Postgraduate Use of Learning Strategies: Are the Strategies Related to One Another?

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Abstract

Higher education has become undisputed platform of autonomous learning in which students must learn to self-regulate their own learning and apply it within their environment. Likewise, applying learning strategies has been associated with academic performance as it is proven able to increase the probabilities of students' success rates in universities. Past studies revealed that 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. This study examines various learning strategies among postgraduate students in one of the largest public universities in Malaysia. This study employs quantitative method using the 5-likert scale survey instruments adapted from Wenden and Rubin (1987). Results from the survey indicated high mean value for all the components of learning strategies consist of cognitive strategy, metacognitive self-regulation, and resource management. This revealed that postgraduate students have employed the learning strategies in their studies just as the undergraduate students. For future research more variables should be tested to determine the relationship of the learning strategies with other predictors and consider using qualitative data and socio-psychological research to maximize the evidence-based implementation for the learning technique and broaden understanding of the characteristics studied.

Keywords: Learning Strategies, Cognitive Strategy, Metacognitive Self-Regulation Strategy, Resource Management, Online Class

Introduction
Background of Study

Learning strategies can be defined as a set of skills that learners chose and apply on various tasks to accomplish specific learning objectives (Gonzales, 2016). The strategies vary from techniques for enhanced memory to improved studying for a test (Rovers et al., 2018).

Learning strategies are essential by students from various levels of education. For instance, when a student is learning for passing a test the focus is narrowed while learning for continuous assessment will be broader. In this technological era where information can easily be available on the internet, the use of learning strategies can be problematic to choose especially to adults.

This can be particularly overwhelming for students in a problem-based curriculum, as this strategy can assert high demands on learners to adopt independent self-study and independent searching for materials on the internet (Rovers et al., 2018). In this study we examine various learning strategies to include cognitive meta-cognitive and self-regulation and ascertain the most useful learning strategies among postgraduate in one of the largest public universities in Malaysia. The study is relevant for Malaysia context as will expose students to a balanced learning behavior while maintaining a degree of flexibility by avoiding traditional learning behavior such as memorizing, highlighting, and rereading which are considered ineffective (Rovers et al., 2018). The findings of this study can support curriculum and learning in higher education especially in postgraduate adult learning.

Statement of Problem
Learning strategies is one of the topics that captures the interests of scholars and has dominated the discourse of education for decades. It has evolved around issues on motivation of students, pedagogical aspects and so forth. The use of learning strategies is essential to support self-paced learning especially during Covid-19 pandemic (Avila and Genio, 2020) which call for students to be more independent in adapting to the new norm of teaching and learning especially in higher learning institutions. As higher education become undisputed platform of autonomous learning, students must learn to self-regulate their own learning and apply it within their environment. One of the main goals of higher learning institutions is to be the place for students to control their learning process and acquire skills and competencies they can utilize inside and outside classroom environment and eventually prepare them for real life challenges (Diaz et. al., 2019; Fernandez et. al., 2013). Likewise, applying learning strategies has been associated with academic performance as it is proven able to increase the probabilities of students' success rates in universities (Endres et. al., 2021; Garcia and Tejedor, 2017; Donker et.al., 2014; Cleary & Platten, 2013).

Moreover, learning strategies which consists of cognitive and behavioural abilities are methods utilized by individuals during learning activities to secure the success of all its phases. Studies of learning strategies hence can be useful to help the instructional planning of courses in particular courses that are thought online, by determining the strategies most used by the individuals (Peixoto et. al., 2012).

In discussing learning strategies, what constitutes 'desirable' state of learning from the perspective of students is imperative to better comprehend how they strategize. This would mean that the condition of learning will mostly depend on the goals they set whether to gain long-term understanding and transfer or simply to pass an examination. Past studies revealed that students often fail to benefit from the learning strategies as they repeatedly adopted ineffective strategies when studying (Rovers et.al., 2018; Blasiman et. al., 2017) and many could not even recognize the use of certain strategies to regulate their learning (Veenman,

2011). In addition, most students do not primarily rely on learning strategies that are most favorable from scientific point of view (Endres et. al., 2021; Bjork et. al., 2013).

Although interest in learning strategies has been consistent for many years, the investigation of this topic was mostly focused on schools (Hasan et. al., 2020;) and undergraduate students (Diaz et. al., 2019; Tran et. al., 2019). There are limited studies on learning strategies that specifically aimed at postgraduate students. Research on postgraduate learning mostly encompassed within the context of purely research challenges (Mohamad et. al., 2020), comparing deep approach and surface approach (Nurshafikah et. al., 2020), emotional intelligence (Sheikhbardsiri et. al., 2020), impact of lockdown on learning (Kapasia et. al., 2020) and comparison of teacher centred and student centred (Emaliana et. al., 2017). The idea of continuous learning signifies the importance of acknowledging that even postgraduate students' learning strategies are worthy to be explored as they face challenges and struggle in their studies considering they must juggle between work, family, and study.

Research Questions

Based on the above problem statement, this research has formulated three (30 research questions as follows namely

(i) How do learners use cognitive strategies in learning?
(ii) How do learners use metacognitive self-regulation in learning? and
(iii) How do learners use resource management in learning?

Literature Review

Use of Learning Strategies

Learning strategies can be defined as, behaviours and thoughts in which a learner engages, and which are intended to influence the learner's encoding process. Pitambar Paudel (2019) defined a learning strategy as a pattern of how information processing activity is used to prepare for an anticipated memory test. It is used to help students learn the desired course contents and be able to develop achievable goals in the future. Thus, the goal of any learning strategy may be to affect the learner's motivational or affective state--or the way in which the learner selects, acquires, organizes, or integrates new knowledge. It is not surprising that students can use a wide variety of strategies in the learning process (Deak & Santoso, 2021).

Presumably, there may be as many strategies as the number of students. It is because each student selects and employs a different strategy depending upon instructional variables such as individual differences, types of domains, teaching methods, amount of time, learning technologies, kinds of feedback, required level of mastery, ways of measurement etc. Categorically stating, Belletti & Vaillant (2022) classify them into five major groups. These groups include strategies of rehearsal, elaboration, organization, metacognition, and motivation. Needless to say, that these variables are also important from the point of designing effective, engaging, and efficient instruction (Uslu, 2018). Hence, the importance of measuring learning styles and learning strategies lies in the fact that they contribute to learning outcomes in the context of different approaches by educators to learners.

Past Studies on Learning Strategies

Many studies have been done to investigate the different instructional strategies that can be used to accommodate students' learning strategies, how they can be applied to various learner groups, which strategies are effective in different learning domains, what kinds of outcomes can be expected from actual implementations as well as learning strategies in different levels of students (Rovers et al., 2018; Wegner et al., 2013; Gonzalez 2016). For instance, Rovers et al (2018) studied how and why students adopted particular learning strategies and the challenges they encountered in the adaptation process. The study adopted a constructivist grounded theory methodological design with a sample size of 26 students. The findings revealed students using various strategies of learning which could fit a particular situation. Some of the learning strategies adopted were considered as "unproductive"; namely, highlighting and rereading (Rovers et al., 2018). These strategies are mainly associated with memory building which could be forgotten easily after a test or examination. On the aspect of challenges, students were faced with too much information available at their disposal; which was difficult to filter and to select the appropriate information for a given assignment.

Similarly, other scholars have categorised learning strategies into six categories namely, cooperation strategies, elaboration strategies, motivational and emotional strategies, revision strategies, organizational strategies and control strategies (Mandl & Friedrich 2006). The six strategies were applied in a practical project based by Wegner et al (2013); who conducted a study to investigate how students can apply these various learning strategies. The study targeted a group of gifted students in natural science who were observed on their leaning behaviour for a number of days. The results revealed that many students were unable to use the six learning strategies successfully as they had not learned them previously at their schools. It was advised that for a proper implementation of the six learning strategies, teachers should be repeating them more often on students to enable develop into good strategy users.

Colman (2022) identified six learning theories for adults to include andragogy, transformative learning, experimental, self-directed, project based and action learning. Andragogy theory believes in problem solving, controlled formal learning with defined need which are the most qualities of adults in the learning process. On the other hand, transformative, experimental, self-directed, project based and action learning action learning believes in building teams, group discussion and uncovering areas of difficulties (Colman, 2022). These theories are also supported by Rasmussen (2015) who found that adults prefer learning through others, problem solving and social interactions. Since adults have other commitments and responsibilities, a discussion group and social interactions can harmonise their thinking making them ask questions and focus on clarifications from their peers or teacher (Rasmussen, 2015; Bens, 2012). With these few studies, it becomes essential to investigate what other postgraduate students in a particular online assessment mode adapt with three learning strategies suggested by this study. Indeed, this category of learners has not been particularly explored.

Studies by Cho & Ahn (2003) on success of learning strategies, Simsek & Balaban (2010) on commonly used leaning strategies were conducted. Simsek & Balaban (2010) assessed the most used learning strategies of undergraduate students and how these strategies were related to their academic performance. A 60 item Likert scale was administered to a sample of 278 undergraduate students. The students were selected based on their cumulative grand-point-average as the most successful and the least successful five senior-year students from each majoring area in the faculties of arts, engineering, science, communication, and sports. The Cronbach's Alpha reliability coefficient of the scale was 0,93. Results showed that successful students used more, varied, and better learning strategies than unsuccessful students.

There are also experimental studies examining the effects of strategies on learning. Wade and Trathen (1989) investigated the impact of highlighting ideas in a text on perceiving the importance of those ideas and learning them. They found that effective study requires more than underlining, emphasizing, and note-taking. The relationship between motivational beliefs and the application of learning strategies was examined by (Braten and Olaussen, 1998). They discovered that when students put in a lot of effort to achieve a goal, they use more and better tactics. According to McWhaw and Abrami (2001), students who have a high level of interest in a subject or topic employ more techniques than those who have a low level of interest. The finding that students have more power or control over the employment of methods than teachers is consistent with this (Eshel & Kohavi, 2003). Sizoo, Malhotra and Bearson (2003) compared learning strategies of students in distance education and traditional face-to-face education. The literature also suggests that online learners usually have higher motivation and use more advanced strategies than traditional classroom learners. Whereas Alberto Valentin et.al (2013) analysed the relationship between different uses of ICTs and the learning outcomes, the relationship between learning strategies and motivation and the use of ICTs.

Besides that, Cristina Montero & Arizmendiarrieta (2017) did a quantitative study on the effectiveness of learning strategies. This study presented the results implemented at the School of Teacher Training and Education, University of Oviedo, Spain. A quasi-experimental design was used with an experimental (n = 60) and a control group (n = 57) of students on the Educational Psychology course. A Spanish adaptation of the Motivated Strategies for Learning Questionnaire (MSLQ): the CEAMR2 was used as a pre and post-test measure. Group A (EG) received training in learning strategies, while group B (CG) received no training. The results suggested that learning strategies courses with proven effectiveness should be offered to university students.

Based on all these studies, one may ask if there is a meaningful correlation between the use of certain strategies and academic performance or if the past achievement levels of students influence their choice of strategies. All these questions are critical, and answers are worth to know for producing successful learning.

Conceptual Framework

Past researchers have shown that when learners use strategies, they are better able to complete their learning activities successfully. The study by Rahmat (2018) has shown that the use of strategies helps to reduce learning difficulties. The use of different strategies is needed for different courses and even different contexts of learning. When learners use strategies successfully, they will feel motivated to proceed to more learning. The study by Lokman et.al (2021) has also shown that motivation to learn depend on how learners perceive the learning task. With respect to online learning, students are motivated by number of factors such as interaction with the peers and instructors as well as the individual students learning strategies (Soh et al., 2022).

Figure 1 shows the conceptual framework of the study. This study is rooted from learning strategies by (Wenden and Rubin, 1987). There are three (3) main learning strategies. Firstly, (a) cognitive strategies involve the use of sub-strategies such as (i) rehearsal, (ii) organisation, (iii) elaboration and (iv) critical thinking. Next, the use of (b) metacognitive regulation empowers learners to think about their own thinking. When learners are aware of the use of this strategy, they learn to take control of their won learning. This involves planning what to do, or even asking questions. The last strategy by Wenden and Rubin (1987) is (c) resource management. This involves the learner learning to manage and control the learning environment so they can maximise their learning.
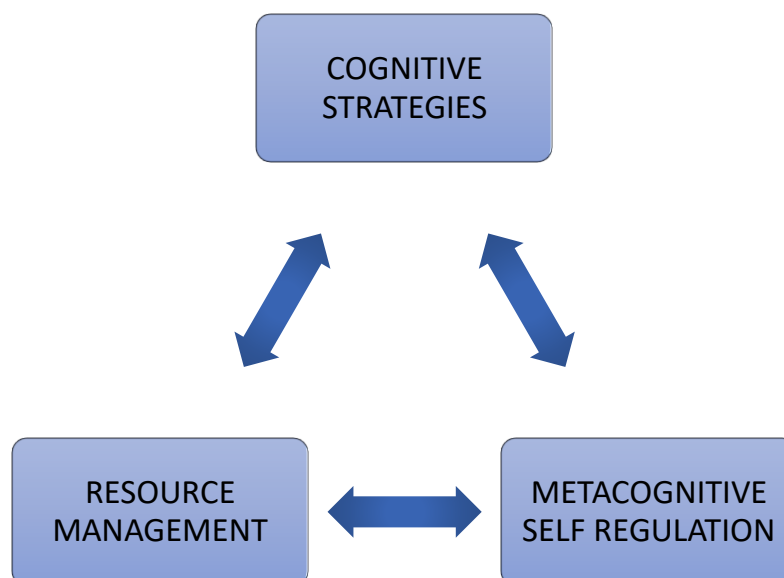

Figure 1- Conceptual Framework of the Study-
Is there a relationship in all learning strategies used by learners?

Methodology

This quantitative study is done to investigate learners' motivation towards learning. 68 respondents participated in this study. The 5-likert scale instrument used a survey adapted from (Wenden and Rubin, 1987). Table 1 shows the distribution of items in the survey. Section A is the demographic profile. It was measured by four (4) items. Section B has 19 items on cognitive components, section C has 11 items on metacognitive self-regulation and section D has 11 items on resource management.

Table 1
Distribution of Items in Survey of Learning Strategies (41 items)

A	DEMOGRAPHIC PROFILE	(a)	Gender	1	4
		(b)	Discipline	1	
		(c)	Mode of Study	1	
		(d)	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	(a)	Environment Management	5	11
		(b)	Effort Management	4	
		(c)	Help-Seeking	2	
Total Items					45

Table 2
Reliability Statistics for the Survey

Reliability Statistics

Cronbach's Alpha	N of Items
.918	41

Table 2 shows the reliability statistics for the survey comprises of continuous data in Section B until Section D. SPSS analysis revealed a Cronbach alpha of .918 thus revealing a high reliability of the instrument used. Nunnally (1978) stated that Cronbach alpha value exceeds .70 is considered good and have high reliability. Data is then analysed to reveal mean scores to answer all the research questions for this study.

Findings
Findings for Demographic Profile (n=68)
This section presents demographic profile of the respondents. The respondents of this study are students that pursuing their postgraduate study via online classes due to covid-19 pandemic. There are four (4) information collected from our respondents as depicted in Table 3 - Table 6.

Table 3
Percentage for gender (n=68)

Q1: Gender		
1	Male	24%
2	Female	76%

Table 3 above depicts the percentage of the respondents based on gender. From a total of 68 respondents, 76% were female (52 respondents) while 24% were male (16 respondents).

Table 4
Percentage for Discipline (n=68)

Q2: Discipline		
1	Administrative Science	47%
2	Corporate Administration	11%
3	International Relations and Diplomacy	31%
4	Public Policy/Policy Studies	3%
5	Business Management	8%

With respect to discipline, as shown in Table 4 above, majority of the respondents (47% - 32 students) are from Administrative Science discipline, followed by 31% (21 students) from International Relations and Diplomacy discipline. There are about 11% (7 students) were from Corporate Administration discipline, 8% (5 students) from Business Management discipline and lastly 3% (2 students) were from Public Policy/Policy Studies discipline.

Table 5
Percentage for mode of study (n=68)

Q3: Mode of Study		
1	Full time	55%
2	Part time	41%
3	e-PJJ/Distance Learning	4%

For mode of study, Table 5 above reveals that majority of the respondents (55% or 37 students) is pursuing their study via full time mode followed by part time mode (41% or 28 students. There are about 4% or equivalent to 3 students pursuing their study via e-PJJ/Distance learning as their preferred mode of study.

Table 6
Percentage for work experience (n=68)

Q4: Working Experience		
1	Less than 1 year	49%
2	1-5 years	14%
3	6-10 years	10%
4	11-5 years	16%
5	16 years and above	11%

Lastly, in terms of work experience, Table 6 above depicts that majority of the respondents (49% or 33 students) have less than 1 year of working experience followed by those who have 11 to 15 years of working experience (16% or equivalent to 11 students). There are about 14% or 10 students having between 1 to 5 years of working experience and about 11% or 7 students having a working experience between 16 years and above. There are only 10% or 7 students have working experience between 6 to 10 years.

Findings for Cognitive Strategy (19 items)

This section presents data to answer research question no 1- How do learners use cognitive strategies in learning? As stated by learning strategies by Wenden and Rubin (1987), there are three (3) main components of learning strategies namely (i) cognitive strategy, (ii) metacognitive self-regulation and (iii) resource management. The first learning strategy is cognitive. There are 19 items used to measure the cognitive strategy which comprises of four (4) different components namely (i) rehearsal, (ii) organization, (iii) elaboration, and (iv) critical thinking. The mean value is interpreted following the suggestion by Oxford & Burry-stock (1995) that categorizes the low mean scores ranges between 1.0 - 2.4, medium mean score ranges between range 2.5 - 3.4 and high mean score ranges between 3.5 - 5.0. Table 7 – Table 10 below depict the mean value for each cognitive component respectively.

(i)   Rehearsal (4 items)

Table 7
Mean for Rehearsal Component (n=68)

Section A: Cognitive Component (Rehearsal)	Mean	Value
LSCCRQ1 When I study for the classes, I practice saying the material to myself over and over.	3.5	High
LSCCRQ 2 When studying for the courses, I read my class notes and the course readings over and over again.	3.9	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.	4.0	High
Overall Mean Value for Cognitive Component (Rehearsal)	**3.9**	**High**

The first cognitive strategy component is rehearsal. Table 7 above depicted the mean findings for rehearsal component which was measured by four (4) items. All four (4) items were scored high with overall mean value of 3.9. Item 1 which is "When I study for the classes, I practice saying the material to myself over and over" scored 3.5 high mean value and item 2 namely "When studying for the courses, I read my class notes and the course readings over and over again" scored high mean value of 3.9. Meanwhile item 3 which is "I memorize key words to remind me of important concepts in this class" also scored high mean value (4.1). With respect to item 4 which is "I make lists of important items for the courses and memorize the lists" also scored high mean value of 4.0.

The overall mean value of 3.9 for rehearsal component under cognitive strategy pointed out that the respondents agreed that rehearsal component under cognitive strategy plays an important role in students strategy in online classes. This is because as an adult working students taking postgraduate program, they are expected to discuss in the class, thus they need to memorize and understand what they have learnt in the class to further enforce their knowledge on the subject matter and to have a meaningful discussion with the course instructor and peers.

(ii)   Organization (4 items)
Table 8
Mean for Organization Component (n=68)

Section A: Cognitive Component (Organization)	Mean	Value
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.	3.4	Moderate
LSCCOQ 4 When I study for the courses, I go over my class notes and make an outline of important concepts.	4.1	High
Overall Mean Value for Cognitive Component (Organization)	**3.9**	**High**

The second cognitive strategy component is organization. Table 8 above depicted the mean findings for organization component which was measured by four (4) items. The overall mean value was 3.9. Three (3) items from four (4) items were scored high mean value. Item 1 which is "When I study the readings for the courses in the program, I outline the material to help me organize my thoughts" scored high mean value of 4.0. Item 2 namely "When I study for the courses, I go through the readings and my class notes and try to find the most important ideas" also scored high mean value of 4.2. However, for item 3 which is "I make simple charts, diagrams, or tables to help me organize course materials in this program" the mean score was moderate (3.4). With respect to item 4 which is "I When I study for the courses, I go over my class notes and make an outline of important concepts" also scored high mean value of 4.1.

The overall mean value of 3.9 for organization component under cognitive strategy pointed out that the respondents agreed that organizing and plan out their study is one of the cognitive strategy that help them to excel in their study. This practice in mind, enable the students to be more organized and having a more structured study plan that assist the students to be more motivated to proceed with their online learning.

(iii)   Elaboration (6 items)
Table 9
Mean for Elaboration Component (n=68)

Section A: Cognitive Component (Elaboration)	Mean	Value
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.	4.2	High
LSCCEQ 6 I try to apply ideas from course readings in other class activities such as lecture and discussion.	4.1	High
Overall Mean Value for Cognitive Component (Elaboration)	**4.1**	**High**

The third cognitive component is elaboration. Table 9 above showcased the mean findings for elaboration component under cognitive strategy which was measured by six (6) items. All six (6) items were scored high with overall mean value of 4.1. Item 1 which is "When I study for the courses in this program, I pull together information from different sources, such as lectures, readings, and discussions" scored 4.1 high mean value and item 2 namely "I try to relate ideas in one subject to those in other courses whenever possible" scored high mean value of 4.0. Furthermore, item 3 which is "When reading for the courses, I try to relate the material to what I already know" also scored high mean value (4.3). With respect to item 4 which is "When I study for the courses in this program, I write brief summaries of the main ideas from the readings and my class notes" scored high mean value of 3.8. Item 5 which is "I try to understand the material in the classes by making connections between the readings and the concepts from the lectures" scored high mean value (4.2) and last item 6 which is "I try to apply ideas from course readings in other class activities such as lecture and discussion" also scored high mean value of 4.1.

The overall mean value of 4.1 for elaboration component under cognitive strategy pointed out that the respondents agreed that elaboration component under cognitive strategy too is important for postgraduate students strategy in online classes. Being an adult working students, postgraduate students they are expected to discuss what they have learnt in the class, thus, an ability to elaborate and relate between the concepts and practices is considered as a useful strategy in their learning process. This will strengthen and further deepen their knowledge on the subject matter.

Critical Thinking (5 items) (iv)
Table 10
Mean for Critical Thinking Component (n=68)

Section A: Cognitive Component (Critical Thinking)	Mean	Value
LSCCCTQ1 I often find myself questioning things I hear or read in the courses to decide if I find them convincing.	4.0	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.	4.0	High
LSCCCTQ 3 I treat the course materials as a starting point and try to develop my own ideas about it.	4.0	High
LSCCCTQ 4 I try to play around with ideas of my own related to what I am learning in the courses.	3.8	High
LSCCCTQ 5 Whenever I read or hear an assertion or conclusion in the classes, I think about possible alternatives.	3.8	High
Overall Mean Value for Cognitive Component (Critical Thinking)	**3.9**	**High**

The fourth cognitive component is critical thinking. Table 10 above exhibits the mean findings for critical thinking component under cognitive strategy which was measured by five (5) items. The overall mean value for this component was high (3.9). All five (5) items scored high mean value respectively. Item 1, 2 and 3 which are "I often find myself questioning things I hear or read in the courses to decide if I find them convincing", "When a theory, interpretation, or conclusion is presented in classes or in the readings, I try to decide if there is good supporting evidence", and "I treat the course materials as a starting point and try to develop my own ideas about it" all scored high mean value (4.0) respectively. Meanwhile item 4 and 5 which namely "I try to play around with ideas of my own related to what I am learning in the courses" and "Whenever I read or hear an assertion or conclusion in the classes, I think about possible alternatives" scored high mean value of 3.8 respectively.

The overall mean value of 3.9 for critical thinking component demonstrates that going extra mile by linking what they have learnt in the class with the experiences they have accumulated while working evidence in high value in their cognitive ability. This implies that understanding and able to critically think out of the box enable them to maximise their learning.

Findings for Metacognitive Self-Regulation (11 items)

This section presents data to answer research question no 2- How do learners use metacognitive self-regulation in learning? The second learning strategy which is metacognitive self-regulation was measured by eleven (11) items as depicted in Table 11 below.

Table 11
Mean for Metacognitive Self-Regulation (n=68)

Section C: Metacognitive Self-Regulation	Mean	Value
MSSRQ1 During class time, I often miss important points because I am thinking of other things.	2.8	Moderate
MSSRQ 2 When reading for the courses, I make up questions to help focus my reading.	3.4	Moderate
MSSRQ 3 When I become confused about something I am reading for the classes, I go back and try to figure it out.	4.0	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.	3.9	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.	3.7	High
MSSRQ 9 When studying for the courses in this program I try to determine which concepts I do not understand well.	4.1	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.	4.0	High
Overall Mean Value for Metacognitive Self-Regulation	**3.8**	**High**

Table 11 above showcases the mean findings for metacognitive self-regulation which was measured by eleven (11) items. The overall mean value for this component was high (3.8). Nine (9) items of the study scored high mean value ranging from 3.5 – 5.0. Two (2) items scored moderate or medium mean value ranging from 2.5 – 3.4. Item 1 "During class time, I often miss important points because I am thinking of other things" and item 2 "When reading for the courses, I make up questions to help focus my reading" scored mean value of 2.8 and 3.4 respectively.

Meanwhile, mean value for item 3 " When I become confused about something I am reading for the classes, I go back and try to figure it out" was 4.0. Item 4 which is "If course readings are difficult to understand, I change the way I read the material" the mean value was 3.8. With regards to item 5 "Before I study new course material thoroughly, I often skim it to see how it is organized", item 6 "I ask myself questions to make sure I understand the material I have been studying in this program" and item 7 "I try to change the way I study in order to fit any course requirements and the instructors' teaching style", the mean score was 3.9 respectively.

With respect to item 8 which is "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", the mean score was high (3.7). Item 9 "When studying for the courses in this program I try to determine which concepts I do not understand well", the mean score was also high (4.1). Furthermore, the mean value for Item 10 "When I study for the courses, I set goals for myself in order to direct my activities in each study period", was also high (3.9). Lastly, item 11 which is "If I get confused taking notes in classes, I make sure I sort it out afterwards scored high mean value of 4.0.

The overall mean value of 3.8 for metacognitive self-regulation strategy implies that this learning strategy empowers learners to think about their own thinking. Students learn to take control of their won learning when they are aware of this strategy. This strategy is regarded as important as adult working take charge of their learning types and preferences as they are their own biggest motivator.

Findings for Resource Management Strategy (11 items)
This section presents data to answer research question no 3- How do learners use Resource management in learning? The third learning strategy as pointed out by Wenden and Rubin (1987) is resource management. There are 19 items used to measure the resource management strategy. There are three (3) main components of resource management strategy namely (i) environment management, (ii) effort management, and (iii) help-seeking. Table 12 until Table 14 below exhibit the mean value for each resource management component respectively.

(a)   Environment Management (5 items)

Table 12
Mean for Environment Management Component (n=68)

Section D: Resource Management Component (Environment Management)	Mean	Value
RMCEMQ1 I usually study in a place where I can concentrate on my course work.	4.4	High
RMCEMQ 2 I make good use of my study time for the courses in this program.	4.1	High
RMCEMQ3 I have a regular place set aside for studying	4.1	High
RMCEMQ 4 I make sure that I keep up with the weekly readings and assignments for the courses.	4.1	High
RMCEMQ 5 I attend the classes regularly in this program.	4.7	High
Overall Mean Value for Resource Management Component (Environment Management)	**4.3**	**High**

Table 12 above shows the mean findings for environment management component under resource management strategy which was measured by five (5) items. The overall mean value for this component was high (4.3). All five (5) items scored high mean value respectively. Item 1 which is "I usually study in a place where I can concentrate on my course work" scored high mean value (4.4), while item 2, 3 and 4 which is "I make good use of my study time for the courses in this program", "I have a regular place set aside for studying" and "I make sure

that I keep up with the weekly readings and assignments for the courses" scored high mean value of 4.1 respectively. Last item 5 which is "I attend the classes regularly in this program" has high mean value of 4.7.

The overall mean value of 4.3 for environment management component demonstrates that attending class, having a special place for study as well as time management are amongst the important features of proper resource management strategy that help students excel in their study. This further enforce that proper management and control of learning environment enable them maximise their learning.

*(b)	Effort Management (4 items)*
Table 13
Mean for Effort Management Component (n=68)

Section D: Resource Management Component (Effort Management)	Mean	Value
RMCEMQ1 I have a regular place set aside for studying	4.2	High
RMCEMQ 2 I work hard to do well in the classes in this program even if I do not like what we are doing.	4.3	High
RMCEMQ 3 When course work is difficult, I either give up or only study the easy parts.	2.4	Low
RMCEMQ 4 Even when course materials are dull and uninteresting, I manage to keep working until I finish.	4.1	High
Overall Mean Value for Resource Management Component (Effort Management)	**3.8**	**High**

Table 13 above depicted the mean findings for effort management component under resource management which was measured by four (4) items. The overall mean value was high (3.8). Three (3) items were scored high with Item 1 which is "I have a regular place set aside for studying" scored high mean value (4.2) and item 2 namely "I work hard to do well in the classes in this program even if I do not like what we are doing" scored high mean value of 4.3. Item 4 which is "Even when course materials are dull and uninteresting, I manage to keep working until I finish" also scored high mean value (4.1). Nevertheless, with respect to item 3 which is "When course work is difficult, I either give up or only study the easy parts" scored low mean value (2.4).

The overall mean value of 3.8 for effort management component pointed out that the respondents indicate effort management as part and parcel of resource management strategy is important role in helping them to strategize their online classes. They realize that their own effort is one of the key factor that to keep them going in their study. As adult working students, they have to motivate themselves and still focus with their aim.

(c)   Help-Seeking (2 items)
Table 14
Mean for Help Seeking Component (n=68)

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.	4.5	High
RMCHSQ 2 I try to identify students in the classes whom I can ask for help if necessary.	4.3	High
Overall Mean Value for Resource Management Component (Help Seeking)	**4.4**	**High**

Table 14 above shows the mean findings for help seeking component under resource management which was measured by two (2) items. The overall mean value was high (4.4). Two (2) items scored high mean value respectively. Item 1 which is "When I cannot understand the material in a course, I ask another student in the class for help" scored high mean value (4.5), while item 2 which is "I try to identify students in the classes whom I can ask for help if necessary" scored high mean value of 4.3.

The overall mean value of 4.4 for help seeking component pointed out that the respondents seek help from other students or the peers in the class as their learning strategy. The respondents imply that they must be resourceful and take charge of their learning process by asking others for help. Thus strategy enable them to manage and control the learning environment so they can maximise their learning. They cannot isolate themselves or learn in silo, as such help seeking is an important learning strategy.

Conclusion
Findings and Discussion

This preliminary study outlines the results of investigating the learning strategies of postgraduate students which are mostly working adults. Results from the survey indicated high mean value for all the components of learning strategies consist of cognitive strategy, metacognitive self-regulation, and resource management. This revealed that postgraduate students have employed the learning strategies in their learning activities just as the undergraduate students.

For the first component: cognitive strategy, the highest mean value came from Elaboration with a score of 4.1. The result contradicts with the research done by Tran et. al (2019) in which the highest mean score is Rehearsal. The inconsistency presumably because of the different level of study. They studied undergraduate level of which many courses require students to memorize the concepts, principles and so forth while postgraduate students who have reached certain level of maturity in acquiring knowledge able to relate, adapt and apply what they have learned interchangeably across courses with minimum notes and memorization.

The second component: metacognitive self-regulation is the component with 3.8, the lowest overall mean score of all the learning strategies components. According to Hariri et. al (2020) self-regulation is highly correlated with cognitive strategy and self-efficacy. This is line with the idea that student must set a learning goal and methods to achieve the goal. For 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, Help Seeking is found to have the highest overall mean value of 4.4. The students literally agree that they will ask for help from other students if they do not understand any material in the course. This result is consistent with the study done by Hederich-Martinez et. al (2020) which claimed that ability to handle resource management is evident in postgraduate level and this is mainly contributed by the ability to find support and leverage through interaction and socialization (Diaz et. al., 2019).

Pedagogical Implications and Suggestion for Future Research

The findings from this study confirms that learning strategies are vital as learning situations becoming less structured, more student centred and require autonomous and self-regulated learning. Postgraduate students just as undergraduate students should be given more exposure on effective learning strategies as Malaysia is expected to produce 60 percent citizens and professionals with postgraduate education. Although the present findings demonstrate that the postgraduate students' cognitive strategies, metacognitive self-regulated and resource management are high, the sample of this study is limited to only 68 participants. Therefore, future studies are suggested to produce more evidence with bigger participants to enhance the reliability of the research findings. Together with a few research studies investigating the effectiveness learning strategies in higher education level, more variables should be tested to determine the relationship of the learning strategies with other predictors and the socio-psychological research should be conducted to maximize the evidence-based implementation for the technique. In addition, future research can employ qualitative data collection strategies, which might have made it possible to widen understanding of the characteristics studied, and the limitation concerning generalization of the results, resulting from the peculiarities inherent to the characteristics of the postgraduate students and the methodology utilized in various disciplines of postgraduate studies.

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