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Teachers' self-regulated learning instructional practices: Differences in perception among TVET students in Cambodia

Chamnan Sok[1], Sarom Mok[2], Somony Som[3], Mengheang Hor[4], Sereyrath Em[5]
[1,2,3]Preah Sihamoniraja Buddhist University, Phnom Penh, Cambodia
[4]The Ministry of Labor and Vocational Training, Phnom Penh, Cambodia
[5]University of Cambodia, Phnom Penh, Cambodia

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ABSTRACT

A growing number of Cambodian students at all levels are seeking to improve their English proficiency due to the increasing demand for English instruction. Self-Regulated Learning (SRL) techniques are crucial for student progress, yet their effective teaching in classrooms is frequently absent. This study used a unique methodology that concentrated on TVET students' perception of their teachers' encouragement of SRL techniques. In order to promote SRL during regular classroom instruction, ten TVET center teachers completed a professional learning program and sent in a video clip of their lessons. Thirty students participated in semi-structured stimulated recall interviews with these videos as stimuli. Students were instructed to use "What, When, Why, and How?" to explain how their teachers taught SRL strategies. It examined relationships among teachers' behaviors, methods of promotion, and the choice of strategy type and situations in which students provided a clear explanation of the goal and the potential for transfer of SRL strategies. The findings show that students were most aware of SRL instruction when it included the strategy's name, a clear application procedure, teacher explanations of how and why the strategy enhances learning, and prompts to encourage students to give examples of transfer. These findings are presented in relation to how educators may effectively encourage SRL in the classroom.

Corresponding Author:

Chamnan Sok
Preah Sihamoniraja Buddhist University, Phnom Penh, Cambodia
Email: sokchamnan76@gmail.com

1. INTRODUCTION

The usage of English as the universal language is growing. Furthermore, there is an increasing need for English fluency worldwide, including in Thailand, due to the economic, political, and cultural dominance of English-speaking nations. In an effort to describe the current state of English language instruction in Cambodia, some academics have succinctly said that proficiency in the language is now required in Khmer society rather than a luxury

[1], [2], [3]. Given its importance, self-regulated learning (SRL) is widely acknowledged as a crucial skill for academic and lifelong learning, and it has been favorably linked to increased learning behavior, motivation, and achievement [4], [5], [6]. Teachers must have access to and use the information, attitudes, and methods required to successfully support SRL in the classroom, ensuring that every student acquires these critical abilities.

1.1 Background and Statement of Problems

Building on the work of two research teams, the Realising the Potential of High Capacity Students Project (REAP), which examined students' SRL capabilities [7] (Harding et al., 2018), and the teaching How to Learn Project, which examined teacher actions to promote students' SRL [8], [9], this study describes the instructional practices that support SRL strategies used by a small sample of Cambodian TVET center teachers.

This study offers insights into SRL education by examining real-world examples of SRL strategy promotion that were recorded in class. Crucially, by analyzing students' statements on "what to do, why to do it, and when to do it," these instances of teachers promoting SRL strategies were examined to obtain evidence of students' opinions on strategy promotion. To identify teacher actions linked to more accurate student descriptions of the purpose and potential transfer of SRL strategies to other learning contexts, these student descriptions serve as markers of the clarity of SRL strategy promotion. According to [10], SRL strategies were defined as any method or activity that students employ on their own or intentionally to improve their learning. This criterion was chosen since the teaching of the How to Learn Research Project, from which this study sprang, was based on the work of Lawson et al. According to [11], students need an "SRL toolkit" that includes a variety of SRL techniques, along with knowledge of when, how, and where to apply them.

Several educational contexts, including primary, secondary, tertiary levels, and TVET [12], [13], [14], [2], as well as more recently online and flipped learning environments [15], have been studied for effective SRL instruction and promotion. SRL promotion in classrooms can be either direct or indirect, as noted by [16]. While direct instruction entails teaching students how to manage their learning, indirect promotion entails establishing a learning environment where students can actively participate in or take responsibility for their learning [17], [18]. The current study focused on the direct teaching of SRL techniques in TVET classes, even though indirect promotion of SRL is crucial to give students opportunities to practice and receive feedback on their SRL abilities.

There are many definitions of explicit and implicit direct education of SRL methods. According to [19], [20], [21], defining and implementing explicit SRL strategy teaching is a crucial area for research in the discipline. There are differences in the specific elements considered necessary for successful explicit instruction, despite the fact that researchers generally agree that explicit instruction entails informing students about the strategy and offering clear guidelines for its use [19], [20], [22]. While [19]'s definition similarly highlights the advantages of strategy utilization, [20]'s "WWW&H rule" places more emphasis on outlining what to do, when, why, and how to employ a strategy. Based on a thorough analysis of classroom observation research, [18] emphasized the significance of explicit instruction in fostering students' SRL. However, they also pointed out that, as

current classroom instruction remains uneven and unfair, further study is required to develop effective programs to enhance teachers' capacity to support students' SRL [23].

Numerous studies have emphasized the need for teachers to engage in more professional development focused on SRL knowledge, beliefs, and classroom practice. Teachers' perceptions of the value of SRL and their actual classroom practices differed significantly [24]. Just 32% of the surveyed instructors said they planned to actively include SRL elements in their lessons, despite 98.8% of teachers believing SRL was significant. Additionally, 23% of the 124 teachers who participated in the study admitted that they lacked the knowledge necessary to teach SRL. Secondary school teachers, who were found to explicitly instruct and employ SRL methods less often than their elementary school counterparts, appear to be particularly affected by this knowledge-practice discrepancy. This problem was further highlighted by [25], who noted that, compared with other pedagogical domains such as classroom management, the apparent lack of basic SRL pedagogical knowledge among the majority of teachers is noteworthy.

The meta-analysis of SRL training programs by [17] shed further light on the difficulties associated with SRL promotion. Teachers can successfully promote SRL to enhance students' strategy use and academic performance, according to a meta-analysis of 35 secondary school studies. However, a troubling finding was that the impact of SRL training on students' strategy use was greater when delivered by researchers than by regular classroom teachers. This is contradicted by a more recent finding by [26] in their meta-analysis of young children's SRL, which they speculated may be due to recent advancements in the way researchers and instructors work together to create SRL programs. Additionally, the children's young age in the study may have contributed to this discrepancy. Again, [27], [25] suggest that classroom teachers are the only ones who can incorporate SRL strategy education into the lesson's content. This emphasizes the need to provide classroom teachers with more thorough SRL knowledge and professional development to ensure the successful implementation of SRL programs [28].

It is evident that to overcome these obstacles, it is necessary to understand teachers' current attitudes toward SRL [10], [12] and to enhance their ability and self-assurance in imparting these skills. In addition to introducing the idea of self-regulated teaching (SRT), [29], [51] promoted professional development programs that examine teachers' SRL practices and beliefs, highlight the significance of SRL for lifelong learning, and increase teachers' ability to deliver embedded, explicit SRL instruction [30]. Then, the results of this study will have significant ramifications for teacher professional development and classroom practice and offer insights into successful SRL instruction.

1.2 Purposes of the Study

The fundamental purposes of the study are threefold: (1) to find out how TVET teachers encourage SRL in TVET classes; (2) to investigate how well students can characterize the SRL strategies they are taught; and (3) to discover what kinds of education and promotion can help students recognize these strategies in Cambodia.

1.3 Research Questions

This study attempts to address the following questions:

1. In what ways do TVET teachers in Cambodia promote SRL in their classrooms?
2. How well can TVET students in Cambodia explain the SRL approach that TVET teachers are advocating?
3. What kinds of SRL strategy instruction and promotion types might help TVET students become more aware of SRL strategies?

1.4 Contributions of the Study

1. With an emphasis on how teachers convey the "what, when, why, and how" of SRL tactics, this study's primary goal is to provide a comprehensive picture of effective instructional approaches for promoting SRL. Significantly, by including students' perceptions and interpretations of teachers' SRL-related classroom practices—an area [31] identified as under-researched—this study fills a crucial gap in the literature. This research advances the field by developing a method for collecting these students' viewpoints in real-world classroom settings. By examining both teacher practices and student views, it aims to improve our understanding of how to promote SRL in TVET classrooms effectively. The results will guide the creation of targeted professional development initiatives that will ultimately lead to more effective and equitable SRL instruction for all students in TVET school settings.
2. The Self-regulated Learning Teacher Promotion Framework (SRL-TPF), developed by the teaching How to Learn (THtL) Research team to promote SRL in classrooms directly, serves as the basis for this study [22]. Using this framework, the THtL research team developed professional learning modules to improve teachers' comprehension of explicit SRL strategy training and SRL knowledge (Stephenson et al., 2024).
3. By including students' opinions of their teachers' SRL teaching methods, the study builds on earlier studies. This method enables data collection on how well students recognize, comprehend, and possibly use the SRL techniques their teachers have taught them. It is anticipated that students' perception and comprehension of SRL methods, as well as when and where to apply them, will improve with successful education.

2. METHOD

This section describes the methodological framework adopted to investigate how teachers' self-regulated learning instruction is enacted in classrooms and how students understand it. A mixed-methods approach was employed, integrating classroom video analysis, stimulated recall interviews, and quantitative techniques to capture both instructional practices and students' interpretations of those practices. By combining qualitative coding with statistical analysis, the study provides a systematic examination of the relationships between types of SRL instruction, teacher actions, and students' understanding and transfer of SRL strategies.

2.1 Research Design

This study employed a multifaceted method, including video analysis of classroom instruction, student recall interviews, and quantitative analysis of the connections between teacher instruction and student understanding, to explore these concerns. Videos of real-world classroom instruction uploaded by each of the eight participating teachers were used to investigate Research Question One. To determine the frequency of instruction for each SRL strategy and the frequency of each teacher action used to instruct each SRL strategy, instances of SRL strategy instruction were extracted from these videos and coded using the categories outlined in the SRL-TPF.

By conducting Stimulated Recall Interviews with students and gathering accounts of their teachers' SRL instruction, Research Questions Two and Three were investigated from the students' perspective. These descriptions were evaluated based on the students' ability to: (1) describe the strategy's goal; (2) give examples of other classroom scenarios in which the strategy could be applied; and (3) give examples of other learning scenarios outside of a classroom in which the strategy could be applied. To determine the degree and direction of relationships among the types of strategies (Research Question Two), the forms of teacher teaching (Research Question Three), and students' descriptions of each approach, Research Questions Two and Three were examined using quantitative data analysis.

2.2 Research Participants

Teachers from government TVET centers in Cambodia participated in the study. Twelve TVET teachers volunteered to participate in the study and complete the online SRL Professional Learning Modules. These teachers represented a variety of disciplines and teaching experiences, ranging from less than five years to more than twenty-five years. For the purpose of filming a lesson, each teacher chose one. Twenty-five students from these 12 recorded classes provided written approval and participated in the interviews. Because the interviews were optional, the participating students were not uniformly distributed among classes. Twenty-three students were interviewed in person, while two completed it online. Before beginning the trial, each participant gave their informed consent.

2.3 Data Collection and Analysis Techniques for Each Research Question

The teacher-submitted instructional videos were evaluated to generate data for Research Question One, and the same videos served as a stimulus for a student-stimulated recall interview, the results of which were utilized to investigate Research Questions Two and Three, respectively.

2.3.1. Research Question One

After completing the THtL professional learning program, teachers submitted classroom videos of each participating teacher teaching a class. Only the instances of the SRL strategy teaching that the researcher found were shown in these edited movies. The researcher then used the THtL coding guide's definitions and descriptions to examine and code each instance of SRL strategy instruction. Each of the categories included in the SRL-TPF for direct promotion [22] was defined in this THtL coding guide, which also included

examples of the kinds of comments teachers may make when utilizing particular categories of teaching and promotion.

Until interrater reliability reached significant agreement (84% with a Cohen's k of 0.68), the THtL team revised the coding guide. There were multiple steps in the coding process: (1) classifying instruction as explicit or implicit; (2) identifying sorts of promotion employed (metacognitive reflection and support, knowledge and views about learning, or benefit of use); (3) coding the promotion method (direct verbal, modeling, or prompting); (4) categorizing the purpose of the strategy (cognitive, metacognitive, motivational, or affective); and (5) identifying each strategy's domain (domain-specific versus domain-general)

To address Research Question One, a comprehensive picture of teachers' classroom activities was created using a multifaceted categorization of observed strategy instruction.

2.3.2. Research Question Two and Three

Students participated in a stimulated recall interview using the same edited video clips of the SRL approach teaching that the researcher had coded. Without interfering with the lesson's flow or relying solely on memory, this style enabled students to explain how they understood their teacher's SRL instruction practice. Students saw six to ten-minute video clips of their teacher teaching SRL strategies during the 30-minute stimulated recall interviews, and they responded to questions based on Veenman et al.'s "What to do, When, Why and How Rule" [20]. Both spoken and written versions of these questions were available: (a) In this portion of the lesson, what were you expected to do?; (b) To let you know that this was expected, what did your teacher do, say, create, or write? (c) What made your teacher urge you to do this? (d) In what way may this aid your learning? Furthermore, (e) Where else might you apply this method of learning?

To identify instances when students explained the goal of each method or offered examples of transfer to learning circumstances outside the classroom (far transfer) or to other classroom settings (near transfer), each student interview was videotaped and transcribed. While the five interview questions served as a framework for responses, each student's complete transcript was considered when searching for statements that demonstrated students had grasped the strategy's goal or could offer instances of transfer.

To enhance dependability, a coding system for student responses in stimulated recall interviews was created and improved across several iterations. The potential student statements were redefined during the first experiment with four researchers, followed by another trial with two researchers and the necessary clarifications. One researcher finished coding the students' answers after achieving 94% agreement.

To determine how well students could explain each kind of strategy, the likelihood that they would correctly explain the SRL strategy's goal and offer instances of its application was computed. To investigate the direction and strength of these correlations, odds ratios for the association between these descriptors and the strategy type were also computed. To calculate the weighted average probability that students accurately describe the strategy's purpose and give examples of near and far transfer, each strategy type and teacher action

category was converted to binary data (1 = present, 0 = absent). This was done because each teacher had an uneven number of participating students.

The Minitab® (Version 21) software [32] was used to perform logistic regressions, which produced odds ratios, confidence intervals, and p-values for the relationship between each approach type and teacher action, and each of the three student measures. Research Question Two was addressed using the ensuing probabilities and positive statistically significant odds ratios for the various strategy types. To address Research Question Three, the probabilities and odds ratios for the association between teacher actions and student measures were used to identify which teacher activities were most effective at encouraging student comprehension and the transfer of SRL methods.

2.3 Ethical Considerations

The data-gathering process was respectful. The Graduate School of the Preah Sihamoniraja Buddhist University granted permission for the research before it began. Every piece of information collected from participants was kept private. An online platform that enabled anonymous responses to survey questions was used to conduct the study. The TVET Center Directors gave their consent to conduct a poll of the targeted demographic. A note explaining that completing the survey is equivalent to agreeing to participate was also provided to participants.

3. RESULTS

The results of this investigation are presented in this session. Each research question's findings are presented in the following order: (a) research question one regarding the teachers' SRL instruction; (b) research question two regarding the students' description of the SRL strategies; and (c) research question three regarding the SRL strategy instruction linked to in-depth student descriptions.

3.1 Results for the Research Question One

The first research question was asked: "*In what ways do TVET teachers in Cambodia promote SRL in their classrooms?*"

The frequency of each teacher action and strategy type observed was calculated to provide a thorough summary of the SRL tactics and the teacher actions used to instruct and support them. Three strategies instructed by the teachers are included: (1) Cognitive Strategies (COSs); (2) Metacognitive Strategies (MESs); and (3) Motivational/Affective Strategies (MOSs/AFSs). It is noted that the numbers indicate the number of instances of this approach.

As shown in Table 1 below, among the strategies examined, COSs accounted for 58% (29 out of 50) and were the most frequently taught. The frequency of MESs, which made up 30% (15 out of 50) of the total, was almost twice as high. MOSs/AFSs were merged to enable statistical analysis because of their similar character from a student perspective and their rare frequency (12%, 6 out of 50).

Table 1. Results of Strategies Instructed by the Teachers

COSs (29)	MESs (15)	MOSs/AFSs (6)
1. Stressing important words (4)		
2. Linking to prior experiences (4)		
3. Exchanging concepts (4)	1. Setting goals (5)	
4. Making notes (4)	2. Bringing up past knowledge (4)	
5. Practice (2)	3. Replicate learning objectives and achievement standards (3)	1. Making use of rewards (3)
6. Presentation orally (2)		2. Writing silently (2)
7. Acronyms (2)	4. Examining the work (2)	3. Goal word count (1)
7. Using sequential equations (2)	5. Understanding of rates (1)	
8. Generating ideas (1)	6. Applying rubrics (1)	
9. Annotating words or concepts (1)		
10. Create a model (1)		
11. Overview sheets (1)		

Table 2. Results of Actions of Teacher and Strategy Types (n=50)

Classification		Frequency Utilization	
		No.	%
1. Action of the Teacher			
A. Initial Instruction			
1. Explicit		*32*	*64%*
2. Implicit		*18*	*36%*
	Total	*50*	*100%*
B. Promotion Types			
1. Metacognitive reflection and support		*25*	*50%*
2. Knowledge and beliefs about learning		*15*	*30%*
3. Benefit of use		*10*	*20%*
	Total	*50*	*100%*
C. Number of Promotion Types			
1. 3 promotions		*10*	*20%*
2. 2 & 3 Promotions		*20*	*40%*
3. 0 & 1 Promotions		*15*	*30%*
4. 0 Promotions		*5*	*10%*
	Total	*50*	*100%*
D. Manner of Promotion			
1. Direct verbal		*26*	*52%*
2. Prompting		*16*	*32%*
3. Modelling		*8*	*16%*
	Total	*50*	*100%*
2. Strategy Types			
A. Strategy Purpose			
1. Cognitive		*33*	*66%*
2. Metacognitive		*18*	*36%*
3. Motivational/affective		*9*	*18%*
	Total	*50*	*100%*
B. Strategy Domain			
1. General		*38*	*76%*
2. Specific		*12*	*24%*
	Total	*50*	*100%*

According to Table 2 above, the findings indicate that the frequency of the teachers' instruction and promotion of different SRL methods varied considerably, and distinct patterns emerged. Of the 50 strategies, 32 (64%) were clearly taught, making explicit training twice as common as implicit instruction. Interestingly, six out of four (100%) of the MOSs/AFSs were taught directly. It also reveals that 50% of the strategy training in the sample was accompanied by metacognitive reflection and assistance, which were the most common promotion types. 30% (15 out of 50) of the SRL strategies were driven by knowledge and beliefs, and only 20% (10 out of 50) highlighted the advantages of using the method. In 30% of strategies (15 out of 50), teachers most commonly used two promotion types simultaneously, and in 40% (20 out of 50), they used two or three promotion types. On the other hand, 5 out of 50 strategies, or 10% of the total, were taught without further advancement. Also, the most common method of promotion was direct verbal instruction (52%, 26 out of 50), followed by prompting (32%, 16 out of 50), and modeling (16%, 8 out of 50). 76% of SRL strategies were labeled as domain-general, and cognitive strategies were the most common.

3.2 Results for the Research Question Two

The second research question was asked: "*How well can TVET students in Cambodia explain the SRL approach that TVET teachers are advocating?*"

Table 3. Results of Weighted Average Probability of Student Measures

Classification	Weighted Average Probability Measured by Students			
	Frequency Utilization	Precise Purpose Reporting	Near Transfer	Fair Transfer
1. Action of the Teacher				
A. Initial Instruction				
1. Explicit	*32 (64%)*	*65.5*	*63.4*	*33.8*
2. Implicit	*18 (36%)*	*73.8*	*85.8*	*38.9*
B. Promotion Types				
1. Metacognitive reflection and support	*25 (50%)*	*72.8*	*77.7*	*41.5*
2. Knowledge and beliefs about learning	*15 (30%)*	*82.5*	*84.2*	*48.5*
3. Benefit of use	*10 (20%)*	*74.6*	*76.7*	*38.8*
C. Number of Promotion Types				
1. 2 & 3 Promotions	*20 (40%)*	*81.1*	*82.7*	*48.8*
2. 0 & 1 Promotions	*15 (30%)*	*57.8*	*63.6*	*24.7*
3. 0 Promotions	*5 (10%)*	*41.3*	*41.3*	*19.5*
D. Manner of Promotion				
1. Direct verbal	*26 (52%)*	*65.2*	*58.9*	*24.5*
2. Prompting	*16 (32%)*	*74.2*	*90.2*	*47.5*
3. Modelling	*8 (16%)*	*71.7*	*65.8*	*42.4*
2. Strategy Type				
A. Strategy Purpose				
1. Cognitive	*33 (66%)*	*84.5*	*80.3*	*39.8*
2. Metacognitive	*18 (36%)*	*56.4*	*69.5*	*32.7*
3. Motivational/affective	*9 (18%)*	*45.7*	*51.2*	*28.9*
B. Strategy Domain				
1. General	*38 (76%)*	*68.7*	*73.4*	*37.8*
2. Specific	*12 (24%)*	*73.8*	*64.8*	*19.3*

The researcher calculated the weighted average likelihood for each metric to identify which teacher behaviors would have enabled students to describe the goal of each SRL method or to offer examples of transfer. Surprisingly, techniques that were implicitly taught had the highest likelihood of students correctly reporting the strategy's goal and offering instances of near and far transfer.

Promoting the approach using knowledge and beliefs about learning, using two or more promotion types, and utilizing prompting as the method of promotion were the teacher actions associated with the greatest weighted average probabilities. For each of the three-student metrics, cognitive techniques had the highest weighted-average probability. A greater likelihood of students providing examples of each type of transfer was associated with domain-general techniques. However, domain-specific methods yielded the highest likelihood that students would explain the strategy's goal.

3.3 Results for the Research Question Three

The third research question was asked: "*What kinds of SRL strategy instruction and promotion types might help TVET students become more aware of SRL strategies?*"

There are fifty examples of strategy education in all. "NS" stands for "not a significant predictor" in this study. "A" denotes that the student accurately described the strategy's goal, indicating that it is either cognitive, metacognitive, or motivational/affective. "B" indicates a near transfer, meaning the student provided examples of how to use the technique in a different classroom or center setting. "C" stands for fair transfer, which indicates that the student gave examples of how to apply the technique outside of the center. Table 4 below lists the odds ratios for the significant connections.

Table 4. Results of the Odds Ratios for Significant Associations

Classification	Statistically Significant Odds Ratios (OR)		
	A	B	C
1. Action of the Teacher			
A. Initial Instruction			
1. Explicit	*NS*	*0.281*	*NS*
2. Implicit	*NS*	*3.571*	*NS*
B. Promotion Types			
1. Metacognitive reflection and support	*3.201*	*2.901*	*2.621*
2. Knowledge and beliefs about learning	*NS*	*2.405*	*2.545*
3. Benefit of use	*NS*	*NS*	*NS*
C. Number of Promotion Types			
1. 2 & 3 Promotions	*3.025*	*2.650*	*2.098*
2. 0 & 1 Promotions	*0.333*	*0.390*	*0.340*
3. 0 Promotions	*0.258*	*0.205*	*NS*
D. Manner of Promotion			
1. Direct verbal	*NS*	*5.730*	*2.325*
2. Prompting	*NS*	*0.275*	*0.375*
3. Modelling	*NS*	*NS*	*NS*
2. Strategy Type			
A. Strategy Purpose			
1. Cognitive	*4.850*	*2.230*	*NS*
2. Metacognitive	*0.370*	*NS*	*NS*
3. Motivational/affective	*0.325*	*0.340*	*NS*
B. Strategy Domain			
1. General	*NS*	*NS*	*NS*
2. Specific	*NS*	*NS*	*NS*

As shown in Table 4 above, several teacher actions, such as explaining the strategy's goal and providing examples of both close and far transfer, were significantly positively correlated with thorough student descriptions. Also, teacher actions included two or more forms of promotion and the use of knowledge and values to support the SRL method. On the other hand, when teachers utilized one or fewer forms of promotion for the SRL approach training, there was a strong negative correlation between students' capacity to explain the goal and give examples of transfer. Both forms of transfer were also linked to the teacher's promotion strategy. Providing examples of both near and far transfer was significantly positively correlated with teachers' use of prompting to encourage the method.

On the other hand, there was a strong negative correlation between both forms of transfer and direct verbal promotion. There was a substantial positive correlation between students who gave examples of near transfer to another classroom learning scenario and the implicit instruction of methods. In addition, the explicit teaching was significantly inversely correlated with close transfer, which is the polar opposite of this finding. In terms of strategy types, students who reported the strategy's objective and gave examples of near transfer were substantially more likely to use cognitive methods. Both of these variables showed strong negative correlations with motivational/affective strategies. Similarly, students' reporting of the strategy's objective was strongly inversely correlated with the use of metacognitive methods. The three student assessments and the strategy's domain (generic or specific) did not significantly correlate.

4. Discussion

Based on the findings, the following aspects are discussed: teacher-delivered SRL instruction, student descriptions of SRL strategies, and SRL strategy instruction linked to thorough student descriptions.

4.1 Discussion of the SRL Instruction by Teachers

According to our analysis, teachers in this study most often used explicit instruction to teach cognitive, domain-general methods. They mostly promoted through direct verbal communication, offered assistance and metacognitive reflection, and used another form of promotion. According to earlier studies [17], [33], [22], cognitive strategies are taught more frequently than metacognitive or motivational/affective strategies. According to [7], teachers' perceptions of time constraints in teaching curriculum information, together with SRL skills, may account for this pattern. This conclusion is concerning because it may indicate that teachers prioritize teaching content-specific knowledge over promoting metacognitive and motivational/affective methods [34], [35], [11]. Teachers must be persuaded of the value of teaching SRL techniques across all subject areas to solve this problem, and they must be given clear instructional models to ensure efficient, well-planned instruction.

Since teachers likely recorded examples of whole-class instruction at the beginning of courses or when introducing new SRL strategies, the prevalence of direct verbal instruction observed in the submitted videos may be related to the data-collection process. It would be expected that teachers will give their students more verbal instruction in both

scenarios. This result is consistent with research by [22], which found comparable rates of domain-general strategy promotion and direct verbal instruction. However, our study's higher frequency of explicit instruction deviates from the findings of [22], perhaps as a result of the teachers' completion of THtL professional learning modules. The explicit teaching of SRL techniques was the focus of these courses, which encouraged teachers to identify methods and provide a comprehensive explanation of their workings. The higher frequency of teachers incorporating information and beliefs about learning and metacognitive reflection in our research, compared to [22]'s study, may be explained by the completion of these modules. This implies that the participating educators incorporated important lessons from the THtL modules into their lesson recordings. Teachers' use of explicit instruction examples has increased similarly in other professional learning programs [13].

4.2 Discussion of the Student Descriptions of the SRL Strategies

The most thorough student descriptions were linked to cognitive strategies, as indicated by students' responses to the stimulated recall interview questions. These strategies were the only ones that showed a positive correlation with students' capacity to explain the strategies' transfer and purpose. Students found it difficult to give examples of transfer for domain-specific strategies, even though there were no correlations between the strategy's broad or specific domain and their descriptions. This is to be expected, given that these methods are subject-specific, underscoring the need for educators to properly convey how domain-specific strategies are used in the real world. The high likelihood (84%) of students reporting these methods is reflected in the strong positive association (Odds Ratio [OR] = 4.850) between cognitive strategies and students' descriptions of their purpose. Compared to metacognitive or motivational/affective strategies, students were almost five times more likely to report the goal of cognitive methods. According to [36], students mainly concentrate on topic information and cognitive methods, making links between their application and learning outcomes. This conclusion may suggest that students view cognitive strategies as more useful and memorable. More recent research supports this, showing that students most commonly reported using cognitive strategies such as rehearsal [37] and that they rated this strategy as the best for learning [38]. These findings also show that students can accurately describe SRL strategies that are obvious to them and that they value. This emphasizes the need for teachers to make sure that metacognitive and motivational/affective strategies are effectively promoted and that students understand the value or benefit of learning them.

For motivational/affective strategies, students were least likely to provide thorough explanations; negative correlations were observed for accurately describing their objective (OR = 0.325) and for giving examples of near transfer (OR = 0.340). These findings imply that students could not be aware of these as learning tactics or think that controlling their thoughts, feelings, emotions, and motivation to learn is something they should naturally be able to do. Kids who lack this understanding have an equity problem because not all kids have the chance to acquire these abilities at home or in other classes. [39] and [50] refer to this situation as the hidden curriculum of SRL and contend that when teachers and institutions prioritize topic instruction over explicit SRL instruction, some students encounter serious difficulties.

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The low weighted likelihood of 55% that students would appropriately state the aim of these strategies and the unfavorable correlation revealed by the odds ratio of 0.370 demonstrated the absence of thorough student descriptions of the goal of metacognitive methods. Given the known link between metacognitive techniques and academic success, this is problematic [16], [40], [21]. According to [41], [42], [48], metacognitive strategies enable students to understand themselves as learners, take ownership of their learning processes, and choose the best solutions to fit learning problems. According to [43]'s Metacognitive and Affective Model of Self-Regulated Learning (MASRL Model), these strategies help students develop the metacognitive knowledge and skills needed to engage with learning tasks successfully [44], [45], [49]. This finding implies that students might not know when or how to apply these crucial strategies in their autonomous learning.

During the interviews, students reported that five of the strategy instruction cases (12%) used learning routines that were frequently employed in their classrooms. The weighted average chance that students could correctly state the goal of these routines was 68%, indicating that not all students could explain the goal of these routine SRL strategies, even though they were used frequently. This decreased likelihood could be explained by students' inability to define the tactics in detail, as they have either forgotten or grown accustomed to their use over time, despite prior teachers' explanations of their function. Additionally, children may become confused if multiple professors employ the same tactics for different objectives. In order to make sure that students comprehend the application of each strategy, its goal, and its potential for transfer, teachers may need to review the education of these kinds of routine methods frequently.

4.3 Discussion of the SRL Strategy Instruction Linked to Thorough Student Descriptions

The study found that increased student recognition and description of SRL strategies was linked to several important teacher activities. These results have implications for teacher professional development and classroom practice, and offer insights into successful SRL instruction. The significance of teachers using information about their own learning beliefs and knowledge when promoting SRL strategies was one of the most important outcomes. This method was associated with the highest likelihood of students accurately stating the strategy's goal (82.5%), giving examples of near transfer (84.2%), and demonstrating far transfer (48.5%). The only promotion type that was substantially correlated with all three student outcome measures — accurately expressing the strategy's aim (OR = 3.201), providing close transfer examples (OR = 2.901), and providing distant transfer examples (OR = 2.621) — was knowledge and beliefs about learning. The substantial correlations imply that this promotion type is an essential component of SRL strategy education, either alone or in conjunction with other promotion types, even though it was rarely employed in isolation, making it challenging to draw clear conclusions regarding its independent effectiveness.

Students' capacity to give examples of strategy transfer was also found to be correlated with teachers' supply of metacognitive reflection and support. When this promotion type was available, students were more than twice as likely to give examples of

both near and far transfer (OR = 2.405 and 2.545, respectively). Interestingly, when metacognitive reflection and assistance were used to promote the method, students were more likely (50%) to state its objective accurately; however, this association was not statistically significant. Furthermore, promotion strategies, especially prompting, were found to be important in improving students' capacity to provide examples of strategy transfer. When prompting was used instead of direct verbal instruction or modeling, students were five times more likely to provide examples of near transfer (OR = 5.730) and more than twice as likely to provide examples of far transfer (OR = 2.325). Since teachers frequently employ inquiry to urge students to reflect on their prior knowledge, this finding may be related to the close relationship between prompting and metacognitive reflection and support.

In contrast to earlier research [17], the study did not find any significant correlation between students' thorough descriptions of the strategy's goal or transfer and teachers' endorsement of the strategy's benefits. The use of two or more promotion types, however, significantly correlated with all three student outcome indicators. Students were three times more likely to correctly explain the strategy's goal (OR = 3.025) and considerably more likely to give examples of near and far transfer (OR = 2.650 and 2.098, respectively) when professors employed two or more promotion types. According to this research, students are more likely to notice, describe, and transfer the goal SRL strategy when professors provide detailed training and progression. It is crucial to remember that utilizing all three forms of promotion did not significantly predict any of the student measures. This suggests that two forms of promotion might be adequate and that giving students too much information verbally could cause them to become disengaged and tune out. The idea of an ideal degree of instructional support in SRL promotion is supported by this finding [17], [28], [46].

5. CONCLUSION AND RECOMMENDATION

This section summarizes the study's key findings and their implications for SRL instruction. It also presents recommendations for future research aimed at improving the effectiveness of SRL strategy teaching and expanding understanding of how instructional practices influence students' awareness, comprehension, and transfer of SRL strategies.

5.1 Conclusion

This study came to the following conclusions.

1. According to this study, teachers increased the likelihood that their students would recognize the SRL strategy they were taught, comprehend its goal, and be able to give examples of how to apply the strategy to learning situations both inside and outside of the classroom by utilizing two forms of promotion to highlight the significance of the strategy, specifically knowledge and beliefs about learning and metacognitive reflection and support.

2. A model of successful SRL strategy instruction can be given by including the viewpoint of the pupils. Students were most aware of SRL strategy instruction and promotion when two modes of promotion were used. Specifically, the teacher used metacognitive prompts and their own knowledge and views about learning to promote the approach. Since both teachers and students seem focused on cognitive strategy development,

teachers must persuade students of the need to develop their comprehension and application of these strategies to increase students' awareness of metacognitive methods.

3. Teachers may be better able to encourage a wider variety of strategies in their students if they receive professional development that increases their understanding of "what, when, why, and how" SRL methods should be taught and applied.

5.2 Recommendations for Future Research

1. Future studies with a bigger sample size are required to confirm and expand these findings. Investigating intentional, planned instruction, a topic not covered in the current study, would also be possible with collaborative research designs involving teachers. Probably, some of the strategy-teaching examples this study examined were not intended to be SRL instruction, which would have led to less thorough strategy information being provided. Future studies could learn more about effective SRL promotion by collaborating closely with educators to provide strategy education that systematically measures and controls specific promotion types and their combinations.

2. The approach created in this study could be expanded upon in future research to evaluate students' perceptions of their teachers' use of SRL strategies. By leveraging students' special status as critics and creators of educational practice [47], this strategy may enhance research findings and students' personal learning experiences. These lines of inquiry have the potential to advance our understanding of effective SRL instruction significantly and to guide the development of more focused and effective teacher preparation programs and instructional strategies.

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