



Improving Learning through a Metacognitive Intervention for Tertiary Thai EFL Learners: Evidence from a Cluster Randomised Controlled Trial

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Abstract

To promote thinking skills which has been highly valued in higher education's policy and practice globally, the notion of metacognitive development has been widely adapted in various disciplines including English language education. A myriad of studies has reported positive effects of promoting metacognition on improving learning outcomes and developing self-regulated learners. However, the evidence of such effectiveness in tertiary English as a Foreign Language (EFL) settings is still equivocal because such evidence is mostly drawn from studies with trivially small sample size or lacking comparators. To provide a clearer evidence, a cluster randomised controlled trial (RCT) was conducted to implement a model of metacognitive intervention to tertiary EFL learners in the southernmost areas of Thailand. More than 400 EFL students took part as either intervention or control participants. The intervention which supports reflective and strategic thinking spanned over a semester and multiple data collection methods were used for both impact and process evaluations. The results reveal the intervention group has clearly higher improvement in English language outcomes than their non-intervention peers with effect sizes of 0.68 in listening and 0.77 in overall English score. The results provide a secure evidence of the effectiveness of metacognitive promotion for improving second language learning. The key advantages and some challenges of the intervention and implications for further research and practices are discussed.

Keywords: *metacognition and self-regulation, English as a foreign language, evidence-based education, impact evaluation.*

1. Backgrounds

The notion of metacognitive and self-regulatory development has been widely applied in various educational contexts, including English language education. The term metacognition, which is commonly known as 'thinking about thinking' is multifaceted and has been given multiple interpretations [1]. However, the fundamental components emphasised in most definitions are the knowledge and regulation of one's cognitive activities in learning processes [2]. Flavell [3], who is often credited as a scholar who coined the term, defined it as "one's own knowledge concerning one's own cognitive processes and products or anything related to them" (p.232). In educational terms, it is students' awareness of their strengths and weaknesses as learners and their ability to use such awareness strategically for directing their learning [4]. The processes through which learners employ their self-awareness to monitor and direct their learning to achieve learning goals are also called self-regulation [5].

The concept also applies to language learning because language learners have different beliefs about the strategies to learn and are capable of reflecting on their learning behaviours [6]. Understanding language acquisition requires reference not only to the language but also cognition insights because cognitive processes are involved in comprehension, production and strategy application [7]. Metacognitive awareness could guide language learners to figure out the relevant knowledge and skills when they face difficulties and metacognitive strategies could facilitate their attempts to problem-solve or accomplish a learning task [8]. Metacognitive strategies in interactions with affective and social strategies are the indirect strategies for language learning [9].

To support the participants in this study, the Plan, Monitor, Retrieve (PMER) model was developed for metacognitive and self-regulatory promotion in second language listening (Figure 1). The PMER model is informed by the self-regulatory principles proposed by both cognitive development and language acquisition scholars. The first three processes in the model are the most common metacognitive strategies. The strategies for each process are largely influenced by Zimmerman's model [5] but have been adapted to cater for second language listening. The strategies



are expressed in mnemonic manner to aid memory. The model also includes pedagogical sequence, in line with Vandergrift and Goh [10] to resonate with classroom practices. The role of retrieval practice is the key distinctive feature of the model. Moreover, the model realises the important role of metacognitive awareness as a fundamental element in each metacognitive process [11].

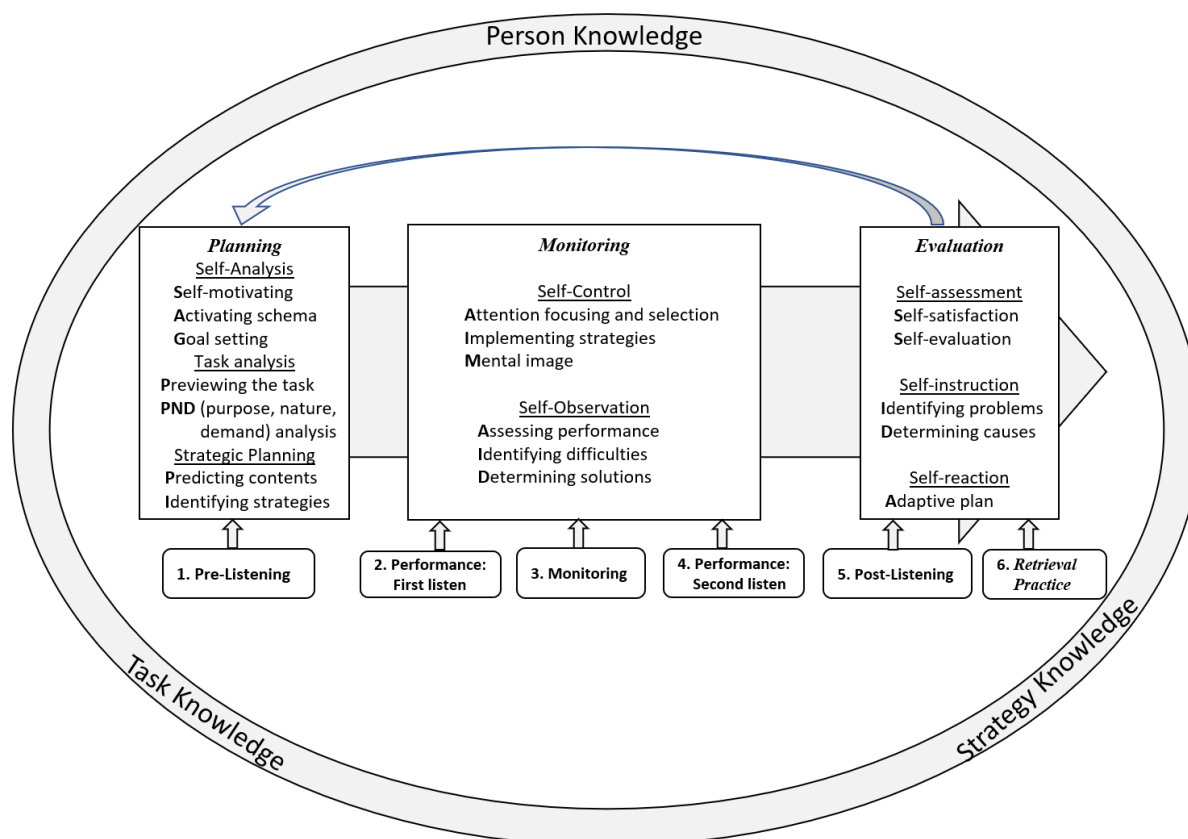


Figure 1. The PMER model for metacognitive instruction in second language listening

2. Research questions

This study addressed the following research questions:

- To what extent does metacognitive instruction have an impact on the listening and overall English achievement of English learners in southern Thai universities?
- To what extent does metacognitive instruction have an impact on metacognitive awareness for listening of English learners in southern Thai universities?
- In what manner is the impact of metacognitive instruction associated with differences in biographical variables such as gender, first language background, socio-economic backgrounds and pre-existing proficiency levels?
- What are the teachers and students' perceptions of metacognitive instruction?

Due to limited space, only the key findings for the first and the last questions are presented here.

3. Design and methods

A randomised control trial (RCT) was the design of the study. It is one of the strongest research designs for establishing a causal link between an intervention and any effect [12]. For this study, twelve sets of students from a university in the southernmost areas of Thailand were recruited. In total, six clusters with 216 students were in the intervention group and six clusters with 258 students were in the control group. Most of the participants have pre-intermediate and intermediate proficiency levels. Random allocation took place at cluster level, which can minimise contamination caused by the possible spillover between the two groups [13]. However, individuals within the same cluster can have similar characteristics which may bemuse the assessment of impact.



The intervention, based on the PMER model, was implemented by the teachers responsible for the classes in five sessions over the first semester of academic year 2020 while the researcher joined as a teacher in one cluster to allow comparison of the results. At the end of each session, there was a retrieval practice to promote recall and consolidation of what students have learnt. Additionally, two independent practices were provided for each session. They were available online for students to learn at their own time outside the classroom.

Measurement of the primary outcome was based on tests adapted from the University English Test which students have to take. A questionnaire based on the Metacognitive Awareness Listening Questionnaire (MALQ) by Vandergrift et al. [14] was used to assess metacognitive awareness which is the secondary outcome. Moreover, the open-ended responses in the questionnaire, classroom observations and semi-structured interviews formed the process evaluation to assess how well the intervention went.

4. Key findings

At the end of the trial, there was a small percentage of dropouts. The complete results from 197 intervention students and 249 control students were used in the following analyses. The impact of the intervention is presented in effect sizes calculated by the difference between mean scores for each group divided by their overall standard deviation. As a guideline, Cohen [15] suggested the effect size of 0.2 can represent a small effect, 0.5 a medium effect and 0.8 a large effect. The effect size below 0.2 can be regarded as trivial and barely shows sign of impact.

4.1 Impact evaluation

The overall English scores at the outset, which reflect the pre-existing English proficiency of the participants, appear quite similar (Table 1). The effect size of this difference is +0.09, favouring the intervention group. At the end, the intervention group has clearly made more progress than the control group.

Groups	Pre-test mean	SD	Post-test mean	Post-test SD
Intervention	16.8	6.5	22.0	7.3
Control	16.2	6.9	15.2	8.4
Overall	16.4	6.7	18.2	8.6

Table 1. Students' overall English test scores, pre and post-intervention

Similarly, for the listening section results, Table 2 suggests the intervention group was already slightly ahead at the outset (effect size of +0.13). After the intervention, the intervention group has clearly made more progress than the control group.

Groups	Pre-test mean	SD	Post-test mean	Post-test SD
Intervention	10.2	4.5	12.6	4.7
Control	9.6	4.6	8.3	5.0
Overall	9.8	4.6	10.2	5.3

Table 2. Students' English listening test scores, pre and post-intervention

All of these initial differences are part of the justification for using gain scores for the key findings, which look at progress rather than absolute attainment.

The effect sizes in Tables 3 suggest that the intervention group clearly made more progress than the control group. This is true both for the overall English score and the listening section. The effect sizes of +0.77 and +0.68 are far larger than those found at the outset. Moreover, because the intervention group which was already ahead made the larger gains, the result cannot be due to regression towards the mean. The confidence intervals (CI) are also far above zero. Therefore, the metacognitive instruction for the Thai EFL learners in the study was effective.



Groups	Gain score, overall	SD	Effect size	Gain score, listening	SD	Effect size
Intervention	5.2	7.1	+0.77 (CI: 0.57,0.96)	2.4	4.7	+0.68 (CI:0.48,0.87)
Control	-1.0	8.8		-1.2	5.8	

Table 3. Effect sizes for overall English and listening gain scores

4.2 Process evaluation

Most students were positive about the intervention. They reported that it guided them with useful strategies for learning. The strategies usually mentioned were planning, directed attention and problem-solving, which helped them to have less panic when dealing with tasks. Some students think that it helped increase their understanding from listening, analyse the tasks and tackle the tests better. The teachers who delivered the intervention found the intervention a good approach for teaching. Planning and task analysis are the most obvious beneficial skills which both teachers agreed on. From teachers' perspectives, the intervention strategies help students feel more ready, and encourage attention during the listening and can be applicable to reading skills and could be used in other English courses.

However, some drawbacks in the intervention were reported. The two most mentioned flaws expressed by both teachers and students were its time-consuming nature and the use of unfamiliar terms in the intervention guidebook. In the classroom, some students appeared less confident to complete the metacognitive task at first, perhaps because of the unfamiliar concepts and terms. Pair and small group discussions later on in the session helped them proceed with the task better. Both teachers agreed that the intervention had excessive details, similar to the students' view. It took time to follow the guidelines fully while time is limited (partly due to the reduced teaching time caused by the COVID-19 outbreak).

5. Implications for policy and practice

The findings suggest that the metacognitive intervention can lead to improved outcomes of the intervention students compared to the control peers. Therefore, it is reasonable to say that metacognition and self-regulatory promotion shows promise as an appropriate approach for tertiary EFL learners, especially for the less-proficient learners with pre-intermediate and intermediate levels.

The application of metacognitive and self-regulatory approach to teaching is not yet common practice in Thai EFL contexts. One of the main barriers seems to be the complexity associated with the concept of metacognition, as expressed the trial teachers. Indeed, it is not the ultimate aim for teachers to teach complex concepts or terms to the students. What should be emphasised is the strategies and positive dispositions such as reflective and strategic thinking and self-efficacy which play a significant role in improving learning [16] and can also be transferred across contexts [17].

At a policy level, there are multiple reasons to advocate this approach in higher education policy. From the evidence of this study and other sources [e.g. 18], the metacognitive approach is a high-potential methodology for improving English learning capacity. It is also economical to implement. Teacher training is required to equip teachers with better understanding and applicable techniques for instruction.

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