

## Exploring Relationship between Learning Approaches among Postgraduate Students

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### Abstract

Postgraduate studies which include master's and doctoral degree programs in universities allow students to embark on a journey of independent learning and research. Entering higher education, students in particular the postgraduate students in which majority of them are working adult, face the challenge of self-regulating their learning. Despite the extended research conducted investigating the relationship between the use of learning strategies and student academic performance, there is lack of evidence on the use of learning strategies by postgraduate students in Malaysia. This study aims to explore perception of postgraduate students on their use of learning strategies and to ascertain the relationship between the learning strategies. This study employs quantitative approach. Using purposive sampling, a total of 259 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted from Wenden & Rubin (1987). The survey has 4 sections. Section A has 5 items on demographic profile. Section B has 19 items on cognitive components. Section C has 11 items on metacognitive self-evaluation. Section D has 11 items on resource management components. The findings indicated that the postgraduate students' cognitive strategies, metacognitive self-regulated and resource management are high, and all the learning strategies have positive relationship of each other. This explicitly means no one single learning strategy is considered predominant and superior to the other strategies. As this study tested limited variables, it is recommended that future research could focus on thorough profiling analysis. This includes investigating the level of differences of learning strategies utilized by students from different disciplines and mode of study. Moreover, a combination

of both quantitative and qualitative analysis would offer richer data that could shed the light of the issue better, and eventually can recommend measures to support the postgraduate students in their academic journey.

**Keywords:** Learning Strategies/Approaches, Self-Regulated Learning, Cognitive Component, Resource Management

## **Introduction**

### **Background of Study**

Postgraduate studies which include master's and doctoral degree programs in universities allow students to embark on a journey of independent learning and research. This high level of studies offers wider opportunities for them to pursue and generate new knowledge and skills which in turn could lead to not only personal and professional development but also contribute to the national development of a country (Amani et.al., 2022). Entering higher education, these postgraduate students in which majority of them are working adult, face the challenge of self-regulating their learning. They are expected to be self-directed learners hence they are required to plan and monitor their own learning in different context and settings. As postgraduate students are also less guided compared to the undergraduate students hence it is essential to utilize learning strategies that could support the nature of autonomous learning of postgraduate level.

Learning strategies are defined as a set of approaches that learners use to acquire information and knowledge, such as taking notes, organizing information, summarizing and coding (Muelas & Navarro, 2015). The concept of learning style is different from learning strategies. Learning style refers to the information processing routines associated with students' personalities, whereas learning strategies signify the students' learning approaches in specific learning activities and learning situations (Li et.al, 2016). The discussion on learning strategies often extended to the aspect of what constitute effective learning strategies. Effective learning strategies are associated with the techniques and approaches learners use to achieve the acquisition, storage, retention, recall and adoption of knowledge (Almoslamani, 2022).

The number of postgraduate students in Malaysia has increased tremendously over the last 10 years. It is estimated that there are more than 130,000 students that are currently active pursuing their postgraduate studies (xxx). However, the rate of withdrawal or incompleteness of study is also very high among postgraduate students. As Malaysia is moving towards sustainable employability, knowledge production and growth with the aim to achieve at least 60% Malaysians with postgraduate qualification by 2025 (The Star, 2022) in line with Malaysia Education Blueprint 2015 - 2025, understanding aspects that could improve the performance as well as the factors that could help students to complete their studies successfully are crucial (Puteh et.al., 2022).

Utilizing effective learning strategies during self-study is crucial for positive long-term learning outcomes and academic achievement (Biber et. al., 2020; Almoslamani, 2022). However, most students rely on ineffective strategies, such as rereading (Blasiman et al., 2017, Rovers et.al., 2018). Soderstrom and Bjork (2015) claimed that students are easily fooled by metacognitive illusions and mistakenly interpret short-term performance or ease-of-processing as reliable indicator for long-term learning. As a result of this *experienced-learning-versus-actual-learning*-paradox, students are overconfident in their self-chosen learning strategies relative to academic performance (Winne & Jamieson-Noel, 2002) and often endorse ineffective learning strategies as being effective (Biber et. al., 2020;

Soderstrom and Bjork, 2015). Moreover, a few previous research suggested that students are not well prepared to meet higher education requirements, and they face huge challenges in being self-regulated students (Rosario et al., 2015).

Research on learning strategies has shown that students may adopt more than one learning strategy since the different academic tasks and their nature require different processing strategies, which range from simple to more complex strategies. Some studies established that the learning strategies could be a good predictor of academic achievement (Vettori et al., 2018; Tan, 2019). Despite the extended research conducted investigating the relationship between the use of learning strategies and student academic performance, there is lack of evidence on the use of learning strategies by postgraduate students in Malaysia. Therefore, this study explores the learning strategies adopted by Malaysian postgraduate students in their daily learning activities. This is parallel with Malaysia's effort to strengthen the higher learning education in particular the postgraduate level in order to produce more professionals and thinker by the year 2030.

### **Statement of Problem**

The quality of knowledge and skills obtained by post graduate students is characterised by the learning strategies or the way they approached their study (Pereles et al., 2020; Idris et al., 2022; Zaheer & Hashimi, 2023). The right and suitable learning strategies or approaches employed by postgraduate have significant influence on their academic performance. Pereles et al (2020), maintain that learning strategies have strong relationship on academic achievement. Fathoni & Retnawati (2021) also concur that clear and right learning strategies employed by post graduate students eliminates learning distractions and bring learning effectiveness. As pointed by Zaheer & Hashimi (2023), learning strategies help learners to accomplish their learning goals. Post graduate students are mostly adult learners (Tareen & Haand, 2020) and they are expected to be mature, independent, autonomous, and effective managers of their own learning processes (Fathoni & Retnawati, 2021; Pereles et al., 2020).

However, studies about learning among post graduate students are lacking especially on their learning strategies or approaches (Pereles et al., 2020; Tareen & Haand, 2020; Zaheer & Hashimi, 2023; Puteh et al., 2022). Past studies also pointed out that post graduate students employ different types of learning approaches in their course of study (Idris et al., 2022; Rajasagaran et al., 2022). As argued by Tareen & Haand (2020); Setiawan (2023), the pandemic of Covid-has changed the way students learn from traditional teaching to online learning. Both traditional and online learning require different learning strategies on their end to meet optimum level of learning. Rajasagaran et al (2022), also noted that post graduates students are still lacking in mastering skills in learning strategies, thus number of postgraduate students that did not manage to graduate on time drastically increase every year. A study by Puteh et al (2022), also discovered that post graduate students often fail to benefit from the learning strategies as they repeatedly adopted ineffective strategies when studying and many could not even recognize the use of certain strategies to regulate their learning. In a most recent study by Setiawan (2023), also concurs that students most largely adopted cognitive strategy and disregard other types of learning strategies. Thus, this has been identified as one of the great challenges faced by students during their course of learning.

### **Objective of the Study and Research Questions**

This study is done to explore perception of postgraduate students on their use of learning strategies. Specifically, this study is done to answer the following questions;

- How do learners perceive their use of cognitive components?
- How do learners perceive their use of metacognitive self-regulation?
- How do learners perceive their use of resource management?
- Is there a relationship between all learning strategies?

## **Literature Review**

### *Learning Strategies*

What are learning strategies? A simple answer is that strategies are the process that underlie performance on thinking tasks (Nisbet & Shucksmith, 2017). Learning strategies can also be defined as a set of skills that learners chose and apply on various tasks to accomplish specific learning objectives (Gonzales, 2016). It is also used in a very broad sense to identify a number of different competencies that research and practitioners have postulated as necessary, or helpful, for effective learning and retention of information for later use (Weinstein & Underwood, 1985). Learning strategies can also be defined as the behaviours of a learner that are intended to influence how the learner processes information. Examples include underlining of key ideas in a passage, outlining of the ideas in a lecture, or trying to put some newly learned information into one's own words (Mayer, 1988). Belletti & Vaillant (2022) classify them into five major groups. These groups include strategies of rehearsal, elaboration, organization, metacognition, and motivation. Other than that, The Model of Strategic Learning is an emergent model that considers the variables that are most related to academic achievement and retention and are most amenable to academic intervention (Weinstein, 2008).

### *Self-Regulated Learners*

Self-regulated learners are learners who understand their learning environment and take full control of their learning process (Schraw et al., 2006). In other words, self-regulated learners are intrinsically motivated and autonomous individuals who are proactive in pursuing their own goals for their learning (Zimmerman, 2002). Mostly, their learning process is embedded within the circle of four components namely, goal setting, self-monitoring, self-instruction, and self-reinforcement (Schraw et al., 2006). According to Zimmerman (2002), self-regulated learners set targets, choose the strategies that suits best a given assignment and finally reflect on the outcomes by benchmarking it with the previous performance. Examples of good self-learning skills include good time management, capability to quickly decide on the most efficient problem-solving strategies; and the talent to vigorously observe emotional states such as aggravation and negative outcomes (Stephanou & Mpiontini 2017). These qualities of self learning skills explain why self-regulated learning is predominantly applicable to matured adults (Puteh et al., 2022). This is because matured students have multiple responsibilities such as family, formal employments and career growth. Therefore, these added responsibilities require minimum supervision and which indirectly commands for self-regulated learning behavior.

### *Past Studies on Learning Strategies*

Hattie & Donoghue (2016) found 4400 learning strategies during their investigation, or the procedures that students use to improve their own learning. There were numerous contenders that claimed to be effective learning strategies, though many of them were simply rebranded copies of others or minor variations of others. These techniques aid the learner in organising his or her thoughts in order to plan, establish objectives, track progress, make

corrections, and assess the learning process and its results. These tactics can be grouped in a variety of ways using different categories and classifications. For instance, Boekaerts (1997) promoted three different kinds of learning strategies: (1) cognitive strategies, like elaboration, to enhance understanding of the subject matter under study; (2) metacognitive strategies, like planning, to manage the learning process; and (3) behavioural strategies. However, it is not justified to simply examine these 400 plus strategies as if they were autonomous. As a result, Hattie & Donoghue (2016) created a model of learning that served as a foundation for learning strategies. They developed a learning strategies model that is effective depending on the degree to which the students are aware of the criteria of success, on the phases of learning process in which the strategies are used, and on whether the student is acquiring or consolidating their understanding. The finding is that learning techniques can improve performance most effectively when they are matched to job requirements. Whereas, Richard Mayer (1988), presents three basic models of learning and four components mainly instruction, learning processes, learning outcomes, and performance. Mayer (1988) discussed how learning strategy training can affect the process and outcome of learning, with special emphasis on an exemplary research study.

#### *Past Studies on Self- Regulated Learners*

Self-regulated learning has characterized self-generated judgment, mind-set, and actions, which are systematically oriented toward attainment of students' own objectives in learning process (Zimmerman, 2002). Over the past two decades the variable of self-regulated learning has been greatly researched especially in adult education field and in psychology (Zimmerman, 2002; Akcaoglu et al., 2023). Many scholars have proposed theoretical models in finding what could best be applicable in understanding the main dimensions of learning that can be replicated in particular setting or environment (Candy, 1991; Winne & Perry, 2000; Zimmerman, 2002; Stephanou & Mpiontini, 2017; Akcaoglu et al., 2023). For instance, Stephanou & Mpiontini (2017) conducted a study to understand the effect of metacognitive self-regulation learning style on performance of students. The study targeted 243 upper class primary students who were selected randomly from twenty different public schools in Greece. The findings revealed that the students used metacognitive knowledge (mostly declarative); and also metacognitive regulation (mostly planning); but to a moderate extent.

Similarly, Akcaoglu et al (2023) conducted a study to find whether metacognitive can be related to critical thinking and self-regulated learning. The study was conducted using a survey of 460 teachers who were students at a college. The unique tools for data collection included a self-regulation inventory, the critical thinking standards scale and the metacognitive awareness inventory. The results revealed that the three constructs were significantly related to one another. Specifically, metacognitive awareness was found to be a partial mediator between self-regulation and critical thinking. These findings are somehow similar to Puteh et al (2022), who reported high mean value for the four tested components of learning strategies which consisted of cognitive strategy, metacognitive self-regulation, and resource management.

The findings in Akcaoglu et al (2023) have implication to higher learning institutions, students and researchers. The findings suggest that the variables of self-regulation and metacognitive awareness should be considered in designing course objectives for improved individuals' critical thinking skills. Generally, there are still pragmatic findings and which require further investigation in the construct of self-regulated learning particularly in the middle income countries such as Malaysia where the literature in this field is still inadequate.

### Conceptual Framework

Figure 1 shows the conceptual framework of the study. This study explores the relationship between all learning strategies. According to Wenden & Rubin (1987), there are three learning strategies. The first strategy is cognitive components. This involves learners using sub-strategies such as (i) rehearsal, (ii) organisation, (iii) elaboration and (iv) critical thinking. Next, learners also use metacognitive strategies when they learn and this involves the planning on the part of the learners. The last strategy is resource management and this refer to the sub-strategies that depended on the people /situation around the learner. According to Rahmat (2019), one motivating factors for learners in external regulation. These are the factors that involves interaction. Wenden & Rubin's (1987) resource management are (i) environment management, (ii) effort management and (iii) help-seeking.

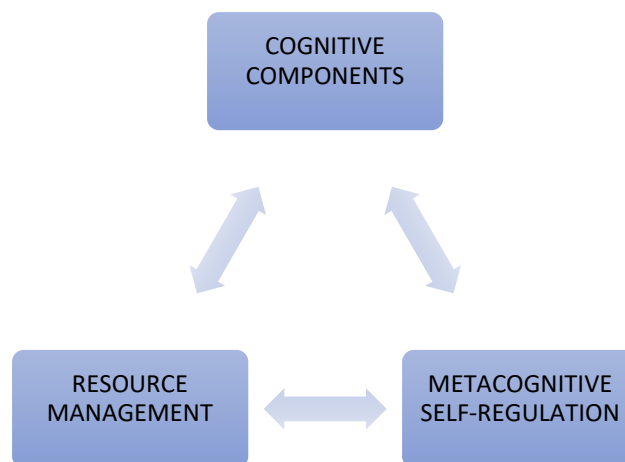


Figure 1- Conceptual Framework of the Study- Relationship between all Learning Approaches

### Methodology

This quantitative study is done to explore motivation factors for learning among undergraduates. A purposive sample of 259 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted from Wenden & Rubin (1987) on learning approaches to reveal the variables in table 1 below. The survey has 4 sections. Section A has 5 items on demographic profile. Section B has 19 items on cognitive components. Section C has 11 items on metacognitive self-evaluation. Section D has 11 items on resource management components.



Table 1

*Distribution of Items in the Survey*

Section	Approach		Elements	No. of Item	Total
A	DEMOGRAPHIC PROFILE	(a)	Gender	1	5
		(b)	Age Group	1	
		(c)	Discipline	1	
		(d)	Mode of Study	1	
		(e)	Working Experience	1	
B	COGNITIVE COMPONENTS	(a)	Rehearsal	4	19
		(b)	Organization	4	
		(c)	Elaboration	6	
		(d)	Critical Thinking	5	
C	METACOGNITIVE SELF-REGULATION				11
D	RESOURCE MANAGEMENT COMPONENTS	(a)	Environment Management	5	11
		(b)	Effort Management	4	
		(c)	Help-Seeking	2	
Total Items					46

Table 2

*Reliability of Survey***Reliability Statistics**

Cronbach's Alpha	N of Items
.937	41

Table 2 shows the reliability of the survey. The analysis shows a Cronbach alpha of 0.937, 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*

This section presents demographic profile of the respondents. The respondents of this study are students that pursuing their postgraduate study. There are four (5) information collected from the respondents as represented in Table 3 - Table 7.

Q1.Gender

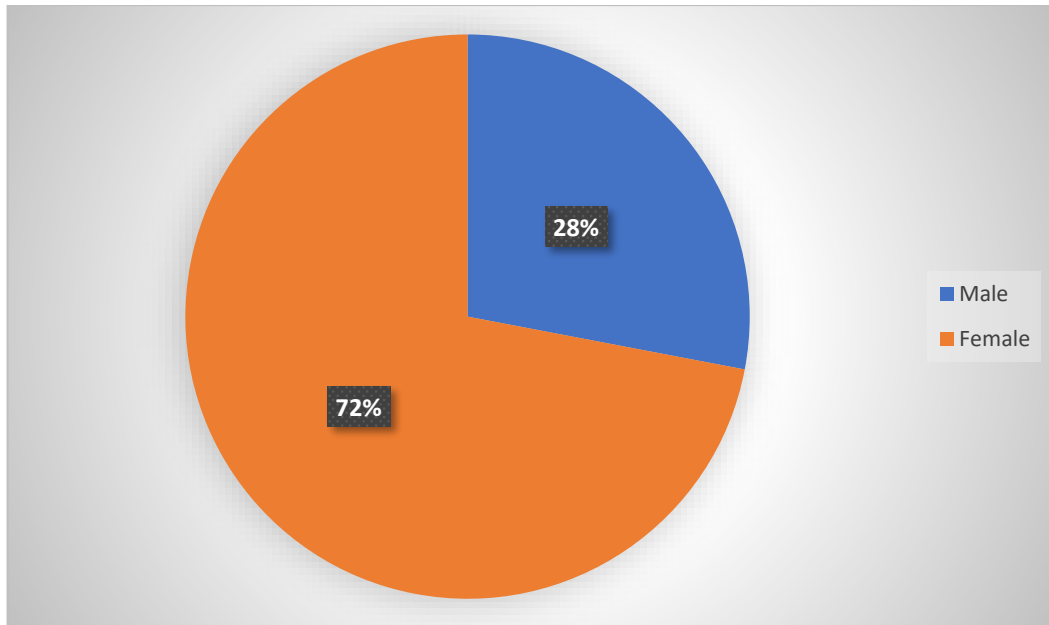


Figure 2 - Percentage for Gender

Figure 2 above depicts the percentage of the respondents based on gender. Out of 259 respondents, 72% are female (187 respondents) while 28% are male (72 respondents).

Q2 Age Group

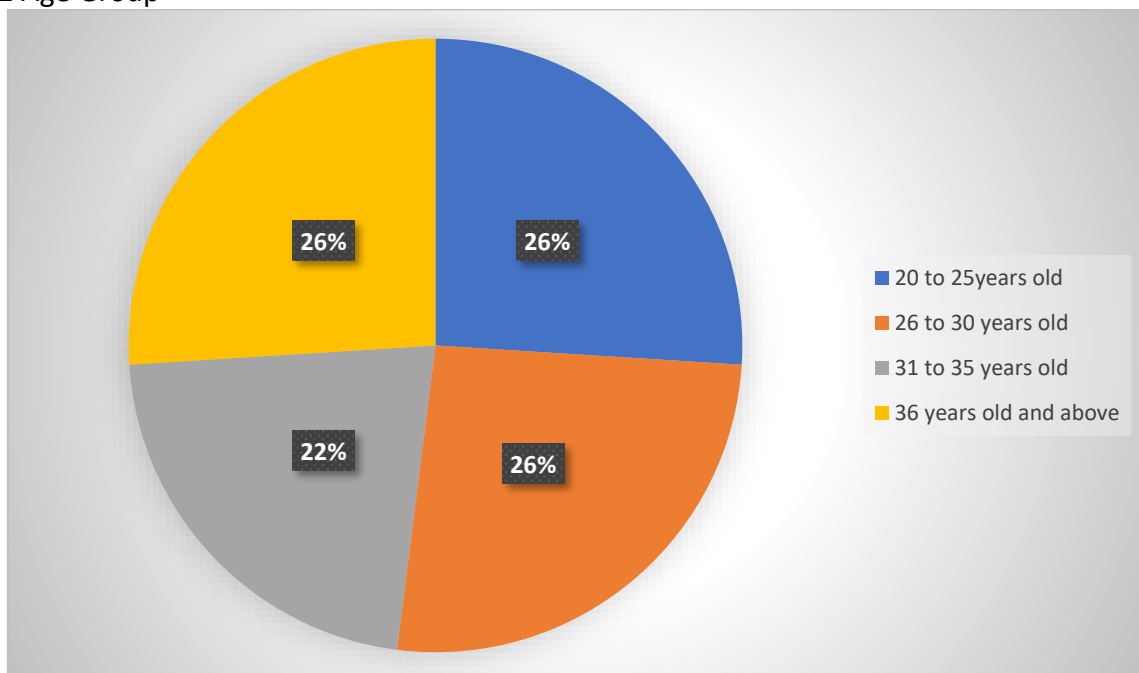


Figure 3- Percentage for Age Group

In terms of age, 26% of the respondents came from several age group as shown in Figure 3 which include respondents of age 20 to 25, 26 to 30 and 36 years old and above while another 22% came from the age of 31 to 35 years old.



Q3 Discipline

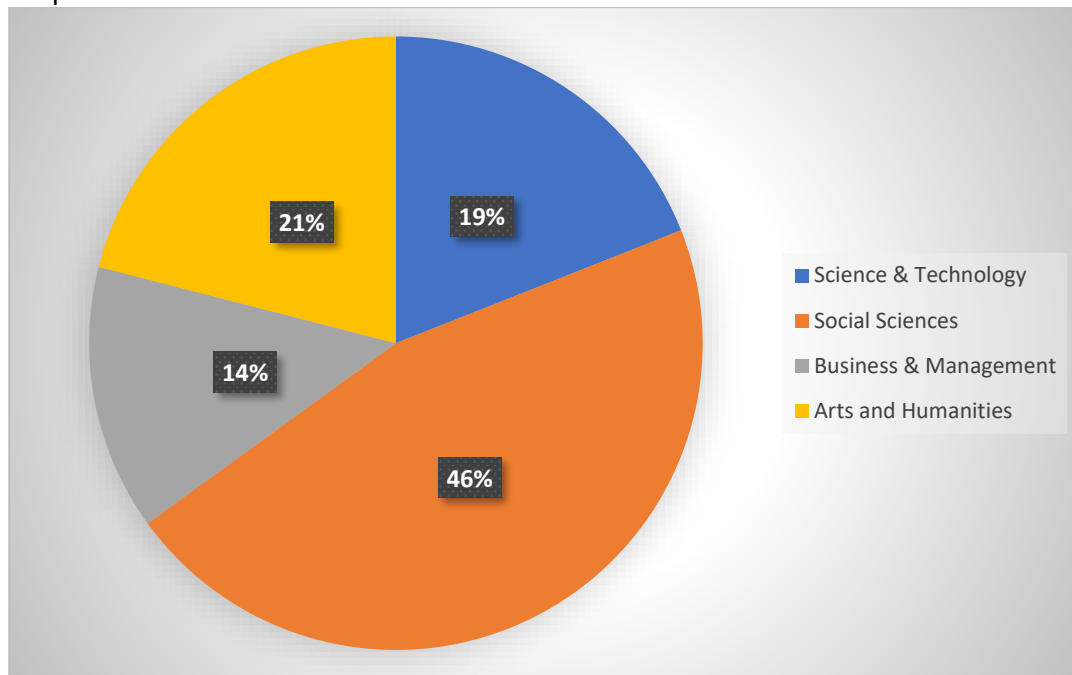


Figure 4- Percentage for Discipline

With regards to discipline, as shown in Figure 4 above, the majority of the respondents (46% - 118 students) are from Social Sciences discipline, followed by 21% (55 students) from Arts and Humanities discipline. There are about 19% (49 students) came from Science and Technology discipline, and lastly 14% (37 students) are from the Business and Management discipline.

Q4 Mode of Study

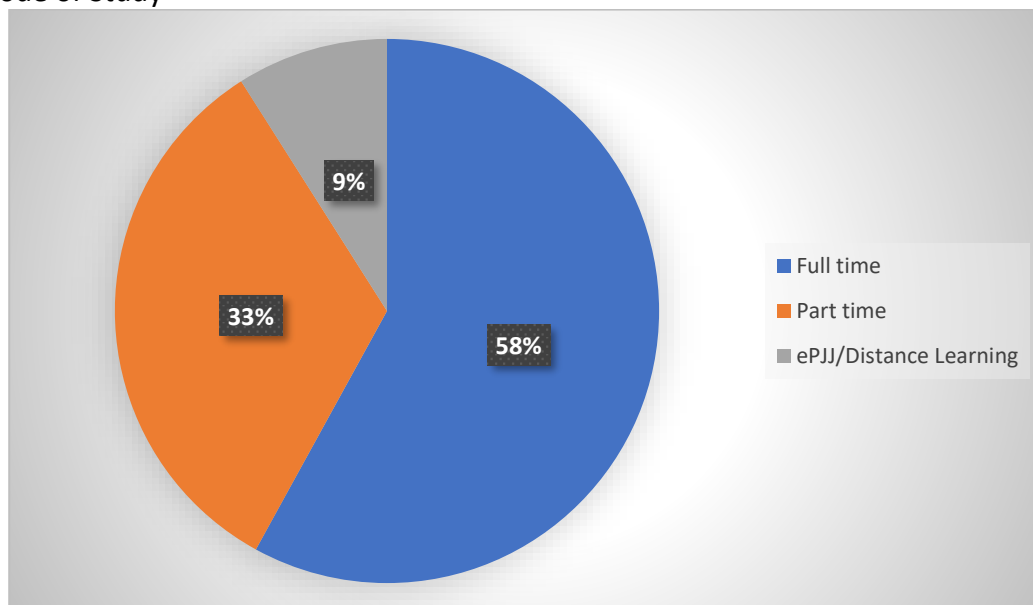


Figure 5 - Percentage for Mode of Study

Figure 5 shows the mode of study of the respondents. Most of the informants are studying full time, represented by 58%. Part time students recorded for 33% of the total population. It is followed by informants from ePJJ/Distance Learning with 9% of the total population.

Q5 Working Experience

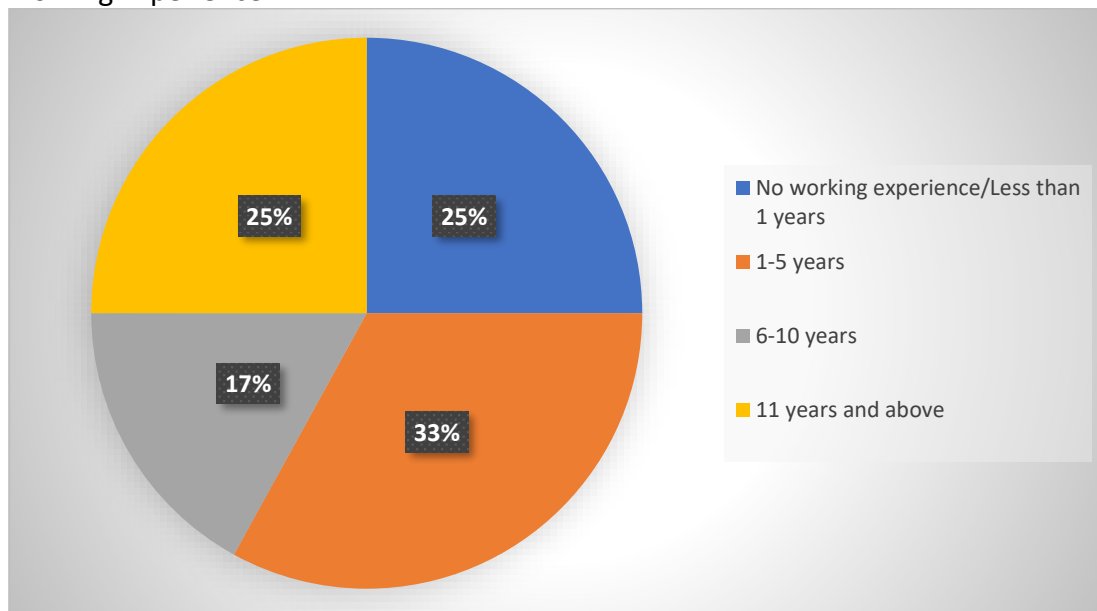


Figure 6 - Percentage for Working Experience

Figure 6 shows percentage for working experience. The majority of the informants were between 1-5 years, represented by 33%. Whilst 25% representing more than 11 years and no working experience/less than 1 year. 6-10 years recorded for 17% of the total population.

Next, the descriptive analysis is used to find the mean value for each question under variables tested in this study. The data is interpreted according to a 5-level mean score scale adopted from Bringula et al (2012); Amin & Ahmad (2012), as shown in Table 8 below.

Table 3

*The 5-point scale, its mean range and the level of interpretation*

Mean	Level of Interpretation
1.00 – 1.50	Very Low / Highly Disagree
1.51 – 2.50	Low / Disagree
2.51 – 3.50	Moderate / Neutral
3.51 – 4.50	High / Agree
4.51 – 5.00	Very High / Highly Agree

Source: Bringula et al (2012); Amin & Ahmad (2012)

*Findings for Cognitive Components*

This section presents data to answer research question 1- How do learners perceive their use of cognitive components? Cognitive components involve (i) rehearsal, (ii) organization, (iii) elaboration and (iv) critical thinking.

## (i) Rehearsal (4 items)

Table 4

*Mean for Rehearsal*

<b>Section B: Cognitive Component (Rehearsal)</b>	<b>Mean</b>	<b>Value</b>
LSCCRQ1 When I study for the classes, I practice saying the material to myself over and over.	3.3	Moderate
LSCCRQ 2 When studying for the courses, I read my class notes and the course readings over and over again.	3.8	High
LSCCRQ 3 I memorize key words to remind me of important concepts in this class.	4.1	High
LSCCRQ 4 I make lists of important items for the courses and memorize the lists.	4.2	High
<b>Average Mean Value</b>	<b>3.85</b>	<b>High</b>

Table 4 above shows four items which measured cognitive component (rehearsal). For item LSCCRQ1 which stated “When I study for the classes, I practice saying the material to myself over and over” had a moderate mean value of 3.3. This indicates that postgraduate students moderately or sometimes practice the materials for themselves and over and over. The next item LSCCRQ 2 which stated ‘When studying for the courses, I read my class notes and the course readings over and over again’ had a mean score of 3.8 which is regarded as high. This means that postgraduate students more often read class notes over and over again. Meanwhile, for the third item LSCCRQ 3 which stated “I memorize key words to remind me of important concepts in this class” had a high mean value of 4.1. The plausible explanation for this item suggests that postgraduate students more often memorise key words learned in class so as to remember some important concepts. Finally, for the item LSCCRQ 4 which stated “I make lists of important items for the courses and memorize the lists” had the highest mean value of 4.2. Again, this could be interpreted to mean postgraduate students considers leaning by memorising some of the important items for the course. The overall mean score for cognitive dimension-rehearsal was 3.85; and it indicates that postgraduate students highly agreed with using rehearsal such as reading materials over and over again, memorising some of the course materials as part of their learning strategies.

## (ii) Organization (4 items)

Table 5

*Mean for Organization*

<b>Section B: Cognitive Component (Organization)</b>	<b>Mean</b>	<b>Value</b>
LSCCOQ1 When I study the readings for the courses in the program, I outline the material to help me organize my thoughts.	4.0	High
LSCCOQ 2 When I study for the courses, I go through the readings and my class notes and try to find the most important ideas.	4.2	High
LSCCOQ 3 I make simple charts, diagrams, or tables to help me organize course materials in this program.	3.6	High
LSCCOQ 4 When I study for the courses, I go over my class notes and make an outline of important concepts.	4.1	High
<b>Average Mean Value</b>	<b>3.9</b>	<b>High</b>

Table 5 above presents mean scores of the items measuring the cognitive component called Organization. As can be seen item LSCCOQ 3 has the highest mean score of all items which reflects the fact that students find the most important ideas for their courses from the readings and class notes. The mean scores of most of the items are above overall average, except item LSCCOQ 3 whose mean score was below the average mean score of 3.9. This implies that students agree that organization is one of the most important learning strategies that they employ when studying for the courses.

(iii) Elaboration (6 items)

Table 6

*Mean for Elaboration*

<b>Section B: Cognitive Component (Elaboration)</b>	<b>Mean</b>	<b>Value</b>
LSCCEQ1 When I study for the courses in this program, I pull together information from different sources, such as lectures, readings, and discussions.	4.1	High
LSCCEQ 2 I try to relate ideas in one subject to those in other courses whenever possible	4.0	High
LSCCEQ 3 When reading for the courses, I try to relate the material to what I already know.	4.3	High
LSCCEQ 4 When I study for the courses in this program, I write brief summaries of the main ideas from the readings and my class notes.	3.8	High
LSCCEQ 5 I try to understand the material in the classes by making connections between the readings and the concepts from the lectures.	4.1	High
LSCCEQ 6 I try to apply ideas from course readings in other class activities such as lecture and discussion.	4.1	High
<b>Average Mean Value</b>	<b>4.0</b>	<b>High</b>

Data in Table 6 above indicates items for dimension number 3 (elaboration) under cognitive component. There is a total of six (6) items. For item LSCCEQ1, the mean value was high (4.1). This indicates that postgraduate students pull together information from different sources, such as lectures, readings, and discussions when they study for the courses they enrols. This signify that combination of information makes them more understand about the subject that they have learned. Next, for item LSCCEQ 2, it was found that during their study, postgraduate students try to relate ideas in one subject to those in other courses whenever possible. The mean score was 4.0 (high). This denotes that by linking the subject that they learn with other subjects makes them able to grasp the knowledge and increase their understanding. As for item LSCCEQ 3, with a mean score of 4.3 (high), the respondents have agreed that during reading for the course, they try to relate the material to what they already know. This signify that connecting the dots between what they know and what they learn in class will make them understand more about the subject and thus increase their comprehension.

Meanwhile, for item LSCCEQ 4, it was found that the respondents elaborated more of their study by writing brief summaries of the main ideas from their readings and class notes. The mean value was high (3.8). This implies that by making small notes or summarize from what they read, makes them understand about the subject better. For item LSCCEQ 5, the respondents concede highly with a mean score of 4.1 that they try to understand the material

in the classes by making connections between the readings and the concepts from the lectures. This result infers that making sense of what they read with what they learn in class enable them comprehend the subject better. Lastly, for item LSCCEQ 6, the respondents noted highly that try to apply ideas from course readings in other class activities such as lecture and discussion. The mean value for this item was 4.1. The average mean score for elaboration dimension was 4.0 and it indicates that our respondents highly agreed with elaboration and extra effort by them are very helpful and beneficial in their study for the post-graduate course that they enrol.

(iv) Critical Thinking (5 items)

Table 7

*Mean for Critical Thinking*

<b>Section B: Cognitive Component (Critical Thinking)</b>	<b>Mean</b>	<b>Value</b>
LSCCCTQ1 I often find myself questioning things I hear or read in the courses to decide if I find them convincing.	3.8	High
LSCCCTQ 2 When a theory, interpretation, or conclusion is presented in classes or in the readings, I try to decide if there is good supporting evidence.	3.8	High
LSCCCTQ 3 I treat the course materials as a starting point and try to develop my own ideas about it.	3.8	High
LSCCCTQ 4 I try to play around with ideas of my own related to what I am learning in the courses.	3.9	High
LSCCCTQ 5 Whenever I read or hear an assertion or conclusion in the classes, I think about possible alternatives.	3.8	High
<b>Average Mean Value</b>	<b>3.8</b>	<b>High</b>

Data in Table 7 above indicates items for dimension number 4 (critical thinking) under cognitive component. There are five (5) items that measure critical thinking dimension. For item LSCCCTQ1, the mean score was 3.8 (high). The respondents of the study noted that questioning things during the study help them to decide if what they have read and heard are convincing. This implies that they comprehend better when they are being critical in what they heard or read to ensure the information are valid and reliable. Next, for item LSCCCTQ 2, our respondents collectively agreed that when study about a theory, interpretation, or conclusion, it must be accompanied with good supporting evidence. The mean score was high (3.8). This implies that, strong evidence and justifications must be critically analysed with regards to discussion and presentation of theory, interpretation, or conclusion. This study also discovered that for item LSCCCTQ 3, the mean score was high (3.8). This suggests that our respondents do not solely rely on the course materials but rather use it as starting point to expand knowledge through extra reading and discussion during and after the class.

Meanwhile, for item LSCCCTQ 4, our respondents noted highly (3.9) on the statement regarding playing around with own ideas related to what they have learned during the class. This denotes the important of linking and relates with what are learned in the class with own knowledge in the area of discipline or course of study. Lastly, for item LSCCCTQ 5, the mean value was 3.8 which indicates high score. Our respondents agreed that what they read or heard during the class regarding the course, they find or look for other possible course of action. This result infers that careful thought and deliberate thinking regarding what they learn in the class facilitate better thinking and provide deeper understanding about the

course. The average mean score for critical thinking dimension was at high level (3.8). This signifies that for postgraduate students, the element of critical thinking facilitate them to understand more about the course they take during their study.

#### *Findings for Metacognitive Self-Regulation*

This section presents data to answer research question 2- How do learners perceive their use of metacognitive self-regulation?

Metacognitive Self-Regulation (11 items)

Table 8

#### *Mean for Metacognitive Self-Regulation*

<b>Section C: Metacognitive Self-Regulation</b>	<b>Mean</b>	<b>Value</b>
MSSRQ1 During class time, I often miss important points because I am thinking of other things.	2.9	Modera te
MSSRQ 2 When reading for the courses, I make up questions to help focus my reading.	3.5	High
MSSRQ 3 When I become confused about something I am reading for the classes, I go back and try to figure it out.	4.2	High
MSSRQ 4 If course readings are difficult to understand, I change the way I read the material.	3.8	High
MSSRQ 5 Before I study new course material thoroughly, I often skim it to see how it is organized	3.9	High
MSSRQ 6 I ask myself questions to make sure I understand the material I have been studying in this program.	3.9	High
MSSRQ7 I try to change the way I study in order to fit any course requirements and the instructors' teaching style.	3.8	High
MSSRQ8 I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for the courses in this program.	3.8	High
MSSRQ 9 When studying for the courses in this program I try to determine which concepts I do not understand well.	3.4	High
MSSRQ 10 When I study for the courses, I set goals for myself in order to direct my activities in each study period.	3.9	High
MSSRQ 11 If I get confused taking notes in classes, I make sure I sort it out afterwards.	3.9	High
<b>Average Mean Value</b>	<b>3.7</b>	<b>High</b>

Table 8 shows the mean score for metacognitive self-regulation. The highest mean score of 4.2 refers to statement "When I become confused about something I am reading for the classes, I go back and try to figure it out". The lowest mean score is 2.9 for the statement, "During class time, I often miss important points because I am thinking of other things". The overall mean score derived from Figure 11 for metacognitive self-regulation is 3.7. In brief, learners' metacognitive self-regulation has a positive high mean score.



*Findings for Resource Management*

This section presents data to answer research question 3- How do learners perceive their use of resource management. Resource management involves (i) environment management , (ii) effort management and (iii) help seeking.

## C. Resource Management Component (11 items)

## (i) Resource Management (5 items)

Table 9

*Mean for Environment Management*

<b>Section D: Resource Management Component (Environment Management)</b>	<b>Mean</b>	<b>Value</b>
RMCEM1 I usually study in a place where I can concentrate on my course work.	4.3	High
RMCEM2 I make good use of my study time for the courses in this program.	4.0	High
RMCEM3 I have a regular place set aside for studying	4.0	High
RMCEM4 I make sure that I keep up with the weekly readings and assignments for the courses.	3.8	High
RMCEM5 I attend the classes regularly in this program.	4.4	High
<b>Average Mean Value</b>	<b>4.1</b>	<b>High</b>

Table 9 shows the mean score for resource management. The highest mean score of 4.4 refers to statement "I attend the classes regularly in this program". The lowest mean score is 3.8 for the statement, "I make sure that I keep up with the weekly readings and assignments for the courses". The overall mean score derived from Table 14 for resource management is 4.1. In brief, learners' resource management element has a positive high mean score. This also means majority of them did accommodate their time, space and condition for their study.

## (ii) Effort Management (4 items)

Table 10

*Mean for Effort Management*

<b>Section D: Resource Management Component (Effort Management)</b>	<b>Mean</b>	<b>Value</b>
RMCEM1 I have a regular place set aside for studying	4.1	High
RMCEM2 I work hard to do well in the classes in this program even if I do not like what we are doing.	4.1	High
RMCEM3 When course work is difficult, I either give up or only study the easy parts.	2.6	Moderate
RMCEM4 Even when course materials are dull and uninteresting, I manage to keep working until I finish.	4.1	High
<b>Average Mean Value</b>	<b>3.7</b>	<b>High</b>

Data in Table 10 above indicates items for resource management component namely effort management. The construct had 4 items whereby the three items had similar loadings with mean values of 4.1. This is to say that POSTGRADUATE students highly agree having regular place set aside for studying; highly agree to work hard and to do well in class even if they do not like what they are doing; and also even when course materials are dull and uninteresting, they manage to keep working until they complete their studies. Meanwhile, one item had a

moderate mean score of 2.6; the item stated ‘when course work is difficult, I either give-up or only study the easy parts’. The overall mean value was 3.7 which is considered as ‘high’ given the mean value characteristics. The plausible explanation of this component suggests that POSTGRADUATE students highly value effort management and would strive within their means to study and accomplish their studies even under various constraints.

(iii) Help-Seeking (2 items)

Table 11

*Mean for Help-Seeking*

Section D: Resource Management Component (Help-Seeking)	Mean	Value
RMCHSQ1 When I cannot understand the material in a course, I ask another student in the class for help.	4.1	High
RMCHSQ 2 I try to identify students in the classes whom I can ask for help if necessary.	4.1	High
<b>Average Mean Value</b>	<b>4.1</b>	<b>High</b>

The data in Table 11 above indicate the last dimension of resource management component namely Help seeking. The construct had 2 items which have similar loadings with mean values of 4.1. Again, this is to say that POSTGRADUATE students highly agree seeking help from their peers when they cannot understand the materials in the course. Similarly, they also highly agree to rely on collegiality relationship by identifying students who can give them help in class where necessary. The overall mean score of the help-seeking dimension is also high suggesting that this dimension is highly valued by matured students in the selected sample of this study.

*Findings for Relationship between all learning strategies*

This section presents data to answer research question 4- Is there a relationship between all learning strategies?

To determine if there is a significant association in the mean scores between all learning strategies, data is analysed using SPSS for correlations. Results are presented separately in table 12 , 13 and 14 below.

Table 12

*Correlation between cognitive and metacognitive components*

**Correlations**

		TOTALCOGNITIVE	TOTALMETACOGNITIVE
TOTALCOGNITIVE	Pearson Correlation	1	.713 **
	Sig. (2-tailed)		.000
	N	259	259
TOTALMETACOGNITIVE	Pearson Correlation	.713 **	1
	Sig. (2-tailed)	.000	
	N	259	259

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

Table 12 shows there is an association between cognitive and metacognitive components. Correlation analysis shows that there is a high significant association between cognitive and metacognitive components ( $r=.713^{**}$ ) 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 cognitive and metacognitive components.

Table 13

*Correlation between cognitive and resource management*

**Correlations**

		TOTALCOGNITIVE	TOTALRESOURCEMANAGEMENT
TOTALCOGNITIVE	Pearson Correlation	1	.581**
	Sig. (2-tailed)		.000
	N	259	259
TOTALRESOURCEMANAGEMENT	Pearson Correlation	.581**	1
	Sig. (2-tailed)	.000	
	N	259	259

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

Table 13 shows there is an association between cognitive components and resource management. Correlation analysis shows that there is a high significant association between cognitive components and resource management ( $r=.581^{**}$ ) 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 cognitive components and resource management.

Table 14

*Correlation between Metacognitive and Resource Management*

**Correlations**

		TOTALMETACOGNITIVE	TOTALRESOURCEMANAGEMENT
TOTALMETACOGNITIVE	Pearson Correlation	1	.608**
	Sig. (2-tailed)		.000
	N	259	259
TOTALRESOURCEMANAGEMENT	Pearson Correlation	.608**	1
	Sig. (2-tailed)	.000	
	N	259	259

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

Table 14 shows there is an association between metacognitive components and resource management. Correlation analysis shows that there is a high significant association between metacognitive components and resource management ( $r=.608^{**}$ ) 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 metacognitive components and resource management.

## Conclusion

### *Summary of Findings and Discussions*

This study presents the results of examining the learning strategies and approaches of postgraduate students from four different disciplines. Results from the survey indicated high mean value for all the components of learning strategies comprise cognitive strategy, metacognitive self-regulation, and resource management. This implies that postgraduate students have employed learning strategies in their daily learning activities just as the undergraduate students. Table 15 presents the summary of the major findings of this study.

Table 15

### *Summary of Findings*

<b>Learners Perceive Use of Cognitive Components</b>	<b>Mean</b>	<b>Indicator</b>
(i)Rehearsal	3.85	High
(ii)Organization	3.9	High
(iii)Elaboration	4.0	High
(iv)Critical Thinking	3.8	High
<b>Learners perceive Use of Metacognitive Self-Regulation</b>	<b>Mean</b>	<b>Indicator</b>
Metacognitive Self-Regulation	3.7	High
<b>Learners perceive Use of Resource Management</b>	<b>Mean</b>	<b>Indicator</b>
(i)Environment Management	4.1	High
(ii)Effort Management	3.7	High
(iii)Help Seeking	4.1	High
<b>Relationship of All Learning Strategies</b>	<b>Value</b>	<b>Indicator</b>
(i)Correlation between cognitive and metacognitive components	( $r=.713^{**}$ ) and ( $p=.000$ )	High significant association
(ii)Correlation between cognitive and resource management	( $r=.581^{**}$ ) and ( $p=.000$ )	High significant association
(iii)Correlation between Metacognitive and Resource Management	( $r=.608^{**}$ ) and ( $p=.000$ )	High significant association

Answering the first question on the use of cognitive strategy, this study found the highest mean value came from Elaboration with a score of 4.0. The result contradicts with the research done by Tran et. al (2019) in which the highest mean score is Rehearsal. The inconsistency is apparently because of the different level of study. The previous study investigated the undergraduate level of which many courses require students to memorize

the concepts, principles and so forth. This was different from postgraduate students who have gained maturity in acquiring knowledge able to relate, adapt and apply what they have learned interchangeably across courses with minimum notes and memorization.

The second question is on the use of metacognitive self-regulation. This learning approach recorded the lowest overall mean score of all the learning strategies components with only 3.7. This result is in line with the findings in research done by (Puteh et. al., 2022). Furthermore, Hariri et. al (2020) in their research concluded that self-regulation is highly correlated with cognitive strategy and self-efficacy. This is in line with the idea that student must set a learning goal and methods to achieve the goal. Postgraduate students, can explicitly identify which concepts they do not understand and control the process of rectifying it especially in distant and online learning (Avila et. al., 2020). Metacognitive self-regulation is crucial in particular for adult postgraduate students to maintain motivation and performance in times of adjustment to the new norm of learning during pandemic.

Meanwhile for the third learning strategies component: Resource Management, Environment and Help Seeking recorded the highest overall mean value of 4.1. The students mostly agree that they will ask for help from other students if they do not understand any material in the course. This result confirms the findings obtained in a study done by (Hederich-Martínez et. al., 2020). They claimed in their research that ability to manage their environment and resource are evident in postgraduate level. This was mainly because of the ability to find support and leverage through interaction and socialization (Alarcón Díaz et. al., 2019).

In terms of correlation, all the learning approaches and strategies are significantly associated with each other and have strong positive relationship. These results indicate that the approaches to learning are interrelated and consistent with a study done by Matcha et.al. (2019). This explicitly means no one single learning strategy is considered predominant and superior to the other strategies.

#### *Implications and Suggestions for Future Research*

The current learning setting and environment has become more flexible, require autonomous condition and student centred. The findings from this study suggest that learning strategies are crucial to all students at all levels including the postgraduate students. The findings indicated that the postgraduate students' cognitive strategies, metacognitive self-regulated and resource management are high, and all the learning strategies have positive relationship of each other. The results of this study offer significant contributions in understanding the dynamics of students learning approaches particularly among postgraduate students. The findings can be a value addition to major existing behavioural theories on learning as it provides evidence of learners' actions and habits in accomplishing tasks and going through the whole learning process.

Moreover, although this study employs the general learning strategies as the main constructs, it allows academics and researchers to integrate the idea with the learning styles comprised of deep, surface and strategic which consequently leads to improved pedagogical strategies. Lecturers or educators are able to plan and design curriculum and coursework that emphasise the aspects of independent and flexible learning and at the same time encourage

peer support, teamwork and collaborative learning with accommodative learning environments which if neglected, often hinders effective learning.

This study however has tested limited variables which may not be sufficient to understand better the phenomena based on specific context of individual postgraduate student. Therefore, it is recommended that future research could focus on thorough profiling analysis utilizing both qualitative methods and inferential analysis. This includes investigating the level of differences of learning strategies utilized by students from different disciplines and mode of study and the factors that influence and shape their learning approaches as well as the factors that hinders effective learning especially among working postgraduate students. Moreover, a combination of both quantitative and qualitative analysis would offer richer data that could shed the light of the issue better, and eventually can recommend measures to support the postgraduate students in their academic journey.

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