



# METACOGNITIVE APPROACH TO LANGUAGE LEARNING: AN EMPIRICAL STUDY

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## Abstract:

This study focuses on the psychological underpinnings of metacognition. It also explains how second language instructors might raise learners' metacognitive awareness. The study will provide data to justify the inclusion of training in metacognitive strategy awareness within an L2 curriculum. The growth of learner autonomy is facilitated by teaching students to be more aware of and critical of how they approach language learning. This empirical study justifies the efficacy of metacognitive instruction as a pedagogical strategy.

**Keywords:** *Metacognition, learning, awareness, performance, efficacy study*

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## Introduction:

"Thinking about thinking is known as metacognition. Both for immediate results and for assisting students in understanding their learning processes, it is a method of improving student learning that is becoming more and more useful. Thus, "metacognition" refers to a wide range of information and ideas about one's learning". (Ku & Ho, 2010.p.10). The ability to teach metacognition, which is essential to other skill sets, including problem-solving, decision-making, and critical thinking, is supported by research. (Eilers & Pinkley, 2006). The capacity to critically evaluate learning processes and experiences to guide future development is known as reflective thinking. It is a component of metacognition. Recent pedagogical changes have underlined the value of helping pupils to develop their independence and self-control as learners. Beyond the classroom, the teacher cannot be there to hold their hands. Baker, L. (2013) feels that "metacognitive pedagogy necessitates that

students engage in meaningful reflection on their learning. Solving complicated or unexpected situations also calls for pupils to be critical analysts of their thinking" (p.4)

There has been a massive increase in the study over the past 35 years since Flavell originally proposed the idea of metacognition (1976). Countless journals, articles, chapters, and books have been written to examine the effects of metacognition on teaching and learning. Some of the recent ones are mentioned here. (Ngoc, 2022; Hunt, et al., 2022 & Cai et al. 2022). A growing number of academics working in L2 education are interested in metacognition. Flavell was active in the early stages of study into the definition of metacognition, its components, and how it improves learning. According to Sajida Bhanu & Kumar, (2022), "metacognition is the understanding of one's cognitive processes, as well as anything associated with them, such as the characteristics of information or facts



relevant to learning. The four main components of the cognitive model are monitoring, reflection, goal orientation and metacognitive knowledge. Metacognitive knowledge is the knowledge we have learned about our cognitive abilities and how to use that knowledge to govern those processes.

Hauck, (2005). categorises metacognitive knowledge into the following three groups: task factors, strategy variables, and knowledge of person variables. "Awareness of one's cognitive processes requires knowledge of each of the three categories: understanding of oneself and others. Your sense of the challenge or simplicity of activities falls under the topic of task variables. The capacity to reflect is significantly influenced by one's awareness of one's methods. Learners lack the strategic behaviours necessary to complete their learning objectives and activities if they are unaware of the variety of solutions available for dealing with a given learning issue. The

cognitive or emotional experiences we link to learning are metacognitive. As the main focus of cognitive activity, goals are highlighted, and actions are the precise measures we take to accomplish those goals" (Zhang et al., 2022). Students can better control their learning processes and responses when they are more aware of these factors. According to Acar-Erdol et al., (2022), metacognition is the capacity to make one's thinking apparent. It is the capacity to consider what one knows, does, and does not know, do, and do. Through critical, healthy reflection and review of one's thinking, metacognition leads to potential adjustments in learning strategies. Reflecting on an experience, articulating what happened, and expressing one's feelings are not all that constitute metacognition. It necessitates cognitive awareness and involvement with one's understanding of thought. He breaks down metacognition into five main parts, depicted in figure 1.

### Metacognitive strategies



Figure-1 Components of metacognition

"None of the five components, including metacognition, exists by themselves. The most

accurate illustration of metacognition maybe when all five are combined into a kaleidoscopic



perspective. These five factors all interact with one another. Preparation, planning, and evaluation are steps in a sequential process. During a learning task, multiple metacognitive processes could be active simultaneously. The shifting patterns make understanding the mutable nature of learning and teaching easier. We notice many patterns as we gaze through the kaleidoscope of metacognitive theories. We now understand the significance of metacognitive knowledge in teaching and learning" (Shirvani & Porkar, 2022). Each class is unique. We may get the most accurate picture of what goes on in learning and teaching from the perspective of metacognition as seen through a kaleidoscope. Metacognitive techniques are frequently included in models of language acquisition techniques.

According to Zhang & Zhang (2022). Three levels of metacognitive awareness can actively influence strategy use to support learners' goals rather than distinct categories of cognitive and metacognitive strategies. A learner who is metacognitively aware will prioritise healthy self-evaluation, which may be understood as being in the middle of a continuum with hypercritical self-evaluation at one extreme and superficial self-evaluation at the other. Students who give themselves a shallow evaluation are convinced of their near-perfect performance in class and don't feel pushed. These students frequently exaggerate how well they can perform in a second language. On the other extreme of the self-assessment spectrum are students who are overly critical of their work. They lay out all the justifications for why they don't think their language skills are up to par. These students frequently underrate their abilities. Both of these kinds of students engage in constructive yet critical self-evaluation. They must be metacognitively conscious of their learning processes for this to occur. "One of the most important abilities that classroom teachers may cultivate in both themselves and their pupils is the understanding and control of cognitive processes. Effective teachers create a learning

environment where reflecting on what happens during the learning experience leads to greater learning skills instead of just focusing students' attention on issues relating to the learning subject. Stronger cognitive abilities also result from the development of metacognitive awareness" (Kummin, Rahman, 2010).

Creating the fundamental motivational conditions, producing initial motivation, maintaining and protecting motivation, and ultimately promoting positive, retrospective self-evaluation are the four elements of motivational teaching practice in the L2 classroom, according to (Carrell et al. 1989). Their framework's fourth element is particularly crucial to our study of metacognition. Dörnyei encourages educators to be conscious of their role as student learning motivators. "One crucial aspect of a teacher's duty as a motivator is to encourage students to reflect on their learning effectively and develop into capable self-evaluators. Our beliefs undoubtedly influence our ideas about how to learn better about learning"(Hauck, 2005). The results of other researchers' studies on learner beliefs are consistent with the associations between one's self-perception and L2 learning.

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A learner's internal beliefs are a knowledge base component that affects learning. The distinction between cognition and metacognition must be made clear, according to (Garner,1988). Metacognition is the process by which we think about our thinking or cognition. Cognition is the act of considering something to be challenging to learn. Metacognition is the act of changing how we think about a challenging learning activity. Accordingly, metacognition must come before cognition. But there is a strong connection between the two shows. As a result, it cannot be easy to distinguish between them genuinely. When we strategically use our thinking to achieve learning objectives, we are a particular factor in our aims and evaluating success in achieving them. We can better understand the distinctions between cognition and



metacognition by examining a few significant research studies. Stern did such a study, & Hertel, (2022). These researchers emphasise the importance of metacognitive abilities and justify why they must incorporate a substantial metacognitive training and awareness component in educational situations in their study.

According to Stern & Hertel (2022), persons who use unsuccessful tactics to obtain success and contentment bear a double strain: not only do they draw the wrong conclusions and make poor decisions, but their incompetence also prevents them from realising their success and satisfaction. They conducted four separate investigations to examine their hypotheses. The initial study focused on the learning outcomes. In a series of focused sessions, subjects were required to rate their learning. Their ratings were contrasted with those of conventional classrooms. The respondents' perceived capacities for language learning were compared in the second investigation. After completing a 20-item logical reasoning test, participants were asked to assess their perceptions of their test performance and analytical reasoning skills. A knowledge test on English grammar comprised the third study. Following completion of a 20-item test in English grammar, participants were asked to rate their ability to spot grammatical faults by comparing their predictions to those of their peers. This study offered a logical thinking training component.

Following the training manual and the test, the participants took part in a session

where they verbally communicated to the researchers which questions on the logical thinking exam they believed they had appropriately answered and which ones they thought they had not. The findings from all four of these experiments provide credence to the idea that participants overestimate their aptitudes, particularly those who score poorly on the exams and are ignorant of their lack of logical thinking skills. When individuals receive some instruction in the abilities being assessed, those who score well tend to understate their performance, whilst those who score poorly continue to overstate their performance and maintain their perception that they are adept at the examined domain. According to the findings of these four research, the blend of comments to the learners and instruction on the abilities being evaluated is part of the secret to boosting learning. The earlier indicated continuum of self-assessment is supported empirically by these results. Some students overestimate their actual language talents (superficial self-assessments), and those who misunderstand them (hypercritical self-assessments). Together with other researchers, Stern & Hertel (2022) extended their investigation and discovered more consistent findings.

Channaet al. (2015) wrote a feature piece on metacognition in which she provided several methods for instructing pupils to keep track of their learning. My favourite approach is maybe the simplest: Channa(2015) offers a set of questions that professors could provide to students as a way for them to organise, track, and assess their exam preparation. Table 1 lists the three phases of metacognitive strategies

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*Table-1  
 Metacognitive strategies.*

<b>Planning</b>	<b>Monitoring</b>	<b>Evaluating</b>
<ul style="list-style-type: none"> <li>• What strategies will I use to study (e.g., study groups, problem sets, evaluating text figures, challenging myself with practice quizzes and/or going to office hours and review sessions)?</li> <li>• How much time do I plan on studying? Over what period of time and for how long each time I sit down do I need to study?</li> <li>• Which aspects of the course material should I spend more or less time on, based on my current understanding?</li> </ul>	<ul style="list-style-type: none"> <li>• To what extent am I being systematic in my studying of all the material for the exam?</li> <li>• To what extent am I taking advantage of all the learning supports available to me?</li> <li>• Am I struggling with my motivation to study? If so, do I remember why I am taking this course?</li> <li>• Which of my confusions have I clarified? How was I able to get them clarified?</li> <li>• Which confusions remain and how am I going to get them clarified?</li> </ul>	<ul style="list-style-type: none"> <li>• What about my exam preparation worked well that I should remember to do next time?</li> <li>• What did not work so well that I should not do next time or that I should change?</li> <li>• What questions did I not answer correctly? Why? How did my answer compare with the suggested correct answer? What confusions do I have that I still need to clarify?</li> </ul>

These inquiries encourage students to reflect on their learning in ways that will help them develop into lifelong learners. The questions give students a road map for tracking their learning. While we might wish they had created one before enrolling in our programmes, most of us have had experiences indicating that not all have.

**Metacognition and the language skills**

Numerous studies determined how metacognitive knowledge training affects L2 students. In this part, we'll review significant research on the four communication skills: listening, speaking, reading, and writing. Tei provides a theoretical framework for a metacognitive approach to L2 listening teaching, & Stewart O. (1985). They want students to employ these tactics when listening in real-time and to become more conscious of the wide range of listening techniques at their disposal. They advise students to be more aware of their metacognition while organising, executing, and assessing the listening job. The learners' experience, knowledge, and learning management techniques are the main topics of the metacognition framework they provide.

**Speaking**

Cubukcu, (2008). When they were engaged in speaking and listening environments, they looked at students' awareness of vocabulary techniques. They looked at 531 students' knowledge and application of 40 speaking and listening techniques. Utilisation-focused techniques, learning methods with an emphasis on form, comprehension-focused strategies, and communication-focused strategies were the four groups into which the researchers separated acceptable strategies. Despite knowing that tactics from all four categories were helpful, the learners' use of these strategies was more use-focused, according to the results. 32 of the 40 methods were deemed helpful by half of the students; however, only 13 of those tactics were said to be regularly used. The researchers contend that this data shows that the students are not yet self-assured consumers of strategies. This suggests that a language learning curriculum should include metacognitive awareness training.

**Reading**

A recent viewpoint on the benefits of L2 reading and metacognitive awareness is offered by Avargil et al. (2018). He describes a study



done with 76 students in Spain who were given two expository texts to read before participating in a 10-minute interview to discover more about their reading motivation, self-efficacy, emotions, and attitudes. The findings are broken down into three categories: self-knowledge, cognitive task-knowledge, and reading strategy-knowledge. More successful readers are more self-aware. They were much more driven, self-assured, self-sufficient, and interested in English than the less effective readers. Effective readers know how to interpret what they have read, whereas less successful readers read more carefully while concentrating more on grammar and vocabulary. Avargil et al. (2018) offer three suggestions for L2 teachers in light of these results. They educate learners on metacognitive knowledge first. Second, the teachers must

reinforce the student's understanding of the learning activities they are working on. Students also need to be aware of their helpful reading strategies. All four talents were not examined for this study. Comprehension was put to the test.

### Method

An experimental approach was used. The study was conducted in a controlled environment. Participants' performance was evaluated both before and following the session. 50 Rajalakshmi Engineering College students took part. After convenience sampling was utilised, the results were divided into an experimental (n=26) and a control group. (n=24) The intervention was employed in a spoken course. The following metacognitive model was used for the experimental group.

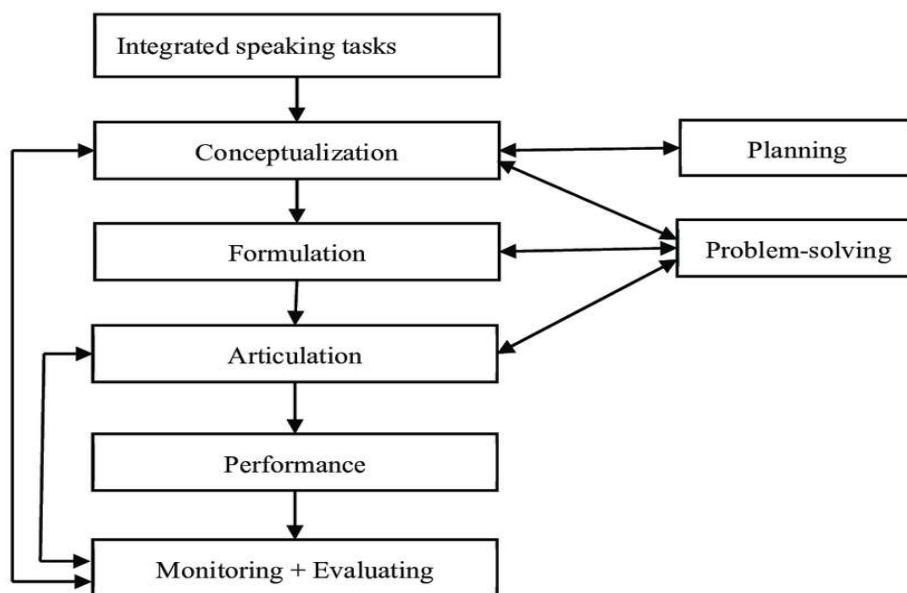


Figure-2

Adapted from Weiwei Zhang

The control group received instruction using a traditional teaching approach, while the experimental group received instruction using the metacognitive teaching paradigm. The following are the stages of the new paradigm. The instructor gets the students ready for the metacognitive session. The teacher piques their interest in learning through their presentation. The teacher encourages the students to express their views. In order to create and distribute

individual learning and collaborative learning, teachers and students worked together. In step two, the conceptualisation phase, the teacher developed concepts for training students' divergent thinking and information-seeking skills. When learning from their teachers, students might seek information from various sources.



The researcher provides web resources and actual objects relating to the task. The instructor scaffolded their education by providing a speaking framework in the third step, formulation. Students learn how information seeking and knowledge creation are related. The teacher assisted them in expressing their ideas in the fourth step, the articulation stage: The instructor encourages students to develop and communicate their ideas. Students are encouraged to discuss, debate, and share their work to learn more about them. The teacher kept an eye on their progress during the fifth stage. The teachers pushed the students to think critically, organise information into categories, and connect old and new knowledge. The instructor encourages original thought, creativity, and the creation of something new. Their suggestions were assessed in the final phase. Students monitor and evaluate their progress toward their goals. Planning and problem-solving were the two steps that made up the entire paradigm.

Like the experimental group, the control group received instruction using a conventional paradigm. The present model comprises three phases: introduction, instruction, and conclusion. This paradigm, which is now prevalent in education, is teacher-centred. This instructional approach disregards students' metacognitive processes and their degrees of mental interest. The exercises did not inspire students to engage in or reflect on creative activity. Most of the time, the teacher gave lessons while the teaching-learning process was going on, which is considered a respectable activity. Students had speech assessments both before and after the intervention. Both sets of lesson plans were distributed to the control group and the

experimental group, respectively. Both groups used the same amount of task time and the same themes.

#### **Validity & reliability of the investigation**

Studies involving educational interventions must include robust experimental research designs, compelling statistical inferences, and precise measurements. In our investigation, various challenges to the research's internal validity were considered to prevent misunderstanding in the inference process. This was accomplished by developing numerical inference, which gave the study a more ecological focus and a strict standard to increase validity and coherence.

We employed a scientific experiment to manage the potential effects of both the trial's maturation of the pupils and the possible impact of specific events that occurred in the students between the pre-and post-treatment. The control group also reduced the effect of familiarity with the pre-and post-treatment measures. The same researchers used the same technique for the intervention to avoid repeatable results. We assessed speaking abilities using IELTS speaking rubrics to ascertain the effects of our intervention. (valid instruments that are sensitive and reliable for our sample population). We made sure that the median ages of both groups were equal. By including the intervention into the curriculum, we could construct it. The same exam for evaluating educational achievement was used to compare outcomes following the intervention.

Consequently, the study was reliable. The collaborative classroom design was used for the comparison group because the study's primary focus is on metacognitive aspects. Figure 2 depicts how the classroom is organised.

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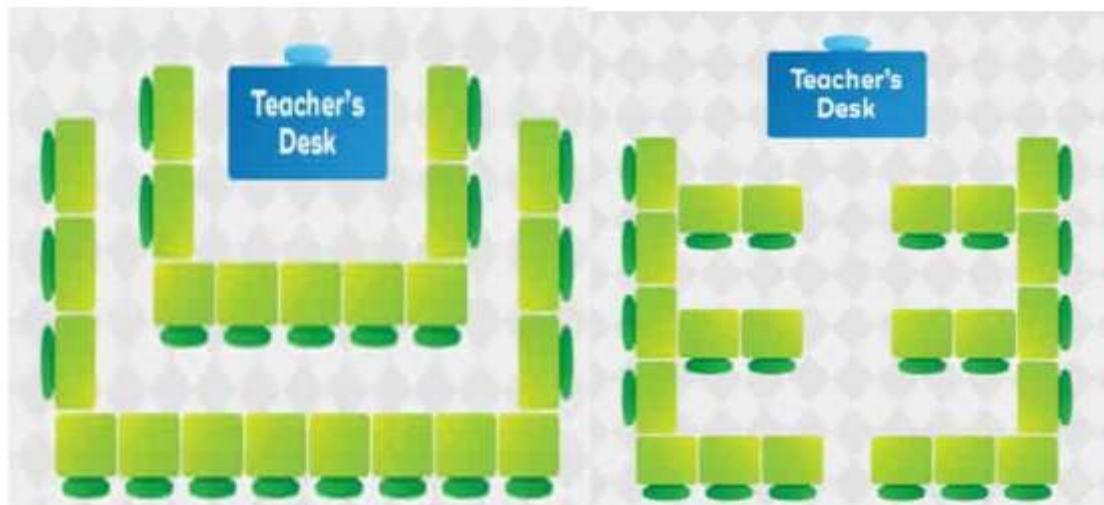


Figure-3

Classroom setting control and experimental groups

**Data Analysis**

The design of this experiment compares two samples. The independent means t-test is widely used to compare data between experimental and control groups. The experimental group received the modification or independent variable, while the control group did not get any treatment. This approach is distinct from the type of repeated assessment since the scores from the two main categories are independent. They are gathered from a number of randomly assigned individuals to either group. The data analysis for this study is consistent with the previous research. There are two types of findings: descriptive findings

and analytical findings. Early research highlights differences in undergraduate students' speaking abilities before and after being taught, utilising metacognitive and conventional teaching methods. How these two teaching methods affected speaking and learning objectives is then determined.

Finally, the outcomes of the two teaching strategies are assessed. The pre-test vs post-test descriptive data for the control and experimental groups are displayed in Table 1. The post-test findings demonstrate an increase over the pre-test results after utilising either instructional methodologies. The experimental group showed a clear improvement.

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Table-1

Descriptive statistics of pre-test and post-test

Dependent Variables	Control Group N=24				Experimental Group N=26			
	Pretest		Posttest		Pretest		Posttest	
	M	SD	M	SD	M	SD	M	SD
Performance in argumentative writing	13.44	2.09	15.69	2.43	13.49	2.97	22.91	2.99

Figure 4 displays the most important comparison between the experimental and control groups. The practical class outperformed the control group, as evidenced by the t-distribution graph.





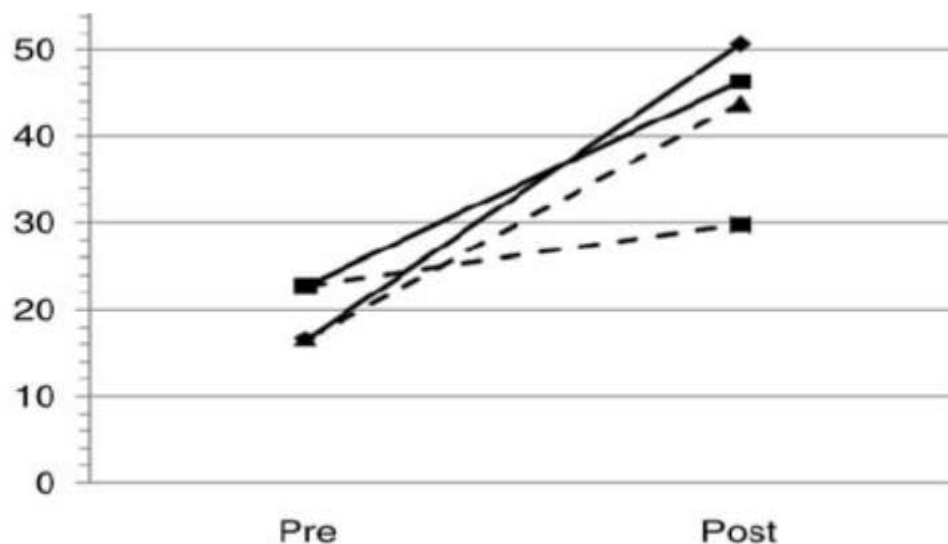


Figure-4  
 comparison of t-distribution

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A two-sample t-test was performed to see if the research group differed considerably from the control group. The following image does not allow the researchers to make

conclusive statements regarding the outcome. Therefore, extra validation calls for the use of inferential statistics. Table 2 displays them.

Table-2  
 Inferential statistics of metacognitive intervention

	Levene's Test for Equality of Variances		t	df	Sig (2-tailed)	Mean Difference	Std.error Difference	95% confidence interval of the difference	
	F	Sig						Lower	Upper
Brainbased and conventional learning	4.219	0.01	-40.861	50	0.12	6.11	.211	1.713	0874

We can conclude from this output that the t-test is significant because the p-value (p.05) is less than 0.05. This has been noted as t. (40.861). The practical learning outcomes in the interventions class, which were the dependent variables, were significantly greater in the intervention group than in the control group. This reasoning suggests that metacognitive learningsubstantially affects students' general performance. This study's conclusions showed that the two teaching strategies had quite different effects on students. In order to

increase learning and creativity in their students, language teachers are advised to use effective teaching strategies. The strategies used by language teachers are growing more significant in recent years. They are improving their teaching strategies and using a particular instructional model to help pupils become better speakers.

Traditionally, language teachers conducted their instruction following this paradigm. In contrast, in the metacognitive approach, language teachers establish a



positive learning environment, which includes producing learning materials, offering assistance, counselling, working together, and foreseeing student requirements. In the metacognitive approach, the students must engage in open inquiry-based learning by exchanging ideas and working together to produce something shareable. They only have to follow the professors' instructions in the traditional way of teaching. Research on sociocultural neurocognitive processes is still in its infancy. Even though metacognitive instruction has been the subject of several studies, metacognition and communication skills have not yet been the subject of any research. More study is being conducted to understand how the brain interprets information. Primarily, neurocognitive psychologists are involved in this effort. However, educators are still confused about how to apply their neuroscience knowledge in the classroom.

In India, this field of metacognitive research is only getting started. The creation of teaching models that incorporate cognitive concepts has been undertaken by certain educational researchers, including Pansky et al. The results showed that experimental group students outperformed control group students in speaking skills learned using metacognitive learning techniques. It is determined that the recently developed model, based on the theoretical underpinnings of cognitive theories, may enhance the expressive abilities of Tertiary level students. The benefits of BBL methodologies are recognised as a crucial teaching paradigm and a potent academic strategy. This teaching paradigm needs to be developed, among other things, and more research is required.

### ***Practical implications of metacognitive learning***

The metacognitive method was used in this study to create the hypotheses relating to the variables. The results are consistent with both ideas, according to the data analysis. Therefore, speaking can be included in these psychological theories. The utility of the

proposed pedagogy in education, particularly in writing, is predicated on several presumptions. However, the literature-based research studies on this hypothesis are not conclusive. For definitive evidence, more study in this area is therefore necessary.

### **Future directions**

Research on L2 learning and metacognition has a bright future. In order to further our understanding and advance our efforts to better L2 teaching and learning, two specific study areas will be investigated. The first is, improving the links between learner beliefs and metacognitive knowledge.

The results of studies on metacognition show that less proficient learners are typically not conscious of their metacognition. A metacognitive awareness training component should be consistently and successfully incorporated into regular classroom instruction to see if this can raise the less skilled learner's awareness of their learning process. These ought to involve postponed research to check on the longevity of the early advantages of such training. Let's focus on what the instructor in the classroom can do to help L2 students build a stronger sense of their metacognitive awareness. After completing assignments and assessments in class, teachers can first have students complete a structured self-assessment exercise. Using the metacognitive approach, the teachers can also assist students in becoming more conscious of their strengths and limitations in self-assessment through these self-assessment activities. A metacognitive journal is another pedagogical tool instructors can use to encourage pupils to become more self-aware of their learning. One effective strategy for encouraging students to reflect on their ideas. The kind of prompts offered to the students react to will determine how helpful the journal is as a metacognitive tool. Talking directly about the cognitive abilities that students are using to complete learning tasks is essential for the effective implementation of classroom training for metacognitive awareness. Teachers must consistently stress



the value of maintaining metacognitive awareness while students are learning.

### Conclusion

If we want metacognitively aware learners, we must have metacognitively knowledgeable teachers. When learners reflect upon their learning, they become better prepared to make conscious decisions about what they can do to improve themselves as language users. Strong metacognitive skills empower learners. The empowerment results in improved learning and will transfer to other aspects of the student's life. As convenience sampling was adopted in our study, the participants had similar backgrounds. Limitations caused by such sample homogeneity may restrict the general-ability of our research findings to other populations. This suggests that diverse sampling is preferred in future studies of relevance for better generalisability. In addition, although individual attributes were found to work as a mediator between learners' perceptions of task difficulty and their use of metacognitive strategies, we did not conduct an in-depth investigation into this variable due to resource constraints.

Given the salience of individual attributes in the research domains of metacognitive strategies, this study further affirms the role of metacognitive instruction. Therefore, further research into this construct is warranted. As convenience sampling was adopted in our study, the participants had similar backgrounds.

Limitations caused by such sample homogeneity may restrict the generalisability of our research findings to other populations. This finding suggests that diverse sampling is preferred in future studies of relevance for better generalisability. In addition, although individual attributes were found to work as a mediator between learners' perceptions of task difficulty and their use of metacognitive strategies, we did not investigate this variable in-depth. Therefore, it is unknown what the individual

attributes were qualitative, how they were impacted by task difficulty and how they affected the metacognitive strategy used quantitatively in integrated speaking assessment tasks.

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