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Motivational Belief, Cognitive Strategy Use & Self-regulation Alliance Pertaining Students Learning Achievement

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Abstract

This study investigated strategies to improve students' use of self-regulated learning (SRL) strategies in their learning activities. SRL is defined as a learner's deliberate efforts to control and steer complicated learning processes, and it is made up of three basic components: cognitive strategy utilisation, metacognitive processing, and motivating beliefs. These three components are articulated in terms of note-taking strategies (cognitive component), self-monitoring prompts (metacognitive component), and feedback on self-efficacy (motivation component). The study focused on a quantitative survey where a set of questionnaires was distributed to 237 students who were selected from the Faculty of Administrative Science and Policy Studies. The findings show that there is a relationship between motivational beliefs and self-regulated learning.

Keywords: Motivational Beliefs, Cognitive Strategy, Self-Regulation

Introduction

Background of Study

Almost every SRL model assumes that motivation is important in students' academic achievement (e.g., Corno & Mandinach, 1983; Pintrich & Linnenbrink, 2000; Zimmerman, 1998). Most studies, for example, believe that self-regulated learners' approach academic assignments with particular objectives in thoughts and have high levels of self-efficacy (Horn et al., 1993; Pintrich & Linnenbrink, 2000). In the current study, the motivational component was operationally defined as academic self-efficacy, which refers to students' assessments of their skills to plan and carry out the actions required to achieve specific types of educational results (Zimmerman, 1998). Academic self-efficacy has been recognised as a key predictor of

student achievement. In general, students with strong self-efficacy outperformed as compared to students with low self-efficacy (Bruning & Horn, 2000).

In addition, the cognitive strategy component of self-regulated learning comprises activities that assist students' control of academic content. Most people refer to this as learning techniques, which include all cognitive operations that are related to performing a task (Pressley et al., 1995). The cognitive strategy component was operationalized as note taking strategies. Students were instructed to take notes in one of two ways: traditional free form or utilising a matrix organiser. Free form notes taking is often defined as a baseline technique, or what students perform before learning. In most circumstances, free form notes consist of transcribing one fact after another in a nearly list-like format. In comparison, a matrix organiser is a two-dimensional cross-classification table with topics along the top row, repeated categories down the left-most column, and data in intersecting cells (Kauffman & Kiewra, 1999; Kauffman, Lebow, Kiewra, & Igo, 2000). Students only need to find knowledge about each topic and category that corresponds to the crossing cells. Prior note-taking research suggests that students who take notes in a matrix learn more than students who take free-form notes.

Many scholars believe that self-regulation is a broad concept that can explain a wide range of human behaviours (e.g., Bandura et al., 1996). The current study on self-regulated learning (SRL), explains learners' deliberate efforts to manage and direct complex learning activities. According to this viewpoint, SRL is a multifaceted concept with complex interactions between cognitive strategy utilisation, motivation, and metacognition (Perry, 2002; Schraw et al., 2002; Zimmerman, 2000). Much of the educational research has focused on the application of cognitive, motivational, or metacognitive strategies, either independently or in combination with another component. Very little research has investigated how these three components interact with one another. Hattie, Biggs, and Purdie (1996), for example, stated that empirical research on how motivation and metacognition influence students' use of study skills was lacking in the field of educational psychology. According to these experts, "theory may have surpassed evidence" (p. 103). The current study was an early attempt to bridge the theory-practice gap by investigating how cognitive strategy, metacognitive, and motivational cues influence students' accomplishment.

The current state of the education system has shifted from a traditional to an online system. However, some students struggle to concentrate in their studies, causing stress because they do not understand what they are being taught. To ensure that students adapt to this situation, effective learning methods that can increase motivation must be planned so that they can prepare themselves to learn effectively.

Statement of Problem

Past studies show that motivation is very important and has a high impact on the studying interest of students. It has proved that highly motivated learners are likely to learn readily, and make any class fun to teach, while unmotivated learners may likely learn very little and generally make teaching painful and frustrating, students' motivation is a critical part of success in education and later life, but it has often been overlooked by educators (Jacob et al., 2020). According to Liu (2015), often students find that they "want" a good academic outcome, but they can't seem to make it happen. Sometimes, this gap occurs when there is a clash between what they are striving for (a good academic outcome/degree) and what they would rather be doing (their interest).

Besides that, some studies findings have emphasised that self-regulated learners often do not achieve as highly as their instructors intend, although there are scaffolds that enhance learners' self-regulated outcomes (Winne, 2005). This may be an effect of them finding the lecture or subject matter boring or not having the same goals as their educators. Students generally perform better when learning activities are perceived as interesting, useful, and valuable. According to Babakhani (2014), students will use more self-regulated learning strategies, resulting in a higher level of academic achievement. This review study revealed that there is an increasing body of literature from 2019 to 2021 especially regarding self-regulated learning with online courses (Yusufu & Muhammad, 2021; Nour & Farrah, 2019). Students' engagement becomes essential factors in the learning process because students must participate in the learning process. Not only the students but also the teachers have to make a good atmosphere during classroom activities. They have to create lessons, assignments and also projects that interest the students. According to Sesmiyanti (2016), students' cognitive engagement involves the students to think during academic tasks, they must be motivated to improve their ability in learning and, they have to participate and be active in the classroom.

To help students to overcome these difficulties in learning context, educators need to take some action to deal with such motivational, SRL and cognitive engagement problems that are related to students' learning, as it should become the priority in their teaching strategy for their teaching processes.

Objective of the Study and Research Questions

- This study is done to explore perception of learners on their use of learning strategies. Specifically, this study is done to answer the following questions:
- How do learners perceive their motivational beliefs for learning?
- How do learners perceive their cognitive strategy use?
- How do learners perceive their self-regulation?
- Is there a relationship between motivational beliefs and self-regulated learning strategies?

Literature Review

Motivational Beliefs in Learning

Motivation refers to the factors that encourage a person to participate in a task or to work towards achieving a goal (Wolters & Rosenthal, 2000). Motivation is a psychologically supportive tool that serves as the reason a student strives to complete an assignment. It can be another layer of support to positively push students to accomplish their learning goals (Panadero, 2017). While a motivational belief can be described as an innate drive that encourages someone to motivate themselves using techniques (Lillian, 2022).

Pintrich and De Groot (1990) explain that student motivation is made up of three parts: an expectation part (self-efficacy), a value part (intrinsic value), and an emotional part (test anxiety). In this study, the motivational beliefs that were focused on were self-efficacy, intrinsic value, and test anxiety. The term "self-efficacy" refers to how a person thinks he or she can plan and carry out activities that will help him or her reach a certain goal. (Bandura, 1986; Tanner & Jones, 2003). In other words, self-efficacy is how a person judges his or her own ability to do a task well. Despite learning challenges, a student with high self-efficacy will work hard to achieve their goals, while those with low self-efficacy may give up. (Lillian, 2022).

Nelson and Debacker (2000) say that intrinsic value is a measure of how much a person enjoys or is satisfied by doing tasks in the learning domain. It includes the goals that students have for the task as well as their beliefs about the significance of interest and value in the task. In the concept of intrinsic value, the student believes that progress is due to personal effort, not luck or the teacher. Test anxiety is a worry or a cognitive component that refers to students' negative thoughts that interfere with performance and an emotional component that refers to anxiety's affective and psychological arousal aspects (Khalid & Ahmad, 2011). This is where the students might have some negative evaluations of themselves and believe that they will not be able to provide what is necessary during the exam or solve a problem that they experience. It is also a subjective emotional state that a person feels before or during a specific test because of the test itself, the possibility of failing, and the perceived bad effects of failing. (Karatas, Alci, & Aydin, 2013).

Self-Regulated Learning Strategies

Self-regulated learning (SRL) is a process through which learners take control of their learning by setting goals, monitoring progress, and adjusting strategies to achieve those goals. SRL strategies can include metacognitive, motivational, and behavioral components. This literature review will focus on recent research related to self-regulated learning strategies. One study by Pekrun, Elliot, and Maier (2009) explored the role of emotions in SRL. The study found that positive emotions, such as enjoyment and pride, were positively associated with SRL strategies, while negative emotions, such as anxiety and boredom, were negatively associated with SRL strategies. The authors suggested that educators should focus on creating a positive emotional climate to facilitate SRL.

Another study by Zimmerman and Schunk (2011) examined the effectiveness of self-regulated learning interventions in K-12 education. The authors found that interventions that explicitly taught SRL strategies, such as goal setting, self-monitoring, and self-reflection, were effective in improving academic performance. The authors also recommended that teachers incorporate SRL strategies into their classroom instruction. A study by DeBacker, Crowson, and Thoma (2008) focused on the role of motivation in SRL. The study found that students who had a growth mindset and a mastery goal orientation were more likely to engage in SRL strategies. The authors suggested that educators should foster a growth mindset and a mastery goal orientation to promote SRL.

A recent meta-analysis by Dignath et al (2018) examined the effectiveness of SRL interventions in higher education. The authors found that interventions that targeted the metacognitive component of SRL, such as planning and self-monitoring, were most effective in improving academic performance. The authors recommended that educators incorporate SRL interventions into their courses to improve student outcomes. In conclusion, recent research suggests that self-regulated learning strategies are effective in improving academic performance. Emotions, motivation, and metacognition all play important roles in SRL, and educators should focus on fostering a positive emotional climate, promoting a growth mindset and mastery goal orientation, and incorporating SRL strategies into their instruction to facilitate student learning.

Past Studies on Motivational Beliefs in Learning

In the last two decades, learning strategies and motivational beliefs have emerged as key variables in the teaching and learning process. Several studies have highlighted the importance of these concepts at various stages of education, particularly higher education

(Stiggins, 2001; Pintrich and Schunk, 2002). There have been many past studies on the motivational belief. The study done by Kavita (2014) is to investigate motivational beliefs among university students in relation to academic achievement of high and low achievers using a descriptive research method with a sample of 176 students. The finding of this study revealed that high achievers and average achievers have significantly different motivational beliefs, specifically task value and control over learning beliefs. High achievers outperform average achievers in terms of average performance.

Next the study by Heliyon (2022) aims to assist students and academics in implementing appropriate motivational strategies to improve students' digital literacy. An empirical analysis of 583 respondents was performed using structural equation modeling-partial least-squares analysis. The study's findings confirm a positive and significant relationship between motivational belief strategies and digital literacy competency, indicating the importance of self-motivation in promoting digital literacy and preparing students to be a part of the digital future. In addition, this research provided a better understanding and insight into the use of motivational belief strategies and their impact on digital literacy. Therefore, motivation plays a significant role in students' learning progress and, as a result, digital literacy competency among students. The role of motivational belief strategies in digital learning is essential; it is the driving force of achievement because it can contribute to the more efficient and prudent use of digital tools.

Past Studies on Self-Regulated Learning Strategies

Self-regulated learning (SRL) is a process of learning that is self-directed in nature, employing tenants of forethought, monitoring, control, and reaction in a learning transaction (Baumeister & Vohs, 2007; Panadero, 2017; Pintrich, 2000). According to Zimmerman (2015), the concept of self-regulated learning relates to how individuals manage their personal learning processes, especially how to monitor, regulate, and evaluate their own learning, and plan learning actions and behavioural processes that increase likelihood of goal attainment. This first study conducted by Zimmerman (2015) conducted based on a systematic review where the search query resulted in 1117 related articles from variety of academic sources and revealed that SRL research in a smart learning environment had evolved increasingly and identified that SRL strategies such as goal setting, helping-seeking, time management, and self-evaluation are mostly supported.

The second study conducted by Gambo and Shakir (2021), aims to find answers to how self-regulated learning (SRL) and cooperation learning orientation correlate with study success. By using the SciPro system, the study was able to retrieve from 47 students and 45 supervisors about their respective responsibilities in the thesis writing process. The result of the study found that learning agent, visualization, recommendation, interactive, and social comparison positively impact the students' engagement and performance, which can support a self-regulated learning. The study observed that different interventions, such as visualization, feedback, recommendation, etc., are used to support learners' learning process. The results of this review may have possible new perspectives and guidance for future smart learning environment research. This research will also provide smart learning environment practitioners with the knowledge and the significance of promoting SRLs in a smart learning environment.

Conceptual Framework

Figure 1 shows the conceptual framework of the study. This study is done to explore the relationship between learners' motivational beliefs and their self-regulated learning strategies. According to Pintrich & De Groot (1990), learners embark on learning activities with their own motivational beliefs. The beliefs are (i) self-efficacy, (ii) intrinsic value and (iii) test anxiety. In addition to that learners' motivation can also be influenced by the surroundings they are in (Rahmat, 2019) and this motivation pushes them to be self-directed learners. Pintrich & De Groot (1990) listed two self-regulated learning strategies and they are (i) cognitive strategy use and (ii) self-regulation.

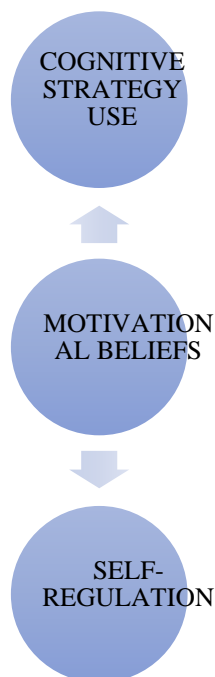


Figure 1- Conceptual Framework of the Study-Is there a relationship between Motivational Beliefs and Motivational Beliefs?

Methodology

This quantitative study is done to explore motivation factors for learning among undergraduates. A purposive sample of 237 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted from Pintrich & De Groot (1990) on learners' motivation to reveal the variables in table 1 below. The survey has 3 parts. Part one has items on demographic profile. Part two has 22 items on motivational beliefs. Part three has 22 items on self-regulated learning strategies.

Table 1

Distribution of Items in the Survey

PART	STRATEGY		SCALE	No Of Items	Total Items
TWO	MOTIVATIONAL BELIEFS	A	SELF-EFFICACY	9	22
		B	INTRINSIC VALUE	9	
		C	TEST ANXIETY	4	
THREE	SELF-REGULATED LEARNING STRATEGIES	D	COGNIVE STRATGY USE	13	22
		E	SELF-REGULATION	9	
	TOTAL NO OF ITEMS				44

Table 2

Reliability of Survey

Reliability Statistics	
Cronbach's Alpha	N of Items
.920	44

Table 2 shows the reliability of the survey. The analysis shows a Cronbach alpha of .920, thus, revealing a good reliability of the instrument chosen/used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

Findings*Findings for Demographic Profile*

Q1. Gender

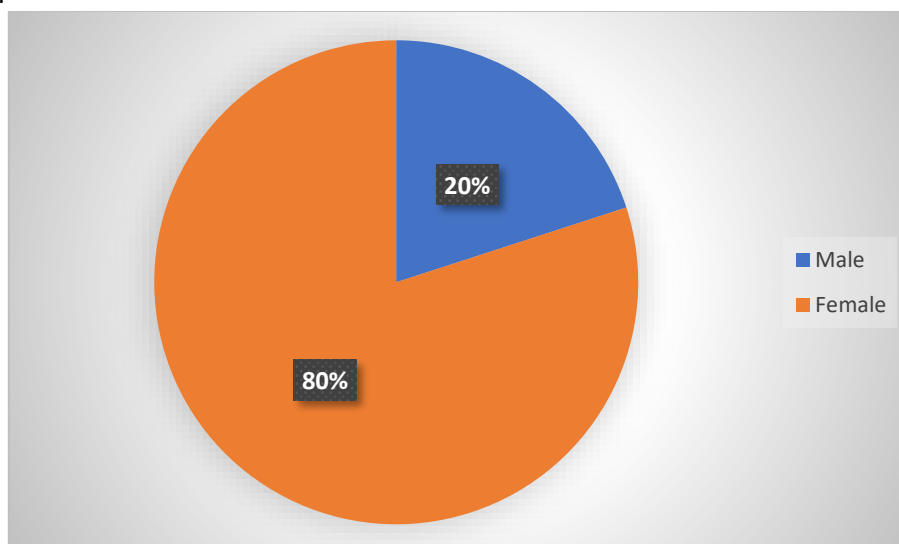


Figure 2- Percentage for Gender

From the feedback, the majority of the respondents are female (80 %) and the remainder are male representing 20%.

Q2 Semester

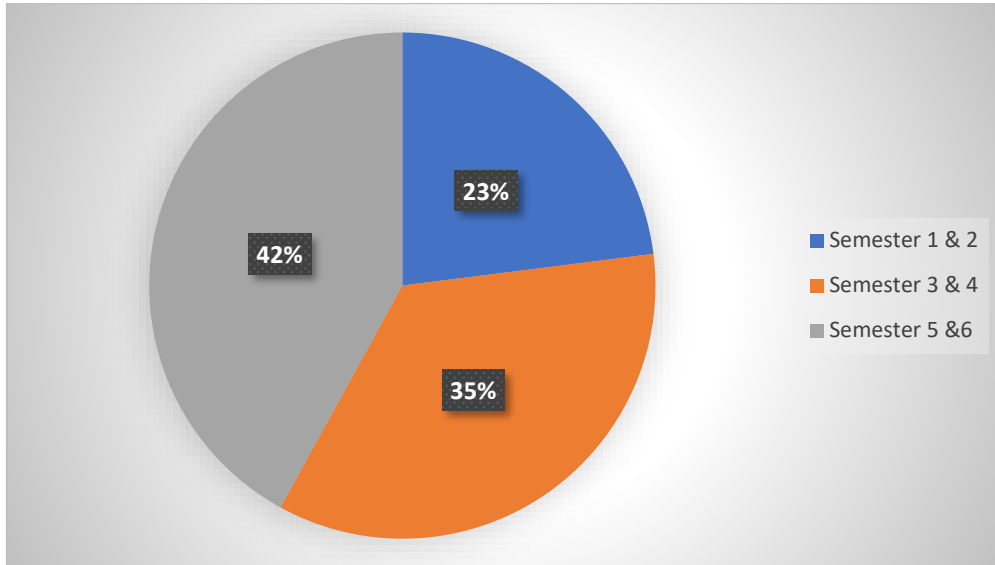


Figure 3- Percentage for Semester

Most respondents are final year students (42%) followed by second year students representing 35%. Only 23% of students from Semester 1 and 2 responded to the survey.

Q3 Programme

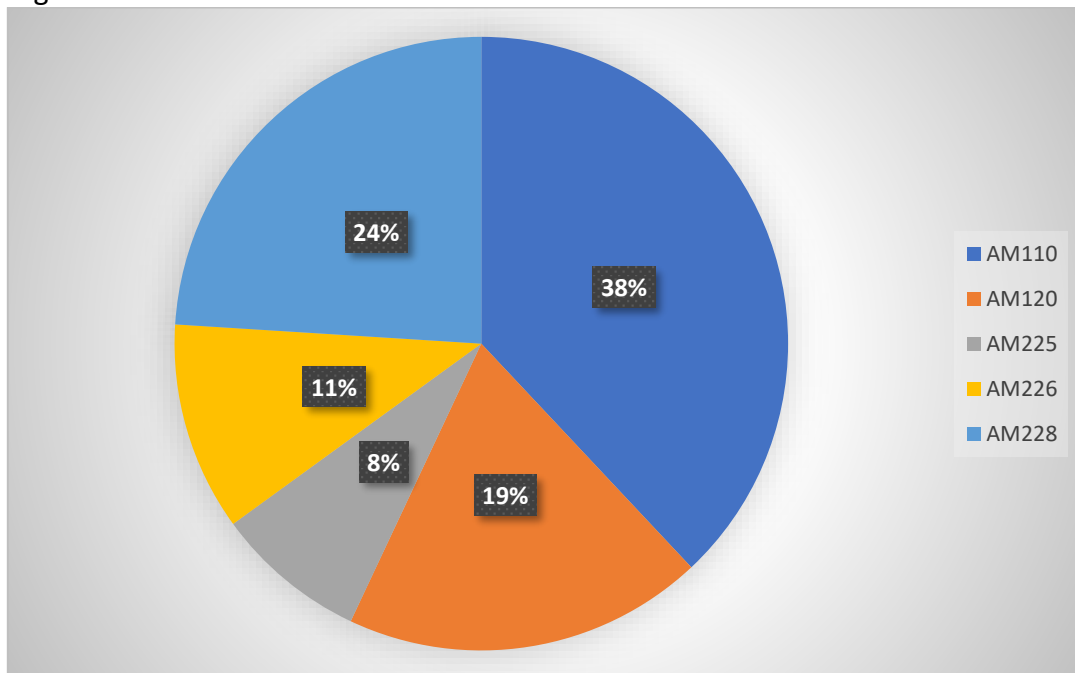


Figure 4- Percentage for Programme

Out of five programs, the highest response received was from AM110 programme (38%) followed by AM228 (24%) and AM120 with 19% response rate. The remainder comes from AM226 and AM225 with total 19%.

Findings for Motivational Beliefs

This section presents data to answer research question 1- How do learners perceive their motivational beliefs for learning? Motivational beliefs are measured by (i) self-efficacy, (ii)intrinsic value, and (iii) test anxiety.

(i) Self-Efficacy (9 items)

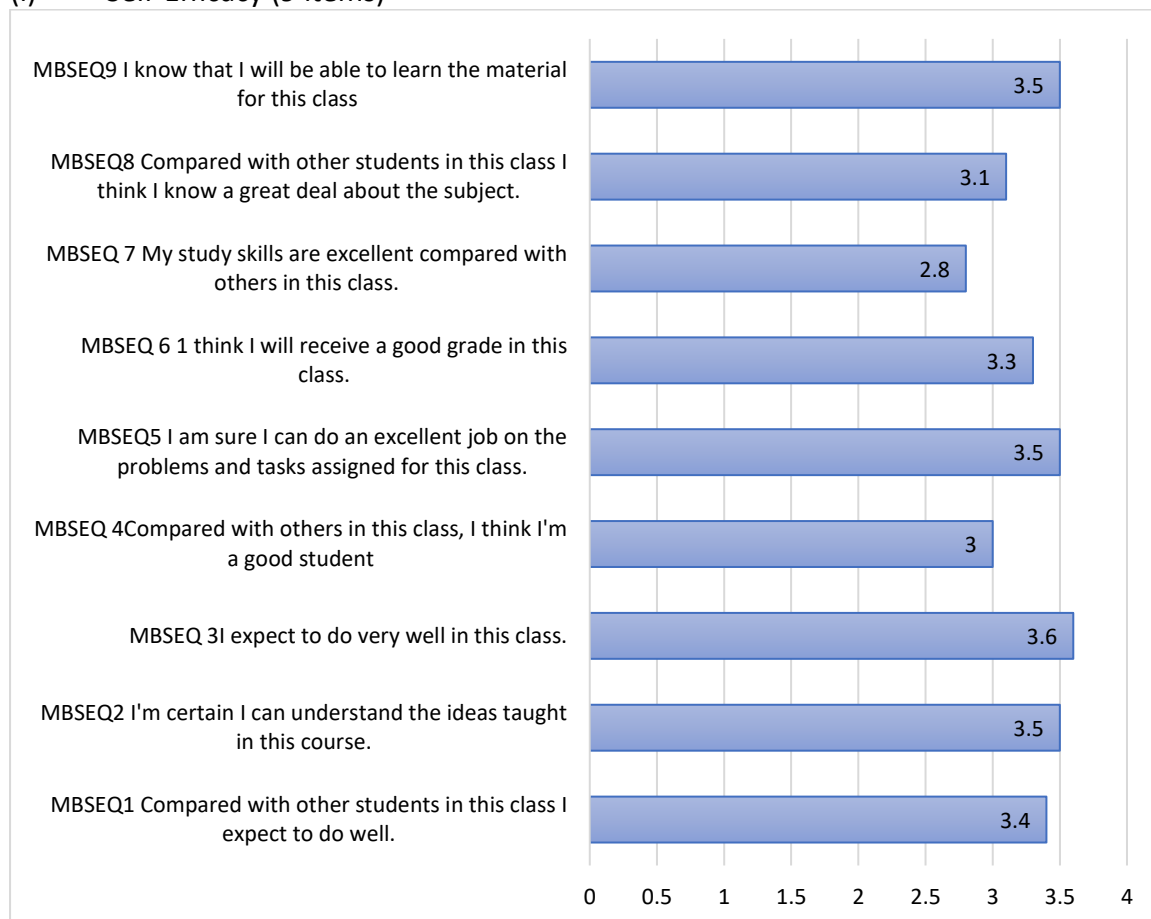


Figure 5: Mean for Self -Efficacy

The above table states the mean score of self-efficacies related to motivational beliefs for learning. In measuring this, the value of mean must be identified. In having a better understanding on the range of mean whether it is high, moderate, or low, the level category by Muslim (2015) is adopted for this study, as stated below.

Table 3

Mean level Indicator

Categories of range level based on the Mean value	
Mean Value	Type of range
1.00-2.33	Low
2.34-3.67	Moderate
3.68-5.00	High

There are nine items measured under self-efficacy. Comparing the findings (refer Table 3) with the mean level indicator by Muslim (2015), it shows that the results scored a moderate mean for all nine items. It is in between 2.8 to 3.6. Learners have high expectations of themselves to perform well, with the highest mean at 3.6. In addition, the learners also agreed that they can understand the ideas taught in this course, do an excellent job on the problems and tasks assigned for this class and be able to learn the material for this class. All these three items scored 3.5. While the lowest mean score of 2.8 indicates that the learners study skills are excellent compared with others in the class.

(ii) Intrinsic Value (9 items)

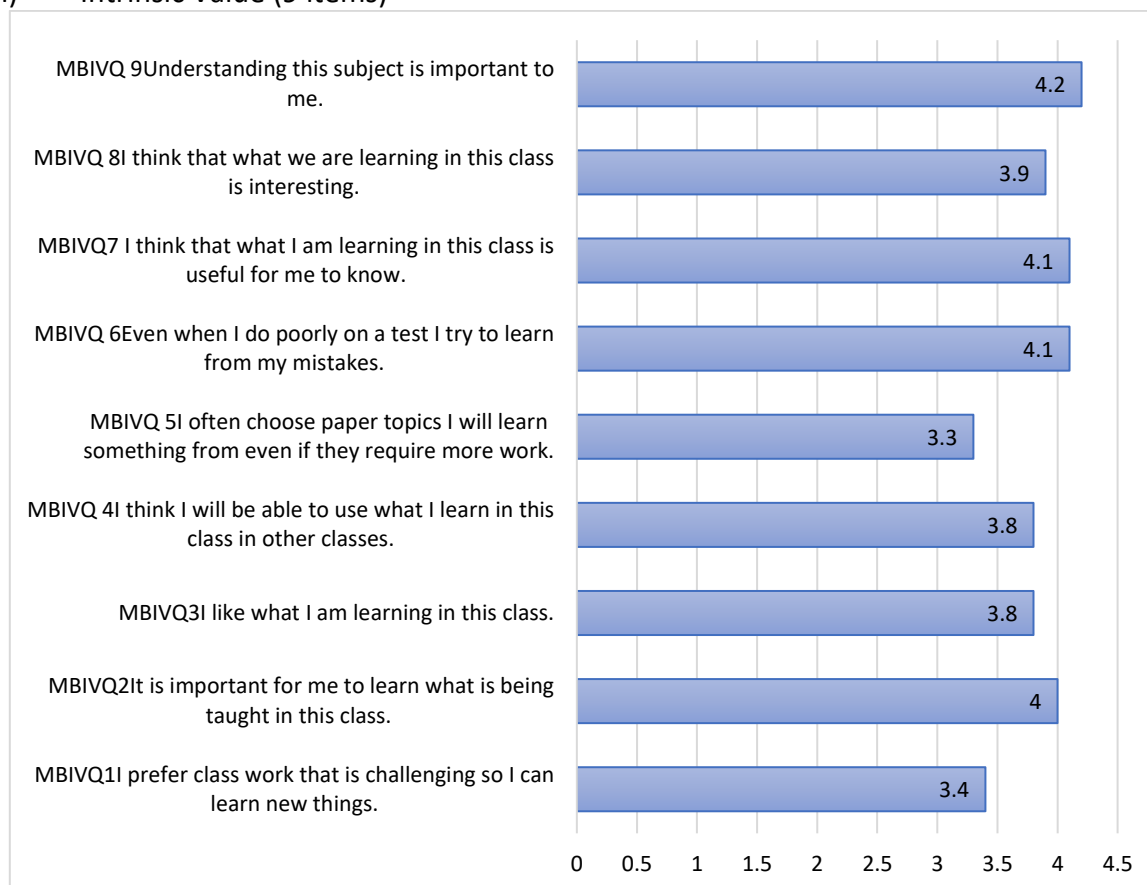


Figure 6: Mean for Intrinsic Value

The above table shows the mean score for intrinsic value pertaining to motivational beliefs for learning. From the results most of the learners believe that it is important for them to understand the subject with the highest mean at 4.2. Meanwhile, the least mean for intrinsic value is at 3.3 where the learner often chooses paper topics that offer opportunity for learning, even if they demand more effort.

(iii) Test Anxiety (4 items)

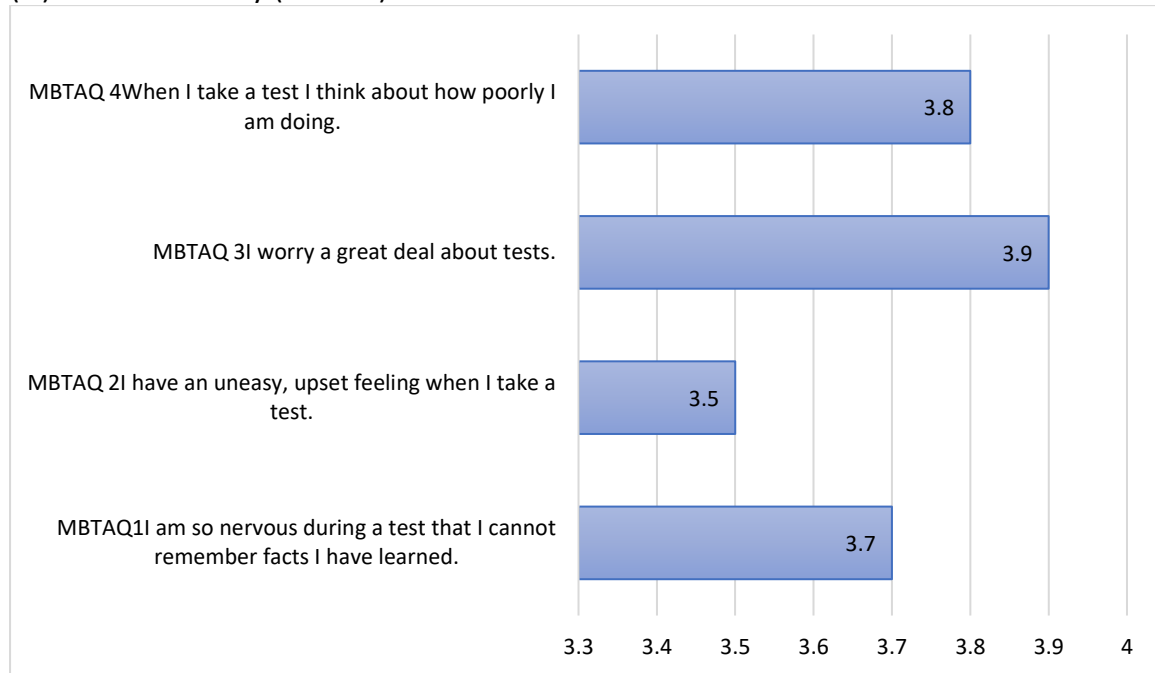


Figure 7: Mean for Test Anxiety

The above table shows the mean score for test anxiety among learners. Most of the learners feel a significant amount of concern regarding tests with the highest mean at 3.9. Meanwhile, the least mean for test anxiety is at 3.5 where the learner feels uneasy and upset when they take a test.

Findings for Cognitive Strategy Use

This section presents data to answer research question 2- How do learners perceive their cognitive strategy use?

Cognitive Strategy Use (13 items)

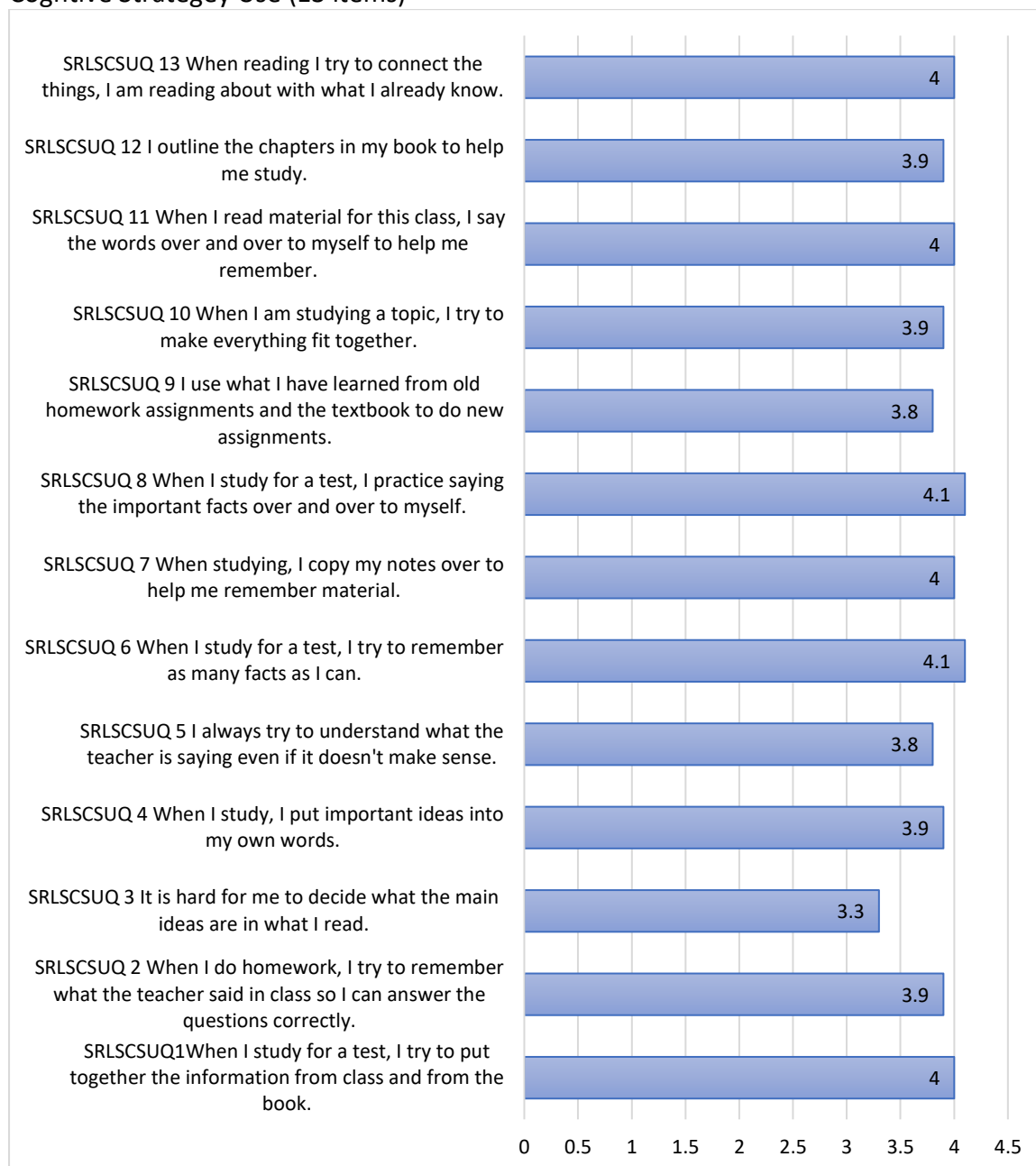


Figure 8: Mean for Cognitive Strategy Use

The above table states the mean score of self-efficacies related to motivational beliefs for learning. There are thirteen items measured under self-efficacy which result in between a range of 4.1- 3.3. From this result, it shows that the most cognitive strategy used by learners is self-testing and memorizing with the highest mean at 4.1. Meanwhile the least cognitive strategy used with a range of 3.3 is underlining the key words whereby the learner has the difficulty to come out with the main idea from what they have read.

Findings for Self-Regulation

This section presents data to answer research question 3- How do learners perceive their self-regulation?

SELF-REGULATION (9 items)

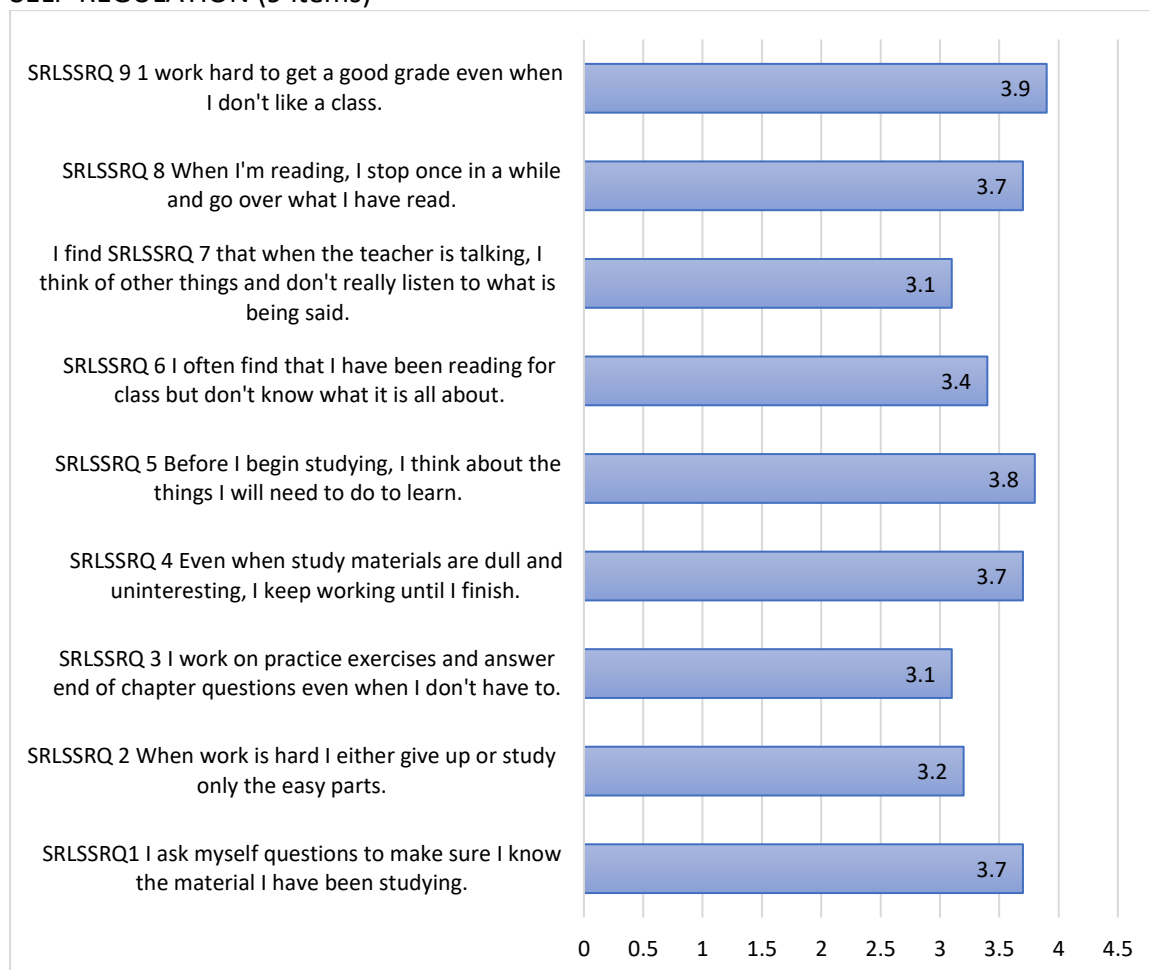


Figure 9: Mean for Self -Regulation

To support the component of self-regulation, most of the students believe by working hard they will get a good result (3.9) and they will plan on the learning strategies before the class starts (3.8). Besides, the students perceived their self-regulation through self-questioning on what to study, completely focusing on the materials even if it is not interesting and keep reading to make clear on what syllabus they have learnt (3.7). However, there are some issues faced where sometimes the students get confused on the materials (3.4) so that they give up and just study the easy part (3.2).

Findings for Relationship between Motivational Beliefs and Self-Regulated Learning Strategies

This section presents data to answer research question 4- Is there a relationship between motivational beliefs and self-regulated learning strategies? To determine if there is a significant association in the mean scores between motivational beliefs and self-regulated learning, data is analysed using SPSS for correlations. Results are presented separately in table 4 below.

Table 4

*Correlation between Motivational Beliefs and Self-Regulated Learning Strategies***Correlations**

		TOTALMOTIVATIONAL	TOTALSELFREGULATED
TOTALMOTIVATIONAL	Pearson Correlation	1	.667**
	Sig. (2-tailed)		.000
	N	237	237
TOTALSELFREGULATED	Pearson Correlation	.667**	1
	Sig. (2-tailed)	.000	
	N	237	237

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows there is an association between motivational beliefs and self-regulated learning. Correlation analysis shows that there is a high significant association between motivational beliefs and self-regulated learning ($r=.667^{**}$) and ($p=.000$). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between motivational beliefs and self-regulated learning.

Conclusion*Summary of Findings and Discussion*

Overall, this study found that there is a strong positive relationship between motivational beliefs and self-regulated learning. The findings on motivational beliefs on the self-efficacy point shows that the learners have high expectations of themselves to perform well, and agreed that they can understand the ideas taught, perform well on the problems and tasks assigned. and learn the material for this class. In addition, for intrinsic value of motivational belief, the learners believe that it is important for them to understand the subject so that it can help them to study well even if most of the students are worried about their performance in any of the assessments. The findings also show a positive result on cognitive strategy use where learners' most common cognitive strategy is self-testing and memorising, even some responses indicate that the learner is having difficulty extracting the main idea from what they have read. Despite of motivation belief and cognitive strategy, the findings also supported through self-regulated learning where the student's belief that they have to strategise their aims for study so that they have the reference, and it can be the control and monitoring tools in order to get the good result. These findings are similar to those discovered by Tang and Neber (2008) about students from three different cultures (American, German, and Chinese) performed significantly differently in Chemistry on motivational and self-regulation characteristics. These findings supported by the study done by Reeve (2012) which students use autonomous guides to action, while others rely on controlling and environmental guides. This distinction is significant because autonomous forms of regulation are more beneficial for learning motivation than controlling forms of regulation (Deci & Ryan, 2000; Reeve, 2012). Controlling forms of motivation regulation direct students' behaviour towards outcomes unrelated to schoolwork: avoiding punishment, receiving rewards,

pleasing parents or teachers, outperforming others, or boosting self-esteem (Smit et al., 2017).

Pedagogical Implications and Suggestions for Future Research

This study demonstrates that students understand and employ motivational, cognitive, and self-regulation strategies. Nonetheless, the mean scores of the strategies in this study indicate that there is room for improvement. Intervention studies are required to determine whether raising motivational awareness and training students in motivational strategies increases their use of such strategies and, as a result, has a greater impact on their motivational outcomes and can directly improve their cognitive and self-regulation strategies in learning. For future research, it is suggested that the study should be conducted on identifying which variable is the strongest influence between motivational beliefs, cognitive strategy used and self-regulation in determining the success of learning strategies among the students.

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