A Study of Correlation between Metacognitive Strategy, Self-Efficacy and Arabic Achievements of University Level Students in Malaysian Public Universities

Di Xuan[1], Wail Muin Ismail [2], Muhammad Azhar Zailani [3], Zawawi Ismail[4]
[1]School of Oriental Languages, Anhui Foreign Language University, China
[2,3,4] Faculty of Education, Universiti Malaya, Malaysia
di_xuan2020@126.com*[1], wailismail@um.edu.my[2], azhar@um.edu.my[3]
zawawiismail@um.edu.my[4]

Abstract

This study investigated the correlation of metacognitive strategies, self-efficacy and academic performance of university-level Arabic learners. A total of 317 university level Arabic learners from Year 1 to Year 4 participated in this study. The quantitative research approach was utilised by using Motivated Strategies for Learning Questionnaire (MSLQ) and the Self-Regulated Online Learning Questionnaire (SOL-Q) as instrument of the study. SPSS analysis of the data indicated a high level of metacognitive skills and self-efficacy. Metacognitive skills and self-efficacy correlated with each other significantly predicted academic performance. Subsequent data analysis also yielded a significant difference in metacognitive strategies and self-efficacy beliefs among Year 1, Year 2, Year 3, and Year 4 learners. The implications of the results for language learning and educational practice are discussed.

Keywords: Metacognitive strategies, Self-efficacy, Academic achievement, Second language acquisition, Arabic language Education

INTRODUCTION

According to the Social Cognitive Learning Theory (Bandura, 1977), the process of learning target behaviour can be achieved by observing or modelling. Second or foreign language teaching, in the same way, can be established through the four stages of input-attention-retention-output, as displayed in Figure 1. An input could be any social/environmental interaction stimulated by peers, lecturers, class lessons, social media, family members, persons respected by the learners, or any other sources. As Bandura (1986) reported, self-efficacy will determine the choice of the task, effort, perseverance, resilience, and achievement in learning a language. In the attention stage, self-efficacy plays a driving role in choosing whether to pay attention to the observed words. Self-efficacy refers to the "*perceptions about one's capabilities to organise and implement actions necessary to attain designated performance of skill for specific tasks*" (Bandura, 1986, p. 391). Mustapha, Daud and Wahab (2013) identified self-efficacy as learners' internal cognitive perceptions of his/her

language learning abilities and how the learners organise them to perform specific language tasks. As a result, the words stored in the attention process will be retained in short-term memory. A shift from the attention process to the retention process then occurs, as well as the transfer of the stored words from short-term memory to long-term memory. In addition, during this process, there is another critical component that has yet to occur, the metacognitive strategies.
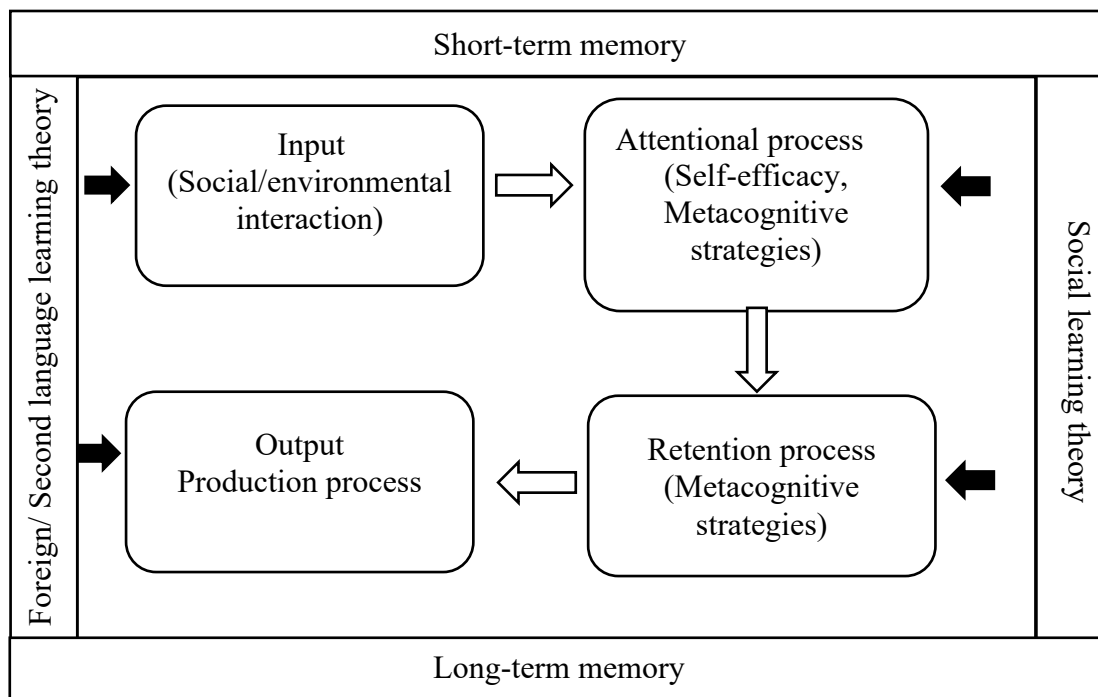

Figure 1. Language learning process cross Second Language Acquisition (SLA) and Social learning Theory

Metacognitive skills play a vital role in a variety of cognitive activities, including information exchange, good reading comprehension, motivation, language understanding, writing, language learning, perception, attention, memory, problem-solving, and social cognition (Baker & Brown, 1984; Brown, 1987). Abdelrahman (2020) mentioned in study that learners with college age can take advantage of using strategies under metacognition strategies. As Flavell (1979, p. 906) explains, "…*metacognitive knowledge can lead you to select, evaluate, revise, and abandon cognitive tasks, goals, and strategies in light of their relationships with one another and with your abilities and interests concerning that enterprise.*" Metacognition is one's awareness of his/her own ability to think and regulate, control, and manipulate the thinking process. Metacognitive strategies (MS), on the other hand, refers to the skill of using previous knowledge to plan a strategy for a specific learning task, take necessary steps to solve a problem, reflect on and evaluate results, and modify one's strategy as needed. Therefore, Flavell (1979) divided metacognitive knowledge into three categories person variables, task variables, and strategy variables which are defined respectively as understanding oneself, understanding the target task, and knowing which strategy to use for the specific task. As the medieval Chinese military strategist Sun Tzu once said, "*Know yourself and know your enemy; you will win every war.*" (Griffith & Oxford University Press, 1971). Pintrich (2012) maintained that students with high awareness of metacognition will more likely to use different types of strategies for learning, problem-

solving, and thinking, and improve their learning outcomes. Thus, MS is a significant component in facilitating the retention process and promoting language output.

Earlier studies (Klassen, 2006; Antonietti & Mancini, 2013; Noghabaee, 2016) have reported that self-efficacy (SE) has positive effects on the development of MS. The positive relation improves learners' confidence level to learn and encourages them to consider the difficulties as challenges rather than threats to be avoided. Developing metacognition provides learners with an awareness of the learning process and the strategies that could lead to success. Additionally, the learner feels more in control during language learning, and that would, in turn, increase the learners' self-efficacy. In particular, MS and SE are components in the Social Cognitive Theory. Bandura (1977) stated that SE beliefs and MS bear a complex reciprocal relation. Furthermore, Antonietti and Mancini (2013) reported that MS assist learners in developing firmer SE beliefs. Learners with a higher sense of SE also have a greater degree of MS usage. Moreover, Khezrlou (2012) investigated the use of MS by young and adult learners of different levels of education across different fields of study. The results showed that the MS differed across levels of education. Likewise, Medina et al. (2017) have found higher MS knowlege among graduate students as compared to undergraduates. In other words, the learners MS knowledge growing as their learning experience increased. Sharoni & Wu (2012) investigated the association between patients' self-efficacy and self-care behaviour, they found that significant differences between self-efficacy and education level. Wahyudiati, Rohaeti, Wiyarsi & Sumardi (2020) explore grade level and gender differences in the attitudes toward chemistry (ATC), self-efficacy (SE), and learning experiences (LE) of pre-service chemistry teachers. The findings showed that there was a difference of SE between the freshman and sophomore groups.

Besides, one of the primary concerns regarding Arabic learners in Malaysia is poor verbal or speaking skill. Despite the extensive research done on improving the Arabic language verbal or speaking skills over the past few decades (Zawawi Ismail et al. 2005; Siti Ikbal, 2006), there are still significant areas that remain unexplored. As Meera & Dustin (2013) and Cetin (2015) reported that the one who have high self-efficacy and use metacognitive skills in their learning will improve their learning performance. Learners' metacognitive strategies and self-efficacy in Arabic learning are two of these areas which under exploring. This study examined metacognition, self-efficacy, and academic achievement among Arabic language learners.

Given how MS and SE are integral to the language learning process, this study was interested to investigate their role in the context of Arabic language learners. Hence, this study sought to investigate:

1. What is the extent of university-level learners' metacognitive strategies and self-efficacy in Arabic learning?
2. Is there a significant difference in metacognitive strategies and self-efficacy among learners of varying years of Arabic learning experience?
3. Is there a meaningful relationship between metacognitive strategies and self-efficacy beliefs among university-level Arabic learners?
4. To what extent do metacognitive strategies and self-efficacy influence academic achievement?

METHOD

317 Arabic language Malaysian learners in five universities —Universiti Malaya (UM), University Kebangsaan Malaysia (UKM), International Islamic University Malaysia (IIUM), Universiti Putra Malaysia (UPM) and Universiti Sains Islam Malaysia (USIM)—were involved in this study. The respondents ranged between Year 1 to Year 4.

The instrument was divided into three sections. Section A asks about the respondents' demographic information that is related to the study. This part of the questionnaire has three questions regarding the respondents' (1) gender, (2) year of study, and (3) academic achievement. Section B is on MS measurements which was adapted from the Self-Regulated Online Learning Questionnaire (SOL-Q) (Jansen et al., 2017) which consists of 18 items. And SE measurements are included in Section C, which has eight elements developed from the Motivated Strategies for Learning Questionnaire (MSLQ).

Cronbach's alpha values of the questionnaires ranged from 0.74 to 0.92, which were obtained from a pilot study of 35 students, as shown in Table 1. The instrument's content validity was validated based on the comments from three experts. Overall, the instrument's reliability and validity were sufficient.

The respondents were Malay university students who were studying the Arabic language and many of them were not very proficient in the English language. Having the questionnaire in the respondents' mother tongue would avoid comprehension errors and make them more interested to participate in the study. Hence, an expert translator helped translate the questionnaire from English into Malay.

The quantitative data was collected using Google Form and printed questionnaire forms. Analyses of the percentage, frequency, mean, standard deviation, the Kruskal Wallis test, Spearman's rho correlation, and linear regression was done using SPSS. A normality test for data distribution was performed at the beginning of the data analysis stage to check whether the subsequent tests would involve parametric tests or non-parametric tests.

Table 1 *Testing Normality MS and SE*

Variables		Skewness (Z)	Kurtosis (Z)	Kolmogorov-Smirnov Sig
	Year of study			
Metacognitive Skills	1	1.74	-3.30	.04
	2	.25	2.83	.02
	3	-2.10	2.38	.00
	4	-.37	2.31	.01
Total MS items		2.39	1.35	.04
Self-efficiency	1	-2.31	3.27	.28
	2	-.35	.85	.00
	3	-1.53	3.34	.09
	4	-.46	-.51	.20
Total SE items		0.50	1.55	.12

Table 1 shows that the variable SE is generally distributed in terms of the univariate normality (according to skewness and kurtosis values), which is in the range of -2 to +2, and the Kolmogorov-Smirnov value is greater than 0.05 (Piaw, 2013). However, the SE items are

different from normal for Year 1, 3, and 4 learners. The MS items are not normally distributed due to skewness value being 2.39 and Kolmogorov-Smirnov value being less than .05. The MS for Year 1, 2, 3 and 4 learners were not normally distributed as well. Therefore, the data analyses had to be done using non-parametric tests.

RESULT AND DISCUSSION

The first research question was answered by descriptive statistics in terms of mean, standard deviation, frequency, and percentage. The second and third research questions required inferential statistical analyses using the Kruskal-Wallis Test and Spearman's rho correlation to identify the relationship between MS and SE. Structural equation modelling (SEM) was carried out to answer the fourth research question.

Metacognitive Strategies (MS)

Table 2 *Percentage and frequency of using MS in Arabic learning*

Variables	Characteristics	Frequency	Percent (%)
Metacognitive skills	Disagree	38	12%
	Neutral	88	27.9%
	Agree	191	60.2%
	Total	317	100

The descriptive data percentage and frequency for the dimensions of the Arabic language learners' MS are displayed in Table 2. 191 students or 60.2% of the respondents either agreed or strongly agreed with the statement on the use of metacognitive skills during Arabic language learning. Another 12% disagreed with MS usage, which means 38 out of the total 317 respondents do not use MS in Arabic language learning. 27.9% of the respondents selected "Neutral", suggesting that they were not sure whether they used MS during Arabic language learning.

Table 3 *Mean and Standard Deviation for Each of the Items in MS*

Items Metacognitive skills	Mean	SD
1. I think about what I really need to learn before I begin a task in my Arabic course.	4.12	.66
2. I ask myself questions about what I am to study before I begin to learn for my Arabic course.	4.06	.67
3. I set short-term (daily or weekly) goals as well as long-term goals (monthly or for the whole Arabic course).	3.97	.74
4. I set goals to help me manage my studying time for my Arabic course.	3.98	.72
5. I set specific goals before I begin a task in my Arabic course.	3.71	.80
6. I think of alternative ways to solve a problem and choose the best one for my Arabic course.	4.15	.60
7. I try to use strategies in my Arabic course that have worked in the past	4.03	.69
8. I have a specific purpose for each strategy I use in my Arabic course.	3.97	.68
9. I am aware of what strategies I use when I study for my Arabic course	3.91	.73
10. Although we don't have to attend daily classes, I still try to distribute my studying time for my Arabic course evenly across days.	3.96	.74
11. I periodically review to help me understand important relationships in my Arabic course.	4.00	.66
12. I find myself pausing regularly to check my comprehension of my Arabic course.	3.63	.79

13. I ask myself questions about how well I am doing while learning something in my Arabic course.	3.97	.69
14. I think about what I have learned after I finish working on my Arabic course.	3.61	.93
15. I ask myself how well I accomplished my goals once I'm finished working on my Arabic course.	3.98	.67
16. I change strategies when I do not make progress while learning for my Arabic course.	3.97	.68
17. I find myself analyzing the usefulness of strategies while I study for my Arabic course.	3.72	.70
18. I ask myself if there were other ways to do things after I finish learning for my Arabic course.	3.87	.77
Overall Mean	3.92	.49

The section on metacognitive skills comprised of 18 items. The means and standard deviations for all the three elements are arranged in Table 3. The descriptive statistics show that Item 6 (M=4.15, SD=.60) has the highest degree of agreement for MS strategy. This result indicates that the respondents used alternative ways to solve problems and chose the best one during their Arabic learning process. Moreover, Item 1 (M=4.12, SD=.66), Item 2 (M=4.06, SD=.67), Item 7 (M=4.03, SD=.69), and Item 12 (M=4.00, SD=.66) also have a high degree of agreement. These results suggest that the respondents were good at strategy planning, such as thinking about what they need to learn before they start a task and use strategies that have worked in the past. However, Item 14 (M=3.61, SD=.93) and Item 11 (M=3.63, SD=.79) have a moderate degree of agreement, the lowest degree of agreement in comparison to the rest of the section. The moderate degree of agreement could mean that the respondents did not strongly practise organising and self-evaluating.

Self-efficacy (SE)

Table 4 *Percentage and frequency of Self-efficacy in Arabic learning*

Variables	Characteristics	Frequency	Percent (%)
	Disagree	31	9.8%
Self-efficiency	Neutral	78	24.5%
	Agree	208	65.7%
	Total	317	100.0%

As displayed in Table 4, there are 208 respondents or 65.7% of the sample agreed or strongly agreed with the self-efficacy items regarding their Arabic language learning, demonstrating a high level of self-efficacy. Another 31 respondents or 31% disagreed or strongly disagreed with the self-efficacy items, which mean that there is a group within the sample that has a low level of self-efficacy regarding learning the Arabic language. 78 respondents or 24.5% answered not sure to self-efficacy items, which can indicate that they do not understand their own capability to learn the Arabic language.

Table 5 *Mean and Standard Deviation for Each of the Items in Self-efficacy Dimension*

Items Self-efficacy	Mean	SD
1. I believe I will receive an excellent grade in Arabic language course	4.01	.76
2. I'm certain I can understand the most difficult material presented in the readings for Arabic language course	3.54	.89
3. I'm confident I can understand the basic concepts taught in Arabic language Course	4.02	.69

4. I'm confident I can understand the most complex material presented by the instructor in Arabic language course.	3.56	.85
5. I'm confident I can do an excellent job on the assignments and tests in Arabic language course.	3.91	.72
6. I expect to do well in Arabic language course.	4.33	.59
7. I'm certain I can master the skills being taught in Arabic language course.	4.01	.73
8. Considering the difficulty of Arabic language course, the teacher, and my skills, I think I will do well in this class.	4.18	.66
Overall mean	3.94	.53

On average, as indicated in Table 5, the respondents have a high degree of self-efficacy (M=3.94, SD=.53). Item 6 showed the highest level of agreement (M=4.33, SD=.59). In other words, the respondents expected that they would do well in the Arabic language course. The item with the next highest level of agreement is Item 8 (M=4.18, SD=.66), which indicate that the respondents agreed they will do well in this course after considering the course's difficulty, their teachers, and their own skills. On the other hand, Item 2 (M=3.54, SD= .89) and Item 4 (M=3.56, SD= .85) showed a medium level of agreement, suggesting that the respondents moderately agreed with the statements "I'm certain I can understand the most difficult material presented in the readings for Arabic language course" and "I'm confident I can understand the most complex material presented by the instructor in Arabic language course."

MS and SE of different study years

Table 6 *Kruskal Wallis Test of SE and MS of different study years*

Variable	Year of study	Mean Rank	df	Chi-Square	P
Self-efficiency	1	185.15	3	16.576	.001
	2	139.24			
	3	166.22			
	4	176.52			
Metacognitive skills	1	182.03	3	22.41	.000
	2	134.98			
	3	122.18			
	4	177.13			

Table 6 shows that there is significant difference in self-efficiency beliefs (p ＜.05) among Year 1, 2, 3, and 4 learners (Chi-square =16.58, df = 3), as year 1 students (M=185.15) show the highest SE beliefs, followed by Year 4 (M=176.52) and Year 3 (M=166.22).Year 2 learners (M=139.24) scored the lowest SE beliefs. On the other hand, the table also indicates there is a significant difference in Arabic learners' metacognitive skills (p ＜.05) among Year 1, 2, 3, and 4 learners (Chi-square =22.41, df = 3). These results imply that Arabic learners use different MS during different levels of study. Year 1 students (M=182.03) show the highest MS usage, followed by Year 4 (M=177.13) and Year 2 (M=134.98). Year 3 learners (M=122.18) scored the lowest MS usage.

Relationship between MS and SE

Table 7 *Spearman's rho Correlation Analysis between learners' MS and SE*

Self-efficacy

	Spearman's rho Correlation	Sig.
Metacognitive strategies	.63	.00

Table 7 shows the Spearman's rho correlation analysis between MS usage and SE beliefs, which resulted in a statistically significant positive correlation (r=.63) p ＜.05. MS usage will increase with the increase of the learner's SE beliefs, whereas, the learner's SE beliefs would decrease when their MS usage decreases.

MS and SE influences in academic performance

This study sought to model the effect of the Arabic learners' MS and SE on their academic achievement (GPA), with MS and SE as the independent variables and academic achievement as the dependent variable.

Table 8 *T-statistics of influence of Arabic learners' MS and SE on GPA*

Regression			Estimate (β)	T.	P
Dependent variable		Independent variables			
GPA	<---	MS	.162	2.369	.019
GPA	<---	SE	.178	2.621	.009

The linear regression analysis with SPSS, shown in Table 8, resulted in t-statistics with values more than 1.96 for individual path between MS to GPA (β= .162, t= 2.369, p <.05); SE to GPA (β= .178, t= 2.621, p <.05). In other words, Arabic learners MS and SE beliefs are predictors of academic achievement.

Discussion

The findings of this study suggest that Arabic language learners at Malaysian universities show a high degree of metacognitive strategies usage and self-efficacy beliefs. They expect to do well and believe that they could do well in their Arabic language course by utilising metacognitive strategies. The learners' metacognitive strategies usage and self-efficacy beliefs both have a significant effect on academic performance. In other words, as Arabic learners' metacognitive strategies usage increases, language learning achievement will increase as well. The learners may do poorly in their Arabic language course if they do not utilise metacognitive strategies.

Similarly, the higher level of learners' self-efficacy beliefs can improve their achievement in their Arabic language course, and conversely, lower SE beliefs may lead to lower achievement. To put it another way, self-efficacy would make the learners have positive feelings about themselves, allowing them to adjust their language learning strategies, and potentially score a high grade in the course. The result was consistent with several studies that show metacognitive strategies and self-efficacy could determine learners' success in second language learning (Adnan, 2011; Mustapha, Mustapha, Daud & Wahab, 2013; Nosratinia, Saveiy & Zaker, 2014; Anderson, 2003; Kartal, 2013).

The Arabic language learners were significantly different in terms of their year of study. They used different metacognitive strategies and self-efficacy during different years of study. The finding was consisted with (Khezrlou, 2012; Medina et al., 2017; Sharoni and Wu, 2012;

Wahyudiati et al., 2020). Most notably, Year 1 learners use metacognitive strategies and self-efficacy significantly the most, followed by Year 4, Year 2, and Year 3, respectively. Based on this result, it can be argued that metacognitive strategies usage and self-efficacy beliefs do not increase with experience. The result seems to disagree with the Social Cognitive Theory, which argues that learning experience is one of the components that improve learners' SRLS and self-efficacy beliefs. Prior studies have also demonstrated that gender has an influence on the use of metacognitive strategies and self-efficacy beliefs. Thus, it is important for future researchers to investigate this relationship in the context of other languages.

The current study also found that learners' metacognitive strategies usage and self-efficacy beliefs correlated positively with each other significantly. The learners' level of self-efficacy beliefs would enhance the degree of his/her metacognitive strategies usage. When the learners' have higher levels of self-efficacy beliefs, the more likely they will use metacognitive strategies, and vice versa. This finding supports other studies' findings including SCT; Pintrich et al. (1994), Zimmerman (2000), Noghabaee (2016), and Antonietti and Mancini (2013), which suggest that self-efficacy beliefs and metacognitive strategies bear a complex reciprocal relation. Furthermore, the finding is consistent with other earlier studies (Adnan, 2011; Mustapha et al., 2013; Nosratinia et al., 2014; Anderson, 2003; Kartal, 2013) which demonstrated that metacognitive strategies usage and self-efficacy beliefs will positively influence learners' academic achievement.

CONCLUSION

The study of metacognitive strategies and self-efficacy beliefs have been widely conducted in education, especially among second language or foreign language learning (Adnan, 2011; Mustapha et al., 2013; Nosratinia et al., 2014; Anderson, 2003; Kartal, 2013) due to their essential role in learners' achievement and in fostering life-long learners. Therefore, the findings of the current study offer some insights on improving metacognitive strategies in two aspects: learning metacognitive strategies and teaching metacognitive strategies. Nunan (1996, p.41) reported that:

"*Language classrooms should have a dual focus, not only teaching language content but also on developing learning processes as well*"

Teaching metacognitive strategies provides individuals with academic involvement, internal locus of control, positive attributions, higher achievement motivation, creativity, productivity, and self-responsibility, and reinforces individuals' self-confidence in dealing with life's challenges. It would also enable them to identify problems, test their capabilities, act freely, and offer the best solutions to different issues (Noghabaee, 2016). According to Rahimi and Katal (2012), one way to accelerate academic language learning is to teach learners how to learn more effectively and efficiently. Hence, teachers and instructors play a central role in teaching metacognitive strategies. In the learning process, teachers should provide appropriate basic knowledge of learning strategies and properly encourage learners in order to increase their self-confidence. Hence, teachers should be equipped with professional knowledge about the concepts and practice in their teaching. Cognitive activities, training, and programmes should be organised for the learners. Brown (1987) proposed that practical metacognitive strategies training include three types, i.e. (1) Basic model knowledge training by providing students with basic cognitive structure training, such as teaching students to use mnemonics,

taking notes, drawing key points, and self-questioning to build a knowledge base; (2) Learning strategies knowledge training through teaching learners using goal-oriented learning methods and knowledge to help learners improve their learning; and (3) Self-adjustment training by reminding learners to use their cognitive knowledge to monitor their learning history at any time, to adopt remedial strategies, and adjust their learning and cognition.

In terms of self-efficacy, there are many factors that could influence learners' self-efficacy which includes familial influences, peer influences, the role of schooling, transitional influences, and developmental changes in self-appraisal skill (Pajares & Schunk, 2001). Learners can also be taught to improve their self-efficacy, which helps learners believe in themselves, in the same aspects, i.e. learning self-efficacy and teaching self-efficacy.

Teaching self-efficacy requires teachers with high self-efficacy. Some of the methods that can be used are to plan moderately challenging tasks, use peer models, teach specific learning strategies, capitalise on learner choice and interest, reinforce effort and correct strategy use, give frequent, focused feedback, allow learners to make their own choices, and encourage learners to try (Schunk & Pajares, 2002). The type of learning environment and teaching method can also improve self-efficacy in the classroom, for instance, by having inquiry-based lab activities and conceptual problems, collaborative learning using electronic applications, and so on (Bandura, 1986). Other approaches include establishing specific, short-term goals that will challenge the learners but are still viewed as attainable, helping learners layout a particular strategy of learning, and having them verbalise their plan. As learners proceed through the task, learners should be asked to note their progress and verbalise their next steps (Schunk & Pajares, 2002). Learner performance should be compared to the goals set for the individual learner, rather than comparing him/her against a peer or comparing him/her to the rest of the class (Bandura, 1986).

The learners' self is another essential aspect. There is a demand for training programmes for learners to enhance their self-efficacy and strengthen their metacognitive strategies and skills. However, learners should have a positive perception of themselves and their learning capability. They may realise certain things about themselves such as "I have slow learning progress", "I may change my strategies", and so on. In these situations, cognitive activities, training, and programmes should be tailored according to the learners' needs.

Declaration of Conflicting Interest

All co-authors have seen and agree with the contents of the manuscript. We certify that the submission is original work and is not under review at any other publication.

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