



Metastrategies Employed by Science and Engineering EFL Learners in a Speaking Task

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Self-regulated students who control their own learning performance can learn more successfully than those who lack self-regulatory capabilities, and they are more likely to be successful when compared to non-self-regulated learners. Self-regulated learning includes constructs such as background knowledge, strategies and metastrategies. Metastrategy has been defined as an “executive function” which controls cognitive, affective, social and motivational dimensions through coordinating, planning, organizing, implementing, monitoring, evaluating, and orchestrating strategy use. Speaking English has become essential for students who study English as a foreign language (EFL). Currently, the unsatisfactory communicative performance of Thai students has led educators to find methods of improving their listening and speaking skills. Therefore, this study investigates metastrategies and corresponding metastrategy sets employed by Thai EFL students in a speaking task using a state-of-the-art strategic self-regulation model of L2 learning (S²R model). The results show that the EFL learners employed metastrategies and metastrategy sets in the forethought, performance, and self-reflection phases of the speaking task. The EFL students mostly used sets of metacognitive strategies, followed by meta-affective strategies, metamotivational strategies then metasocial strategies. Based on the findings and the literature review, a proposed metastrategy speaking model for EFL students was created.

Keywords: EFL, speaking, self-regulation, metastrategy, science and engineering, S²R model

Introduction

Knowledge of the English language has become increasingly important due to globalization. In other words, using English effectively and efficiently in non-English speaking countries is required in fields such as education, business, medicine, fashion design, and manufacturing. This is particularly true in Thailand and other Asian countries where college students are required to achieve good English standardized test scores to apply for jobs. Furthermore, Thai companies and organizations need to recruit staff with good English skills to attract foreign capital and develop the economy. It is undeniable that teaching English as a foreign language has become a priority for educational institutes. However, the quality of Thai students' English listening and speaking skills, measured by schools and universities, remains unsatisfactory. Many Thais, including science and engineering students, are unable to communicate well because their English ability is limited. The 2016 EF English Proficiency Index rates English proficiency in Thailand as very poor. Among the 20 countries in Asia that were reported, Thailand was ranked 15th (Education First, 2017). Many students lack the ability to implement strategies

that could facilitate their learning. The use of a strategy for language learning is a method, which enables students to improve their learning activities (Abedini, Rahimi & Zare-ee, 2011). A lack of good English language skills can cause a communication breakdown or miscommunication, resulting in lost revenue for companies and interpersonal relationship conflicts. This has been demonstrated in Japan, where Japanese EFL students have few opportunities to practice their English and independent study is essential to improve language learning performance (Kobayashi, 2016). This could be due to a lack of metacognitive self-regulated learning strategies employed by learners, particularly, science and engineering undergraduate students. The use of metacognitive strategies, which include planning, monitoring and evaluation, has resulted in learners becoming more aware of the learning process, leading to more successful learning (Mahadi & Subramaniam, 2013). In addition, students who were reported to have a greater awareness of planning, monitoring, and regulating strategies showed an improvement in their grade performances (Lawanto & Santoso, 2013).

The concept of self-regulation is considered to be especially important for EFL learners who need to improve their language skills. Self-regulated learning has grown in interest among academics and psychologists as research has indicated that it has positive effects on learners' academic achievement. Self-regulation is essential to the learning process (Zimmerman, 2008). It can help students create better learning habits and strengthen their study skills (Wolters, 2011). Unfortunately, however, the learning behavior of many students rarely conforms to the normative ideal of self-regulated learning as it is typically depicted in current theoretical models (Oxford, 2017; Zimmerman, 1999). Multi-method or qualitative inquiries will generate highly contextualized understanding about learners' strategy use in specific contexts on particular learning tasks and help language teachers to offer better assistance to learners in other similar situations and learning tasks (Gao, 2004).

In 2011, Oxford proposed a self-regulated S²R model. Since then, the model has been further developed to become more dynamic and responsive to the changing needs of learners with various purposes in different sociocultural contexts. The concept of metastrategies is an important part of self-regulation, which reflects the multidimensional reality of L2 learners. To elaborate, metastrategies provide a synopsis of how L2 learners manage to accomplish a task by creating and implementing plans, managing resources and the environment, as well as controlling their performance until the task is completed in terms of cognitive, affective, social, and motivational dimensions.

It is interesting to find out how science and engineering students use metastrategies because it will enable better understanding of how these students plan, make decisions about the use of strategies, and control themselves while they are learning a second language. In terms of filling a research gap, metastrategies employed by L2 science and engineering students have hardly been studied. Consequently, this study uses a recent S²R model to investigate the metastrategies and metastrategy sets that EFL students employ in each phase of a speaking task. Moreover, the ways the EFL students employed each set of metastrategies and the weaknesses of Thai EFL students were studied. Although similar studies relating to this research have been conducted, research into the EFL metastrategies used by science and engineering students at the tertiary level within a Thai context has not yet been studied. The findings reveal valuable information about the metastrategies that the students used and how they used them in each phase of the task. This study was designed to address the following research questions:

RQ1: What metastrategies and metastrategy sets did the EFL learners employ for the speaking task in each phase of the task?

RQ2: How did the EFL learners employ metastrategies for the speaking task?

Literature Review

Self-regulation

Self-regulation has become an important consideration in language learning (Cohen & Macaro, 2007). Self-regulation refers to the degree to which individuals become metacognitive, motivationally, and behaviorally active participants in their own learning processes (Zimmerman, 1998). Self-regulation in the academic context entails a “multidimensional construct, including cognitive, meta-cognitive, motivational, behavioral, and environmental processes that learners can apply to enhance academic achievement” (Dörnyei, 2005, p. 191). To attain academic goals, students must learn methods that are appropriate for a particular task within a specific context (Zimmerman, 2000). Self-regulation in language learning can refer to the processes the learners use to exercise control over learning (Rose, 2012). Students who are able to regulate their own learning can perform and learn better than their peers who lack self-regulatory capabilities (Pintrich & Zusho, 2002) and they are more likely to be successful in school and become lifelong learners compared to non-self-regulated learners (Zimmerman, 1990). More successful L2 learners tend to use strategies that are relevant to specific tasks, while less successful L2 learners tend to use strategies in an impulsive, almost desperate fashion, without regard to how well these strategies suit the demands of a given task (Oxford et al., 2004; Reiss, 1981). Kobayashi (2016) reported that developing metacognitive knowledge and self-regulatory oral communication improved oral communication scores.

Self-regulated learning strategies are “domain-appropriate” actions “purposefully” used in “an active, constructive process whereby learners set goals for their learning and attempt to monitor, regulate and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features of the environment” (Pintrich, 2000, p. 453). Self-regulated learning strategies have been divided into cognitive and metacognitive aspects (Mofrad & Pourghaz, 2015). In 2011, Oxford proposed the S²R model and in 2017 this model was modified. The recent model is a systematic model that encompasses taxonomies and provides a perspective of metacognitive, meta-affective, metasocial, and metamotivational strategies to assist researchers in analyzing the strategies and metastrategies deployed by EFL students to achieve language tasks.

Several research studies have shown a significant association between self-regulated learning strategies and learning performance. Research suggests that students’ academic achievement is indeed related to self-regulated learning strategies (Fuchs et al., 2003; Glaser & Brunstein, 2007; Patrick et al., 2007). Therefore, self-regulated learning (SRL) and metastrategies can help learners to manage the learning process and solve problems.

Metastrategies

The concept of metacognition was first proposed by Flavell (1976). It was defined as “one’s knowledge concerning one’s own cognitive processes and products or anything related to them (Flavell, 1976, p. 232).” In his later research, Flavell (1979) redefined metacognition as individuals’ information and awareness of their own cognition. Although there are numerous definitions of metacognition in literature, all the definitions share a common core, which refers to an individuals’ awareness and management of their learning processes. Metacognitive strategies have been defined as expressions that indicate an executive function, strategies which involve planning for learning, thinking about the learning process as it is taking place, observing of one’s production or comprehension, correcting one’s own mistakes, and evaluating learning after an activity is completed. Based on a classification, metacognitive strategies involve 1) selective attention, 2) planning, 3) monitoring and 4) evaluation (O’Malley & Chamot, 1990). Metacognitive strategies refer to learners’ regulation and management of their learning, which encompasses a wide range of activities: selecting the most useful strategies for a task; planning, monitoring, regulation, and evaluation of learning (Schraw et al., 2006). Skilled listeners used about twice

as many metacognitive strategies as their less-skilled counterparts, particularly in comprehension monitoring (Vandergrift & Baker, 2015).

Not until 2011 did Oxford use the term “metastrategies” in place of “metacognitive strategies”. To explain the concept, she used an orchestra as a metaphor for metastrategies where the conductor is compared to the role of the “executive function”. In Oxford’s view, the term “metacognitive” was confusing because it applied to the control of strategies in all domains not just the control of cognitive strategies. Therefore, she created the term “metastrategies” to describe three other key dimensions: motivational, social and affective, further coining the terms “metamotivational,” “metasocial,” and “meta-affective.” Recently, she has added another meta-motivational dimension, which is closely tied to the affective domain as a key aspect of learning strategies in her model. (Oxford, 2017).

The S²R model consists of eight metastrategy sets: 1) paying attention, 2) planning, 3) obtaining and using resources, 4) organizing, 5) implementing plans, 6) orchestrating strategy use, 7) monitoring and 8) evaluating. In the model, metastrategies act as the overarching guide to govern four other key dimensions: cognitive (so-called metacognitive strategies), affective/emotional (so-called meta-affective strategies), sociocultural interactive (so-called metasocial strategies) and motivational (so-called metamotivational strategies). Metastrategies guide the use of cognitive, affective, social, and motivational strategies. Metastrategies are important in the sense that the concept helps learners control, manage, and make decisions about the use of the strategies. All the metastrategies help guide the planning, implementing, monitoring, and evaluation of cognitive, motivation regulating, affective, and sociocultural interactive strategies, respectively (Oxford, 2017).

Task Phases

Based on the social cognitive perspective, Zimmerman (2008) derived the process involved in self-regulation. In this cyclical process, he divided the task into three phases: 1) forethought, 2) performance and 3) self-reflection. Similarly, Oxford (2017) divided the task into the same three phases. However, Oxford suggests the tasks start with the forethought phase, which seems most logical, whereas Zimmerman’s ordering can start elsewhere. Hence, this study considers three task phases, which fit well with the nature of a speaking task. In the forethought phase, learners pay attention to the requirements of the task, set goals, plan how to address them, and activate prior knowledge. In the performance phase, learners (a) implement the plan, (b) monitor how well the plan is working, and (c) decide whether to continue the task as it is going, stop entirely, or make changes in the approach to the task. In the self-reflection phase, the learners make judgments about the outcomes.

Self-regulated Learning in Speaking Tasks

Oral communication has turned into one of the most important skills next to reading and writing in second/foreign language learning. In the context of second/foreign language learning, previous studies mainly investigated L2 learners’ communication strategies. For example, how they overcame target language deficiencies to solve communication problems and eventually developed strategic language competence to achieve communicative goals (Hua, Nor, & Jaradat, 2012). Research work on self-regulated learning in enhancing spoken communication has been limited (Mahjoob, 2015). However, an exceptionally detailed Oral Communication Strategy Inventory (OCSI), which focused on strategies used during oral communication was developed by Nakatani (2006). In relation to self-regulated learning strategies, some research has been conducted on the relationship between self-regulation and other English language skills, particularly reading and writing. Mahjoob (2015) found that there was a positive correlation between self-regulation and speaking proficiency. Furthermore, another previous study conducted by Ekhlis & Shangarffam (2013) on the relationship between determinant factors of self-regulation and main language skills revealed that speaking skill was positively correlated with self-evaluation and seeking assistance. Hence, this study investigates metastrategies and metastrategy sets

manifested by EFL students when performing a speaking task.

Methods

Participants

This study examined EFL undergraduate students majoring in science and engineering who took General English (LNG101). The participants consisted of 16 students: four males and twelve females.

Speaking Task

The 16 science and engineering students were assigned a speaking task consisting of a self-introduction and then they were interviewed about their lives. To elaborate, they were required to speak about several aspects of their lives: family, personality, interests, hobbies, food, and travel. This speaking task required two-way communication. When they had finished speaking, the teacher asked a few questions to assess their communication and problem-solving skills.

Instruments

The students were asked to write logs and then they were interviewed about their work process. The logs provided information on how they planned, performed, and completed the task. To derive more useful data, interviews were conducted to gather information pertaining to the ways the students employed metastrategies while they were learning English.

Procedure

After finishing the task, the students were asked to write logs and then they were interviewed to find out how they used metastrategies to accomplish the assigned speaking task. The interviews, lasting about 30 to 45 minutes for each student, were semi-structured and conducted using the one-on-one, face-to-face approach. After the interviews, the collected data were transcribed. The analyzed data were derived from two sources: the students' logs and interviews. Both sources of data were supplemented and cross-checked against each other to obtain more accurate information. However, using more than one source of data causes data duplication because the students may report the same activities using different words, or different writing styles. Therefore, duplicate data obtained from the students were removed. Next, the data were coded based on the S²R metastrategy sets. To ascertain the raters' consistency in coding the S²R metastrategy sets, the Kappa Measure of Agreement was run. Table 1 shows that the Kappa Measure of Agreement value was 0.911 ($p < 0.05$), which according to Peat (2001), represents a good agreement and thus a good estimate of inter-rater consistency. Subsequently, metastrategies which had the same meaning were grouped together. From the grouping, it was possible to obtain the representative metastrategies and the corresponding metastrategy sets that the science and engineering EFL learners employed. After that, the data were further analyzed based on the three task phases. Then, how the students employed metastrategies was investigated and summarized. Finally, the findings were used to propose a model illustrating metastrategies manifested by Thai EFL students in three task phases to complete a speaking task.

TABLE 1
Kappa Measure of Raters' Consistency in Coding Metastrategies Based on S²R Sets

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Measure of Kappa agreement	.911	.043	15.428	.000
N of valid cases	54			

Remark: a. Not assuming the null hypothesis
 b. Using the asymptotic standard error assuming the null hypothesis

Results

The results are divided into 2 parts: 1) Metastrategies and the S²R metastrategy sets employed in each phase of the task, and 2) how EFL learners employed metastrategies for the speaking task.

S²R Metastrategy Sets and Metastrategies Employed in Each Phase of the Task

Table 2 shows the S²R model metastrategy sets, which were employed by EFL students to complete the speaking task across the following four domains: 1) cognitive, 2) affective, 3) social and 4) motivational.

TABLE 2
Metastrategy Sets Employed by EFL Students

Metastrategy sets	Cognitive	Affective	Social	Motivational
1. Paying attention	*	*		
2. Planning	*		*	
3. Obtaining and using resources	*			
4. Organizing	*	*		
5. Implementing plans	*	*		
6. Orchestrating strategy use	*			
7. Monitoring	*	*		*
8. Evaluating	*	*		*

Among the four dimensions, it was found that the students employed all eight metacognitive strategy sets to accomplish the speaking task. They used five meta-affective strategy sets to regulate their emotions, particularly, anxiety before and during the speaking task. Two metamotivational strategy sets were employed: monitoring and evaluating. Only one metasocial strategy set was employed. It is remarkable that the EFL learners mainly used cognitive and affective metastrategies from two dimensions to accomplish the assigned task.

Figure 1 shows the percentage of metastrategy sets employed by the EFL students in each phase of the speaking task.

Percentage of EFLs Employed Metastrategy Sets in Each Task Phase

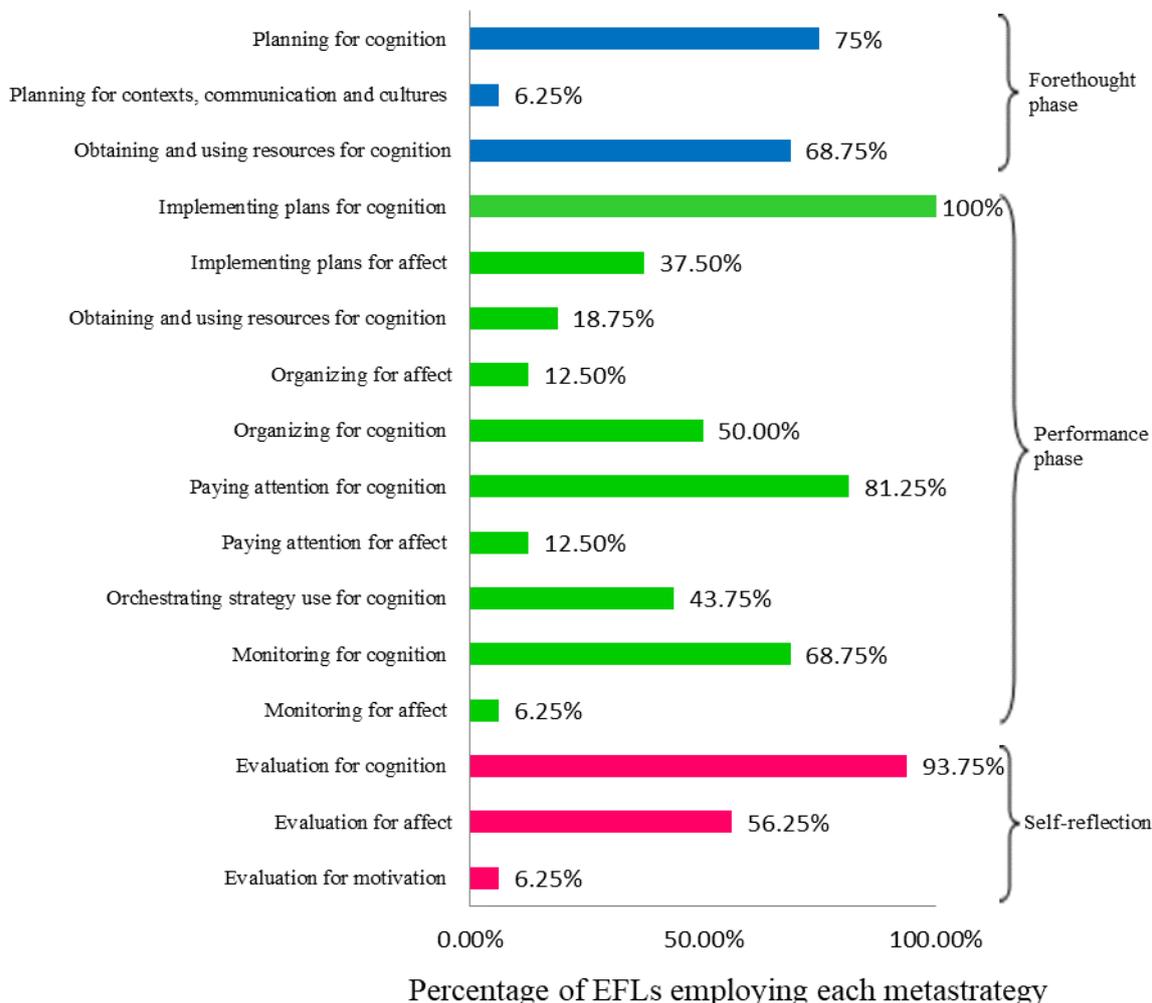


Figure 1. Metastrategy sets employed by EFL students in the task phases.

As shown in the findings, among 16 metastrategy sets employed by science and engineering students, three metastrategy sets were used in the forethought phase, ten metastrategy sets in the performance phase and another three metastrategy sets in the self-reflection phase. Eight metastrategy sets, consisting of seven metastrategy sets for cognition and only one metastrategy for the affective were employed by around 50% of the students. Motivational and social metastrategy sets were rarely used by the EFL students. They employed paying attention and monitoring metastrategies only in the performance phase, not any other phase. Accordingly, it is suggested that students be encouraged to pay attention to and monitor the other phases as well. Furthermore, evaluation metastrategies were only employed in the self-reflection phase. To create more understanding, Table 3 shows the details of the metastrategies and the S²R metastrategy sets employed in each phase of the task.

TABLE 3
Metastrategies and S²R Sets Employed by EFL Students in Each Phase of the Task

Task phase	First level metastrategy set	Second level metastrategy set	Metastrategies manifested in the speaking task
Forethought	Planning	Planning for cognition	1) Choose the topic to be included in the speech. 2) Plan and determine the scope of the speech to fit within the time frame. 3) Outline the content of the speech in Thai first. 4) Prepare the script in an appropriate time frame. 5) Plan the order of sentences. 6) Plan the time to execute the task (each subtask).
		Planning for context, communication and culture (social)	1) Plan to watch foreign English films with captions.
Forethought	Obtaining and using resources	Obtaining and using resources for cognition	<u>Technological resources</u> 1) Search for information related to the speech on the internet. 2) Find vocabulary, sentences, expressions, and check grammar on websites. 3) Watch self-introduction videos on YouTube. 4) Use Google Search to look up words and sentences and then include them in the speech. 5) Listen to English clips to practice pronunciation. 6) Use Google Translate to help translate the content into English. 7) Use online dictionaries to look up words and the definitions of words. 8) Use technology aids such as Text to speech, Google Translate and other English websites to learn how to pronounce words accurately.
			<u>Print resources</u> 9) Study textbooks to find interesting topics and relevant sentences that could be adapted to the speaking task. 10) Study vocabulary, expressions and grammar such as tenses from textbooks and include them in the speech.
Performance	Paying attention	Paying attention to cognition	1) Focus on pronunciation, stress, accent, and intonation. 2) Focus on keywords to grasp the meaning. 3) Focus only on the content of the script. 4) Pay attention to grammar.
		Paying attention to affective	1) Focus attention on anxiety. 2) Consider facial expressions and feelings to match with the speech.
Performance	Obtaining and using resources	Obtaining and using resources for cognition	<u>Technological resources</u> 1) Search for information related to the speech on the internet. 2) Find vocabulary, sentences, expressions, and check grammar on websites. 3) Use technology aids such as Text to speech, Google Translate and other English websites to pronounce words accurately. (also employed in the forethought phase)
			<u>Print resources</u> 4) Study textbooks to find interesting topics and relevant sentences that could be adapted to the speaking task. (also employed in the forethought phase)
Task phase	First level metastrategy set	Second level metastrategy set	Metastrategies manifested in a speaking task

Performance	Organizing	Organizing for cognition	1) Arrange a time to rehearse the script in a suitable tranquil environment. 2) Organize the script of the talk on a smartphone to practice with. 3) Close to the test date, write down the script on a piece of paper. 4) Utilize printed images as guidelines for the speech. 5) Use PowerPoint to present images and a story to guide the speech.			
		Organizing for affective	1) Create a relaxing environment by listening to music prior to the task. 2) Organize a friendly atmosphere to converse with the interlocutor to reduce anxiety.			
	Implementing plans	Implementing for cognition	1) Write the script in Thai language first and then translate it into English. 2) Write the script in English. 3) Think of English sentences that correspond to Thai sentences. 4) Rehearse the speech. 5) Practice the script prior to the test time.			
		Implementing for affective	1) Practice meditation before going for the test.			
	Orchestrating strategy use	Orchestrating cognitive strategy use	1) Try to speak fluently and be grammatically correct. 2) Try to speak fluently regardless of grammar accuracy but emphasize vocabulary to communicate comprehensibly. 3) Try to speak naturally and comprehensibly, not focus on pronunciation and grammar. 4) Attempt to speak clearly and accurately while focusing on pronunciation. 5) Attempt to understand what the speaker says and be able to respond correctly regardless of grammar and accent. 6) Stress on accent and pronunciation regardless of grammar. 7) Attempt to think in Thai language first and then translate into English when unable to think in English.			
			Monitoring for cognition	1) Check if the script is correct, in terms of grammar, spelling, and the organization of the story. 2) Consider whether the content of the speech is coherent then edit some sentences. 3) Consider whether formal or informal sentences are appropriate for the speech. 4) Check the accuracy of the results using tools such as Google Translate. 5) Monitor ability to follow the script.		
				Monitoring for affective	6) Monitor what was said in the presentation as to whether the prepared script was followed. 7) Monitor where words were mispronounced. 8) Predict what will be asked during the test. 9) Monitor mistakes made while speaking.	
					Monitoring for motivation	1) Judge self-confidence during the rehearsal. 2) Monitor anxiety and attempt to control it.
						1) Monitor self-motivation and try to do the best to obtain good marks.
				Self-reflection	Monitoring	1) Evaluate the pronunciation of words.
1) Evaluate the pronunciation of words.						
Task phase	First level metastrategy set	Second level metastrategy set	Metastrategies manifested in the speaking task			
Self-reflection	Evaluating	Evaluating for	1) Evaluate the pronunciation of words.			

		cognition	2) Compare the rehearsal performance with the actual performance. 3) Assess the overall performance. 4) Evaluate responses made to the interview questions. 5) Evaluate the content of the speech. 6) Compare actual performance with other students' performance. 7) Assess the development of confidence while speaking English. 8) Evaluate pronunciation by comparing to a Text-to-Speech program and soundtrack. 9) Appraise performance in relation to goals set. 10) Evaluate fluency when speaking English. 11) Appraise listening skill by evaluating how well the questions asked were understood. 12) Assess how accurately the prepared script was followed.
		Evaluating for affective	1) Feel satisfied or dissatisfied with the actual performance. 2) Believe anxiety was the real hurdle to performing the speaking task well. 3) Evaluate confidence when performing the speaking task.
		Evaluating for motivation	1) Encourage better performance when receiving compliments from the teacher.

The next section explains how the students manifested metastrategies while executing each phase of the speaking task.

How the EFL Learners Employed Metastrategies for the Speaking Task

To start the speaking task, the students reported that they first manifested metastrategies for planning by brainstorming topics, outlining content and planning the speech. They also scheduled a time to plan the task and they mostly prepared and organized the story in Thai. Meanwhile, they used both printed and online resources such as textbooks, websites, and dictionaries to look up words and expressions, which they used to construct sentences. Then, when they translated the scripts from Thai into English, they checked for errors in terms of grammar, vocabulary, and the organization of the speech. An example of the way one student employed metastrategies is shown in Excerpt 1.

Excerpt 1:

After I was assigned to do the speaking task on Introduction to Me and Myself, I first planned what topics should be included in my speech; what presented myself perfectly and then jotted down the topics. Next, I outlined the content and organized the story in Thai. Meanwhile, I studied the content from the lessons learned in the textbook and tried to integrate the content learned in the classroom in my speech.

The students spent much time preparing and rehearsing the speech. To be more effective, they arranged a peaceful studying environment and monitored their mistakes. It could be implied that memorization was important for EFL students to perform this speaking task so they applied different memorization techniques to achieve their goals. During the performance and forethought phases, smartphones were used to look up the meaning of words, check pronunciation, and organize the script including studying materials. Some students employed the affective dimension when they practiced meditation before beginning the test. When the students attempted to regulate their emotions while speaking, affective metastrategies were used to monitor nervousness. An example of the data is shown in Excerpts 2 and 3.

Excerpt 2:

Then, I had completed the script in Thai and translated it into English. In doing this, I knew constructing sentences in English consisted of having two important elements, which were subjects

and verbs. Also, I accessed the website pertaining to restaurants and a variety of food, together with some content from the textbook to write up the story. I frequently adjusted the content to make it coherent. After that, I wrote the script in English and checked the errors in terms of grammar, vocabulary, and the organization of the story. I examined the content whether something should be added or taken out to make the story coherent. The place I found peaceful was the balcony of my room in the dormitory. Most of the time I practiced by myself. I read the script out loud to be heard. I spent several days reciting the script from the evening until late night before the test time. What's more, I paid attention to pronouncing difficult words and sentences accurately by making use of text-to-speech software program belonging to Apple to help imitate my speech, like a native speaker.

Excerpt 3:

There came the test time! While I was telling the story about myself, I was so nervous that I forgot one sentence and this affected the flow of the story. At that moment, I knew that I already made a mistake; I decided whether or not to continue or avoid that part. For a while, I could instantaneously solve the problem by making a simple sentence to keep on the story. If I had the chance to perform again, I would have done that. Nervousness and anxiety is the big killer of my performance even though I prepared and practiced so hard and used difficult vocabulary but still it turned out unpleasant.

Most students employed evaluating for cognition to assess their overall performance in terms of producing clear utterances, abiding by scripts, listening, and communication skill. Evaluating for affective metastrategies was employed to express satisfaction and dissatisfaction towards their performance. When one of the students received a compliment from the teacher, he was inspired to master the task for a future performance. As indicated in the data, one student set his own goals and did not compromise. During the speech, one student was so anxious that he forgot the script and was reluctant to continue. However, because he was self-motivated to obtain good grades, he stayed on task and eventually completed the speech. An example from the data is shown in Excerpt 4.

Excerpt 4:

After the test, I was totally dissatisfied with my actual performance when compared with that of the rehearsal because I had made mistakes. If I had the chance to perform speaking test again, I would absolutely have done it. I believed that the way to reduce anxiety was to get myself used to speaking English in the public. Another thing I should recite the content of the speech repetitively until it was imbued in my instinct and so I could recall it from my instinct. Last but not least, I was kind of person who tried to motivate myself to do my best to achieve my set goals. I set my own standard and never compromised my expectations and goals. I could not disregard mistakes but took it into account for a better performance.

From the findings, our model of the metastrategies manifested by EFL students while performing the speaking task is proposed, as shown in Figure 2.

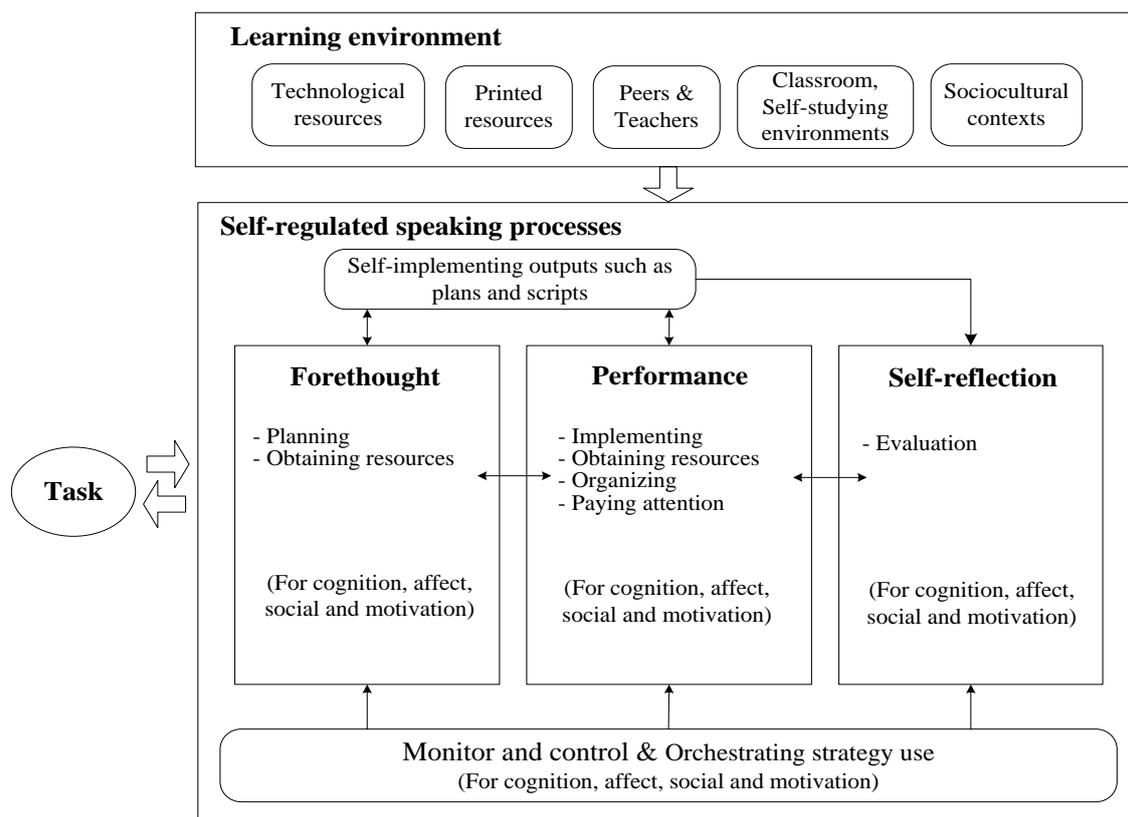


Figure 2. Metastrategies with task phases manifested by EFL students in a speaking task.

Different metastrategies were employed, in each of the task phases, to manage and control the cognitive, affective, social and motivational dimensions. To complete the speaking task, the EFL students utilized online resources, printed resources, peers, and teachers. Several students also needed a suitable environment and time to practice speaking. Monitoring metastrategies were employed to review and control metastrategy use for sub-tasks and overall aspects of the task. In other words, monitoring metastrategies were employed to review: planning, resource management, implementation, and evaluation. Monitoring metastrategy sets played an important role in supervising and governing each phase of the task and the entire process. To optimize task achievement, orchestrating metastrategies were used by several students to tradeoff things such as fluency, pronunciation, and grammatical accuracy. Some students tried to speak naturally and comprehensibly, not focusing on pronunciation and grammar. Meanwhile, other students attempted to achieve several goals simultaneously. It is suggested that an orchestrating strategy could also be employed across all the phases to balance the opportunities and constraints of the task. Additionally, EFL students can go back and forth between the task phases while employing metastrategies (Oxford, 2017). During the forethought and performance phases, the EFL students typically employed metastrategies to generate their plans and write the scripts. Then, for evaluation, they compared the actual outcome with their initial plans and prepared scripts.

Discussion and Conclusion

This paper studied metastrategies employed by EFL science and engineering students in a speaking task and proposed a model of metastrategies for speaking skills. Metastrategies were found to be conducive to the accomplishment of the designated task and cognitive metastrategies were found to be the most frequently used. Besides, affective metastrategies were also found to play an equivalent role in controlling anxiety and motivation when the EFL students performed the speaking task. One metasocial

strategy was employed when a student planned to change his behavior to watching English films with captions to practice pronunciation, accent, and intonation. Two metamotivation strategies were employed.

Based on the recent S²R model, it is not necessary for the learners to follow the phases in a linear order. In other words, the model suggests that the learners could bounce back and forth between the three phases: forethought, performance, and self-reflection. This concept is in congruence with the results of this research because while planning, the students changed the content of their presentations based on their English skills and the given time. The results also concur with Xamaní who indicated that students may scale down ambitions to fit resources and find ways to cope with available resources (Xamaní, 2013). Based on the findings of this research, one amendment to the model is proposed because some students looked for available resources first then adjusted the designated task and vice versa. Therefore, it is recommended that a bidirectional arrow be used instead of a unidirectional one as illustrated in Oxford's model (Oxford, 2017, p. 75).

The EFL students mostly employed planning as well as obtaining and using resources in the forethought phase. In planning for cognition, setting cognitive goals is one of the basic functions and crucial factors usually used by researchers to determine learners' self-regulation (Magno, 2009; Pipattarasakul & Singhasiri, 2016). However, it was found that not many students stated their cognitive goals in the forethought phase. For this reason, it is recommended that teachers elicit questioning about goal-setting and investigate setting cognitive goals to enable students to assess the purpose and expected outcomes of a task. After that, the teacher should give suggestions and provide some resources, which guide the students towards their goals.

Undoubtedly, technological resources are increasingly playing a significant role in enhancing self-regulated learning in the digital era. Various internet tools, for example, Google search, Google translate, online dictionaries and a Siri app on mobile devices, were used by the students. Based on the findings, technological resources should be available both inside and outside the classroom so that students use their devices appropriately to enhance their oral communication skills. The challenging issue for teachers is to find ways of facilitating the use of technological resources creatively while preventing students from misusing the technology in the classroom.

Another thought-provoking issue is increasing EFL students' error awareness. Students need to acknowledge their mistakes and be urged to correct their mistakes promptly. Metacognitive strategies help students to learn English successfully. In a similar vein, meta-affective strategies are equally essential to control students' emotions and motivation. Students who could not monitor and control their emotions were more likely to forget what they had to say and they were unable to correct mistakes such as grammatical and pronunciation errors. Therefore, awareness of using both metacognitive strategies and meta-affective strategies effectively is more likely to reduce errors while at the same time increasing ability. This idea is consistent with research conducted by Kobayashi on the comparative analysis of awareness in reading L1 and L2 texts. His results showed that metacognitive processes allowed learners to be in conscious control of planning, selecting strategy use and regulating as well as evaluating effective cognitive strategies while performing a task. In reverse, without awareness, the students cannot plan, monitor, and evaluate their own learning efficiently and effectively (Kobayashi, 2016). One possible solution to promote error awareness is that teachers should encourage their students to use various strategies consciously so that the students have self-awareness and gradually develop as strategic and self-regulated learners (Sitthitikul, 2007). Another suggestion might be adding scoring criteria to promote error awareness and correction while maintaining fluency. Furthermore, teachers should encourage their students to seek feedback from peers, teachers, and interlocutors.

As illustrated in the proposed model, monitoring and orchestrating metastrategies can occur throughout the whole process or at certain phases. In addition, evaluation metastrategies, which allow learners to assess their capability against an outcome and then reconsider their choice of strategy, can occur across all the phases as well.

Lastly, the nature of tasks has also affected the choice of strategy used. Mei and Nathalang's study on the use of communication strategies by Chinese EFL Learners indicated that students were more likely to

use different communication strategies for different types of tasks. Therefore, one of the three variables affecting the different uses of communication strategies was task type (Mei & Nathalang, 2010). In addition, Atai and Hashemi (2008) studied the effect of task difficulty on listening strategy use. The results showed that the students' reports of strategy use, to a great extent, were affected by the type of task they were doing. Similarly, this study also demonstrated that metastrategies employed by EFL students in speaking tasks were dependent upon the characteristics of the task. Based on the findings, when performing speaking tasks, the EFL students focused on pronunciation, stress, accent, intonation, and anxiety. Consequently, it is recommended that teachers design tasks that encompass learning outcomes, capabilities, and experiences. Furthermore, to enhance their learning ability, students should be guided to employ metastrategies efficiently for each task-based activity.

In conclusion, the proposed model provides a framework, which could be used to gather profound and valuable information regarding the use of metastrategies employed by EFL students in oral communication. Hopefully, the findings can be used as a guide for instructors and curriculum administrators who design tasks, manage resources, and create supporting learning environments to improve the oral communication ability of their students. The comprehensive and dynamic characteristics of the model used in the research may also be applied to investigate the use of metastrategies in other English learning skills.

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