasks, reflecting enhanced intrinsic motivation.

4.2.1.3. Expectancy components

Table 6. Paired T-Test (Comparing pre/post expectancy components scores within experimental group)

MSLQ	Group	Expectancy components-pre (mean ± standard deviation)	Expectancy components-post (mean ± standard deviation)	T	Sig
	Experimental	30.10 ± 1.20	40.20 ± 2.39	20.02	< .001*

* Indicates significant difference (p < .05)

Students' scores on the Expectancy Components subscale showed a significant increase from pretest (M = 30.10, SD = 1.20) to posttest (M = 40.20, SD = 2.39) with p < .001. This indicates a notable improvement in students' self-efficacy and confidence in their ability to succeed in translation tasks, suggesting that the intervention positively influenced their task-related expectations.

4.2.1.3. Affective components

Table 7. Paired T-Test (Comparing pre/post affective components scores within experimental group)

MSLQ	Group	Affective components-pre (mean ± standard deviation)	Affective components-post (mean ± standard deviation)	T	Sig
	Experimental	10.80 ± 2.39	14.10 ± 1.73	3.91	.004*

* Indicates significant difference (p < .05)

Students' scores on the affective components subscale increased significantly from pretest (M = 10.80, SD = 2.39) to posttest (M = 14.10, SD = 1.73) with p = .004. This improvement suggests that students experienced reduced anxiety and more positive emotional engagement with the learning process, reflecting greater emotional regulation and comfort in working with AI-based translation tasks.

4.2.2. Learning strategies scales

4.2.2.1. Cognitive and metacognitive strategies

Table 8. Paired T-Test (Comparing Pre/Post Cognitive & Metacognitive Strategies Scores within Experimental Group)

MSLQ	Group	Cognitive & Metacognitive Strategies-pre (mean ± standard deviation)	Cognitive & Metacognitive Strategies-post (mean ± standard deviation)	T	Sig
	Experimental	55.60 ± 3.63	88.30 ± 10.47	9.70	< .001*

* Indicates significant difference (p < .05)

Students' scores on the cognitive and metacognitive strategies subscale showed a significant increase from pretest (M = 55.60, SD = 3.63) to posttest (M = 88.30, SD = 10.47) with $p < .001$. This marked improvement indicates that learners developed stronger skills in planning, monitoring, and evaluating their translation work, reflecting enhanced metacognitive awareness and more strategic engagement with AI-produced translations.

4.2.2.1. Resource management strategies

Table 9. Paired T-Test (Comparing pre/post resource management strategies scores within experimental group)

MSLQ	Group	Resource management Strategies-pre (mean ± standard deviation)	Resource management strategies-post (mean ± standard deviation)	T	Sig
	Experimental	12.70 ± 1.25	19.60 ± 1.96	7.46	< .001*

* Indicates significant difference (p < .05)

Students' scores on the Resource Management Strategies subscale increased significantly from pretest (M = 12.70, SD = 1.25) to posttest (M = 19.60, SD = 1.96) with $p < .001$. This suggests a notable improvement in learners' ability to manage time, effort, and learning environments effectively.

4.3. MSLQ overall

Table 10. Paired T-Test (Comparing pre/post MSLQ scores within experimental group)

MSLQ	Group	Overall MSLQ-pre (mean ± standard deviation)	Overall MSLQ-post (mean ± standard deviation)	T	Sig
	Experimental	157.40 ± 4.70	229.30 ± 20.70	11.93	< .001*

* Indicates significant difference (p < .05)

To gain a holistic view of students' development in SRL, a paired-samples t-test was conducted on their total MSLQ scores. The results showed a statistically significant increase from pretest (M = 157.40, SD = 4.70) to posttest (M = 229.30, SD = 20.70), with $p < .001$. This substantial improvement in the overall score suggests that the instructional intervention effectively enhanced students' general capacity for motivation regulation and learning strategy use, reinforcing the benefits of implementing a self-regulated learning approach to AI-assisted translator training.

4.4. Reflective journals

Weekly reflective journals were incorporated into the instructional design for the experimental group as part of the SRL approach so that a deeper insight could be afforded into the students' engagement with SRL strategies in AI-assisted translation training; in effect, these journals served as a qualitative supplement to the quantitative data which were collected through the translation performance tests and the MSLQ.

Students in the experimental group were required to submit their short reflective notes at the end of each week throughout the 12-week project. As for reflective journals, the format was semi-structured. This means that instead of imposing a rigid template, students were provided with guiding prompts which were to encourage thoughtful reflection, while individual expression would still be preserved. Prompts[5] included questions such as:

- How did you evaluate the quality of the AI-produced translation? Any comments on its strength, its weakness, etc.

[5] See appendix 3 for the full list of the prompts

- What translation strategies did you use to refine AI output?

Students were encouraged to respond freely to these prompts; they were also allowed to write about any other thought or observation which could be relevant to the translation process or their learning behaviors. Actually, the goal was to prompt metacognitive awareness and to reinforce habits of critical self-evaluation in alignment with SRL principles.

4.4.1. Qualitative thematic analysis

An essential component, at this stage, was the role of instructor's feedback which was systematically integrated into the analysis of reflective journals. Each week, the instructor reviewed the journals and provided learners with customized feedback both on their use of SRL strategies, and on the effectiveness and justification of their translation strategies which were employed while using AI. The aim of this dual-layered feedback loop was to create a space which was meant for recursive learning in which students were not only encouraged to articulate their feelings and experiences but were also challenged to refine their thinking and decision-making in response to guided prompts and targeted reflections.

A thematic analysis of the reflective journals revealed a dynamic shift in learners' attitudes and behaviors which can be categorized into the following four themes. However, it is worth noting that there cannot be clearly-defined boundaries, and it is more appropriate to conceptualize the themes as stages along a continuum:

4.4.1.1. Experiencing initial uncertainty

Many students, in the early weeks of the project, were in a state of uncertainty and had a sense of inferiority when they compared their own translation decisions with those of ChatGPT. They often accepted the AI output without critique as they felt hesitant to challenge AI suggestions. Students viewed AI as a dominant, authoritative presence, and often assumed a passive role for themselves in the translation process.

4.4.1.2. Developing awareness

It was midway through the course when most of the students began to develop a more reflective stance as they started to question the appropriateness of certain AI-produced translations. They then attempted to analyze the matter because they were required to find out the rationale behind the AI output and to write about it in their journals. Although they were still cautious, they began to notice limitations in AI performance.

4.4.1.3. Engaging critically

As their experience and confidence grew, students became more assertive in their making translation choices. They actively started to challenge and revise AI translations considering linguistic accuracy and cultural appropriateness. In effect, at this point, students demonstrated early signs of self-regulation.

4.4.1.4. Reclaiming agency

At this stage, students' reflections emphasized a shift from considering AI as a dominant authority to a supportive assistant. Learners began to demonstrate self-regulation by articulating the reasoning behind their own translation choices which replaced those of AI, and exhibiting autonomy in task completion.

The iterative dialogue between students' reflections and instructor's feedback served as a driving force behind the observed shift in the learners' opinions on their position as translators.

5. Discussion and Conclusion

Considering learners' translation performance, the findings demonstrate that the integration of SRL strategies into AI-based translation instruction can both enhance the translation performance and fix the perceived identity of students as translators. Significant improvements which were observed in the experimental group's translation posttest scores, which was then supported by ANCOVA analysis as well, provide clear evidence that SRL-based translation instruction leads to more effective learning outcomes than those the conventional approach can offer. These findings go beyond simple

translation performance improvements and suggest that strategic self-regulation enables students to approach AI-based translation tools not passively, but as critical users capable of refining and improving AI-produced translations.

Regarding learners' motivational and strategic development, the MSLQ results provided strong quantitative support for the experimental group's development; statistically significant gains were also observed almost across all five subscales (value components, expectancy components, affective components, cognitive and metacognitive strategies, and resource management strategies). This highlights meaningful improvements in both motivational and strategic dimensions of SRL. Furthermore, the noticeable increase in students' overall MSLQ scores from pretest to posttest reinforces what is concluded, that the intervention encouraged learners' proactive engagement and more autonomous learning behavior, which supports the argument that motivation and strategy use are not fixed traits but can be shaped through deliberate instructional design (Pintrich, 1995), even in the context of AI-mediated learning.

Concerning learners' attitudes and behaviors, the qualitative analysis of reflective journals revealed a striking shift in their perception. Students, who were in a state of uncertainty at the beginning of the course and were heavily reliant on ChatGPT for their translation tasks, gradually turned into more confident and autonomous translators to the extent that by the end of the course, they viewed ChatGPT as a translation assistant and not an authority; this aligns with what Wang (2024) believes that AI has the potential to serve as a supportive companion and not an unquestionable authority when embedded within a SRL framework. This insight is especially relevant in translation studies where human-AI collaboration is becoming the norm rather than the exception.

It must be mentioned that the instructor's feedback on students' translation decisions and on their use of SRL strategies, was an important mediator which acted as catalyst throughout the whole project. This interactive feedback mechanism led to deeper reflection on both translation and learning strategies and reinforced students' metacognitive awareness and agency. This aligns with the literature suggesting that feedback is crucial for effective learning and it can be an enabler for SRL (Nicol & Macfarlane-Dick,

2006; Panadero et al., 2017; Zawacki-Richter et al., 2019; Wang, 2024; Campos, 2025). Moreover, beyond the structured feedback which was provided by the instructor, students engaged in ongoing self-generated feedback through goal setting, self-monitoring, self-evaluation and self-reflection processes. This internal feedback mechanism, which is intrinsic to SRL, empowered learners to take ownership of their progress and fostered greater metacognitive awareness and autonomy. Such a dual-feedback system, both external and internal, likely contributed to the significant improvements in the experimental group's translation performance.

Compared to previous studies, this research expanded the topic by placing SRL in an AI-based translation training context. The results of the present study not only align with the literature which emphasizes that SRL can have a crucial role in academic success (Pintrich, 1995; Zimmerman, 2002), particularly in technology-based learning environments (Barnard-Brak et al, 2010; Cho & Heron, 2015; Jaramillo et al., 2022; Buot, 2023; Caixia et al., 2025; Simón-Grábalos et al., 2025; Faza & Lestari, 2025), but also show that, even in the context of translation education, SRL can help learners navigate the complexity of AI-produced translations. This study also demonstrates that structured training can mitigate overreliance on AI by enhancing affective use of it (Wang, 2024). This becomes particularly important in the current context where AI is capable of producing translations of acceptable quality; this may lead students to develop blind trust in AI. Such overreliance not only undermine students' self-esteem, as it was revealed through the analysis of their reflective journals at the beginning of the course, but also calls into question the very rationale for offering translation training programs.

This study contributes to the intersection of translation pedagogy and learner autonomy by showing how SRL can scaffold more critical, reflective use of AI. Moreover, it suggests that translation instructors should not merely introduce AI tools, however, they should provide structured guidance on how to critically interact with them, for example, through SRL strategies.

Overall, the findings of the present study support a pedagogical shift toward empowering students both to use AI and to challenge it at the same

time. Such a shift holds promise for more ethically grounded, cognitively engaged, and learner-centered translation education.

Several limitations of the present study should be acknowledged, including the relatively small sample size, which was due to the limited space of the university lab and the low speed of the Internet, both of which affected the feasibility of recruiting more participants. Future studies with larger and more diverse participant pools could be carried out to complement the results. In addition, the duration of the instructional intervention was limited to a single academic semester. Although the observed changes were promising, a longer-term study might be needed in order to examine the sustainability of improvements. Moreover, the study focused exclusively on a single AI tool (ChatGPT). It is recommended that this approach be tested using other AI-powered tools as well.

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Appendices

Appendix 1

Motivated Strategies for Learning Questionnaire (MSLQ)*

1. I prefer class work that is challenging so I can learn new things.
2. Compared with other students in this class I expect to do well.
3. I am so nervous during a test that I cannot remember facts I have learned.
4. It is important for me to learn what is being taught in this class.
5. I like what I am learning in this class.
6. I'm certain I can understand the ideas taught in this course.
7. I think I will be able to use what I learn in this class in other classes.
8. I expect to do very well in this class.
9. Compared with others in this class, I think I'm a good student.
10. I often choose paper topics I will learn something from even if they require more work.
11. I am sure I can do an excellent job on the problems and tasks assigned for this class.
12. I have an uneasy, upset feeling when I take a test.
13. I think I will receive a good grade in this class.
14. Even when I do poorly on a test I try to learn from my mistakes.
15. I think what I am learning in this class is useful for me to know.
16. My study skills are excellent compared with others in this class.
17. I think what we are learning in this class is interesting.
18. Compared with other students in this class, I think I know a great deal about the subject.
19. I know that I will be able to learn the material for this class.
20. I worry a great deal about tests.
21. Understanding this subject is important to me.
22. When I take a test I think about how poorly I am doing.
23. When I study for a test, I try to put together the information from class and from the book.
24. When I do homework, I try to remember what the teacher said in class, so I can answer the questions correctly.
25. I ask myself questions to make sure I know the material I have been studying.
26. It is hard for me to decide what the main ideas are in what I read.
27. When work is hard, I either give up or study only the easy parts.
28. When I study, I put important ideas into my own words.

29. I always try to understand what the teacher is saying even if it doesn't make sense.
30. When I study for a test, I try to remember as many facts as I can.
31. When studying, I copy my notes over to help me remember materials.
32. I work on practice exercises and answer end of chapter questions even when I don't have to.
33. Even when study materials are dull and uninteresting, I keep working until I finish.
34. When I study for a test, I practice saying the important facts over and over to myself.
35. Before I begin studying, I think about the things I will need to do to learn.
36. I use what I have learned from old homework assignments and the textbook to do new assignments.
37. I often find that I have been reading for class, but don't know what it is all about.
38. I find that when the teacher is talking, I think of other things and don't really listen to what is being said.
39. When I am studying a topic, I try to make everything fit together.
40. When I'm reading, I stop once in a while and go over what I have read.
41. When I read materials for this class, I say the words over and over to myself to help me remember.
42. I outline the chapters in my book to help me study.
43. I work hard to get a good grade even when I don't like a class.
44. When reading, I try to connect the things I am reading about with what I already know.

* Pintrich, R. R., & DeGroot, E. V. (1990)

Appendix 2

Motivated Strategies for Learning Questionnaire (slightly modified for AI-based translation training)

1. I prefer AI-based translation task that is challenging so I can learn new things.
2. Compared with other students in this class I expect to improve my translation skills even now that I know AI can generate acceptable

translations.

3. I am so nervous while doing a translation task that I cannot remember facts and strategies I have learned.
4. It is important for me to learn what is being taught in this class.
5. I like what I am learning in this class.
6. I'm certain I can understand the ideas taught in this course.
7. I think I will be able to use what I learn in this class in other translation classes.
8. I expect to improve my translation skills very well in this AI-based class.
9. Compared with others in this class, I think I'm a responsible student who tries to understand the process of translation, not just relying on AI output.
10. I often challenge AI outputs to learn something from even if it requires more work.
11. I am sure I can do an excellent job on the problems and tasks posed by AI.
12. I have an uneasy, upset feeling when I do a translation task using AI.
13. I think I will receive a good grade in this class.
14. Even when I do poorly on a translation task I try to learn from my mistakes.
15. I think what I am learning in this AI-based class is useful for me to know.
16. My using translation strategies is excellent compared with others in this class.
17. I think what we are learning in this AI-based class is interesting.
18. Compared with other students in this AI-based class, I think I know a great deal about how to challenge and revise AI-generated outputs.
19. I know that I will be able to learn how to improve my translation skills despite the fact that AI can generate excellent outputs.
20. I worry a great deal about translation tasks which must be done using AI tools.
21. Understanding how to translate using AI is important to me.
22. When I do a translation task using AI, I think about how poorly I am doing.
23. When I do a translation task, I try to put together the information from class and from the book.
24. When I do homework, I try to remember what the teacher said in class, so I can do the translation task correctly.
25. I ask myself questions to make sure I know the material I have been studying.
26. It is hard for me to decide what I should challenge and revise when I use AI for translation.

27. When work is hard, I either give up or translate only the easy parts.
28. When I study, I put important ideas into my own words.
29. I always try to understand what the teacher is saying even if it doesn't make sense.
30. When I do a translation task, I try to check and revise the AI output as much as I can.
31. When studying, I copy my notes over to help me remember materials.
32. I work on practice exercises and translate end of chapter tasks even when I don't have to.
33. Even when study materials are dull and uninteresting, I keep working until I finish.
34. When I do a translation task, I practice saying the important facts over and over to myself.
35. Before I begin studying, I think about the things I will need to do to learn.
36. I use what I have learned from old homework assignments and the textbook to do new assignments.
37. I often find that I have been translating for class, but don't know what to do with the AI output.
38. I find that when the teacher is talking, I think of other things and don't really listen to what is being said.
39. When I am translating a text, I try to make everything fit together.
40. When I'm translating, I stop once in a while and go over what I have translated.
41. When I read materials for this class, I say the words over and over to myself to help me remember.
42. I outline the strategies and techniques in my notebook to help me study.
43. I work hard to get a good grade even when I don't like a class.
44. When translating, I try to connect new strategies I am practicing with what I already know.

Appendix 3

List of reflective prompts

1. How did you evaluate the quality of the AI-produced translation? Any comments on its strength, its weakness, etc.
2. What translation strategies did you use to refine AI output?
3. How did you use the feedback to improve your translation or your learning behavior?
4. What challenges did you face when interacting with AI for this translation task?
5. How has your perception of AI differed since last week?
6. What goals did you set, and how did you self-monitor this week?
7. What have you learned about your own strengths and weaknesses as a translator in using AI tools so far?

About the authors

Mahboubeh Khalili is an Assistant Professor of Translation Studies at the University of Mazandaran, Babolsar, Iran, where she has been teaching for the past few years. Her research interests include a range of cultural, sociological, historical, and technology-based approaches to translation. Her recent work has focused on integrating AI into translation education.