

Exploring Learning Strategies through the Social Cognitive Theory

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ABSTRACT

Learning strategies were fundamental in the educational system as a guide for learners to achieve success in education. They referred to the methods and approaches used by individual learners to enhance their learning process, comprehension, and retention of new information. These strategies were categorized into three main types: cognitive, metacognitive, and resource management strategies. Understanding the acceptance and implementation of these strategies was important to ensure their relevancy and impact. This study aimed to investigate how learners perceived cognitive components, behavior, and environment in learning, as well as the relationship between these components. The quantitative study examined learning strategies among undergraduates, utilizing a purposive sample of 103 students from UiTM Cawangan Johor who responded to a survey instrument structured on a 5-point Likert scale. The survey, informed by theoretical frameworks from Bandura (1986) and Wenden and Rubin (1987), was designed with four distinct sections. Section A collected demographic data, while Sections B, C, and D focused on cognitive components, behavioral aspects (specifically metacognitive self-regulation), and environmental influences, respectively. The data obtained were further analyzed using SPSS. The results showed a strong correlation between the components, indicating a balanced approach to studying that combined these three elements as part of learning strategies. In terms of cognitive strategies, the findings revealed that students employed a variety of study methods integrating both traditional techniques and higher-order thinking skills. Additionally, students demonstrated proactive learning behaviors, including generating questions, clarifying confusion, and setting study goals. Regarding environmental factors, the findings indicated that students managed their study environments effectively. The study recommended future research incorporating actual student performance to explore its alignment with Social Cognitive Theory.

Keywords: Learning strategies, Education, Cognitive strategies, Metacognitive, Resource management

INTRODUCTION

Background of Study

Learning strategies refer to methods and approaches individuals use to improve their learning process, comprehension, and retention of new information. These strategies are fundamental in the educational system. Each learner requires the implementation of a method or strategy to accomplish its main goal (Mohammed Raffi et al., 2023). Learning strategies can be categorized into three main types (Weinstein et al., 1988): cognitive strategies, involve mental processes used to understand, organize, and manipulate information. Metacognitive strategies refer to awareness and regulation of one's own cognitive processes, it involves planning, monitoring, and evaluating one's learning and resource management strategies, involve managing resources such as time, materials, and study environments to optimize learning. By encouraging students to engage with these strategies, educators and institutions may facilitate deeper understanding, critical thinking, problem-solving abilities, and analytical skills among students. This, in turn, can lead to more advanced levels of learning, where students can apply knowledge in complex scenarios, make connections across different concepts, and demonstrate a deeper grasp of the subject matter (Liu et al., 2023)

Social Cognitive Theory emphasizes the role of observational learning, imitation, and modelling, which are crucial in diverse educational settings. (Tshering et al., 2024). Exploring learning strategies through the Social Cognitive Theory is important, as it addresses the intricate dynamics of how students learn within their social environments. This framework is particularly relevant in Malaysia's educational context due to several key reasons:

Cultural Context and Learning Environments

Malaysia's multicultural society creates diverse learning environments where social interactions play a crucial role in education. Social Cognitive Theory's emphasis on observational learning and social interactions (Hey et al., 2024) aligns well with Malaysia's educational settings, where students often learn from peers and community members. This is especially important in classrooms with a mix of ethnicities, as students can benefit from observing and modelling behaviours from a variety of cultural perspectives.

Government and Educational Policies

The Malaysian education system is focused on producing well-rounded individuals who can thrive in a globalized world. The Malaysian Education Blueprint 2013-2025 emphasizes the development of critical thinking, communication, and collaborative skills. Social Cognitive Theory supports these goals by promoting active learning strategies where students are encouraged to set personal goals, self-regulate, and engage in collaborative learning.

Technology Integration

Malaysia is increasingly integrating technology into its education system. Social Cognitive Theory's principles can be applied to the use of digital tools in classrooms, such as educational software and online learning platforms. These technologies can provide virtual environments for observational learning and interactive simulations, enhancing the learning experience. There is a significance impact of online learning to the implementation of Social Cognitive Theory (Sivakumar et al., 2023).

Statement of Problem

Low enrollment at the tertiary level has become a significant concern (UNESCO Documents). One potential factor contributing to this trend is the current examination system at the school level in Malaysia. The elimination of major examinations such as PMR (Penilaian Menengah Rendah) and UPSR (Ujian Penilaian Sekolah Rendah) leaves SPM (Sijil Pelajaran Malaysia) as the sole major examination before students advance to tertiary education. This limited examination framework may not adequately foster the development of students' cognitive skills during their school years. Consequently, students may lack the necessary cognitive preparedness, leading to low enrollment rates. Therefore, it is important to revisit student cognitive development at the tertiary level using Survey Social Cognitive Theory. (Bandura 1986)

Previous studies have explored specific areas that combine the three main components of Social Cognitive Theory (Bandura 1986) comprehensively. Few studies highlight the implementation of Social Cognitive in lower education level (Widodo & Astuti, 2024). However, the current study focuses on assessing the reliability of each key component to evaluate the significance of the findings among respondents at the tertiary level in the context of Malaysia.

Objective of the Study and Research Questions

This study aims to investigate learners' perceptions regarding their use of learning strategies. It specifically addresses the following questions: How do learners perceive the cognitive aspects involved in their learning? How do they view their behavior during the learning process? How do they perceive the influence of their environment on learning? Additionally, the study examines whether there is a relationship between these components in the context of learning.

LITERATURE REVIEW

Social Cognitive Theory

Albert Bandura's Social Cognitive Theory is a generally recognized and scientifically supported theory of individual behaviour (Compeau et al., 1999). It highlights how environmental, behavioural, and cognitive elements interact to shape human behaviour. SCT holds that human behaviour is a result of a complex interaction between various variables rather than being exclusively influenced by internal thoughts or external stimuli (Govindaraju. V, 2021). Social Cognitive Theory offers a thorough framework for comprehending how people's perceptions, beliefs, and social interactions affect how they respond to learning opportunities. Educators and students can improve the efficacy of educational interventions and foster good learning outcomes by considering elements like self-efficacy, outcome expectancies, observational learning, and social effects.

Learning Strategies

Learning strategies relate to the various techniques, tactics, processes, or behaviours that students utilize to increase their comprehension and retention of information (Abd. Kadir, 2021). In these strategies, learners use cognitive, metacognitive, and affective processes to gather, organize, commit to memory, and apply new knowledge and skills. Learning techniques are important resources that students use to maximize their educational possibilities, improve their academic performance, and develop their general knowledge.

Past Studies on Social Cognitive Theory

Many Studies have been done to investigate the learning strategies through the social cognitive theory. Yip (2023); (Almoslamani, 2022) did a study, specifically on learning strategies for foreign language, Mandarin for non-speaker and for Arab study.

There have been many past studies on the social cognitive theory. The study by Ying et al. (2023) is done to investigate learning strategies through the social cognitive on foreign language for not natural speaker. There are 168 participants in this study. These participants were studying Mandarin as a foreign language and are not natural speakers. The study's research tool is a five-point Likert scale survey based on Wenden and Rubin's learning techniques. The study's finding shows a strong correlation between the acquisition of Mandarin language and several language-learning variables, such as motivation, attention and reproduction, and retention. Seeking assistance in the motivation element was found to be the most favoured method by language learners to enhance their language acquisition. The study has important ramifications for educators, language instructors, students, and legislators in the field of education. Teachers can create customized language classes that meet the unique learning styles of their students by knowing the elements that affect language acquisition based on Social Cognitive Theory.

Next, the study by (Almoslamani, 2022) also looked at the connection between learning strategies adopted by Saudi university students and student academic achievement. This study focuses on Saudi Arabian university students' use of learning strategies and how those tactics affect their academic performance. Respondents to the poll included 365 college students who were enrolled in a college of education. The participants were selected by means of the random clustering method. The study used the brief "ACRA-C" learning techniques scale and a cross-sectional descriptive analytical methodology. The finding revealed that learners' favourite study habits and micro strategies are as follows. There were statistically significant differences between male and female students in the usage of learning methods, with the female students using them more frequently. Additionally, the study discovered that a strong predictor of students' academic success is their learning practices. Larger sample sizes from various Saudi Arabian institutions and universities should be used in future research, along with a range of academic accomplishment metrics, such as students' marks in particular courses rather than their overall grade average. The report also offers suggestions for further investigation, taking sample size and academic achievement metrics into account.

Conceptual Framework

There are many factors that encourage or hinder learners to be successful in their learning. According to Rahmat (2018), cognitive factors, combined by learners' behaviour added by a conducive environment help learners learn better. Figure 1 shows the conceptual framework of the study. Bandura (1986) in his theory of social cognitive theory states that **learning occurs in a social context with a dynamic and reciprocal interaction of the person**. The three main components in Bandura (1986) are then merged with Wenden & Rubin's (1987) learning strategies to reveal figure 1.

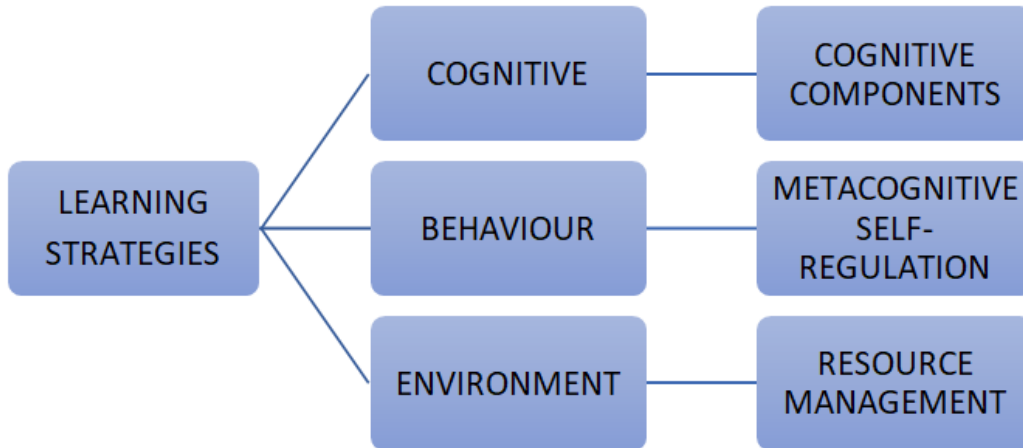


Figure 1- Conceptual framework of the study

Exploring Learning Strategies through the Social Cognitive Theory from Wenden & Rubin's (1987)

METHODOLOGY

This quantitative study investigates learning strategies among undergraduates, utilizing a purposive sample of participants who responded to a survey instrument structured on a 5-point Likert scale. This study employs purposive sampling, selecting 103 undergraduate students from UiTM Johor to explore learning strategies through the lens of Social Cognitive Theory. The sample was chosen due to the students' active involvement in learning processes, making them relevant for examining self-efficacy, behavior, and environmental influences on academic outcomes. Using students from a single institution ensures contextual consistency, providing focused and relevant insights within a manageable scope for meaningful analysis.

The survey, informed by theoretical frameworks from Bandura (1986) and Wenden & Rubin (1987), is designed with four distinct sections as mapped in Table 1. Section A gathers demographic data, while Sections B, C, and D delve into cognitive components, behavioral aspects (specifically metacognitive self-regulation), and environmental influences, respectively. By employing this multifaceted approach, the study aims to comprehensively analyze the diverse dimensions of learning strategies adopted by undergraduate students.

Table 1 Distribution of Items in the

	Social Cognitive Theory (Bandura, 1986)	STRATEGY		SUB-STRATEGY		Number of question	Cronbach Alpha
A	COGNITIVE	COGNITIVE COMPONENTS	(a)	Rehearsal	4	19	.921
			(b)	Organization	4		
			(c)	Elaboration	6		

			(d)	Critical Thinking	5		
B	BEHAVIOUR	METACOGNITIVE SELF-REGULATION				11	.875
C	ENVIRONME NT	RESOURCE MANAGEMENT	(a)	Environment Management	5	11	.811
			(b)	Effort Management	4		
			(c)	Help-Seeking	2		
						41	.949

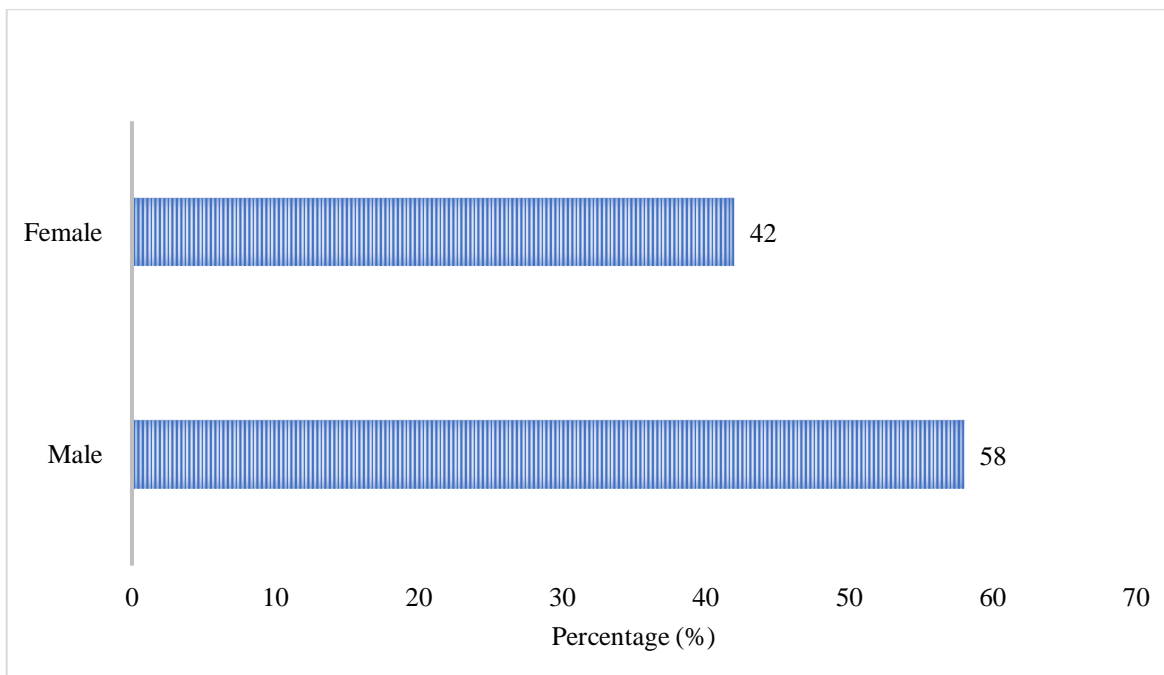
Source: Survey Social Cognitive Theory (Bandura, 1986)

The analysis, as detailed in Table 1, unveils strong internal consistency for the instrument employed, with a Cronbach's alpha coefficient of 0.921 for the cognitive domain, 0.875 for behavior (metacognitive self-regulation), and 0.811 for environmental factors. These coefficients substantially exceed the threshold of 0.7, indicating robust reliability across the survey items within each construct. Leveraging SPSS for further investigation, the subsequent analysis delves deeper into addressing the research questions of this study. Hopefully, the findings could provide comprehensive insights into the learning strategies among undergraduate students.

FINDINGS

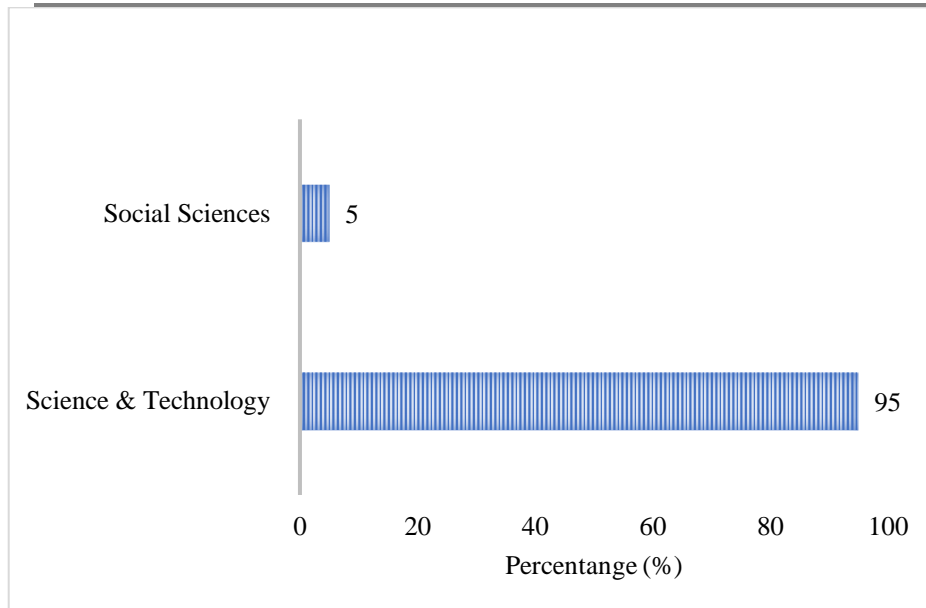
Findings for Demographic Profile

The demographic profile of the survey respondents, as shown in Graph 1, 2,3 and 4, provides a detailed information about the sampled population’s characteristics and academic background.



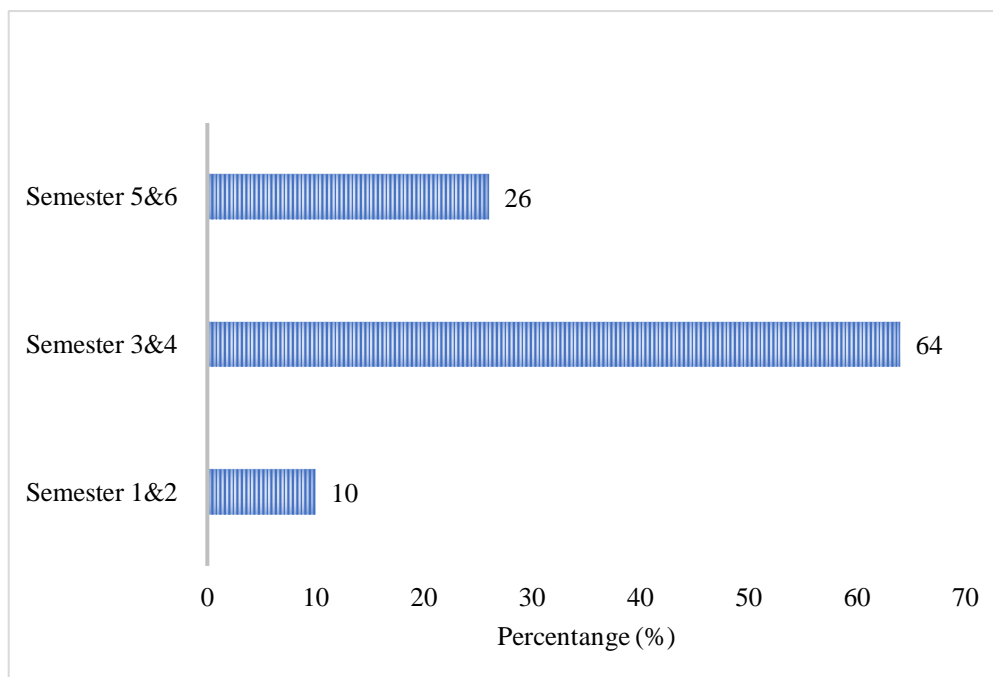
Graph 1 Percentage for gender

Graph 1 shows the gender breakdown of the survey participants. According to the data, majority of respondent is male, constituting 58% of the total, compared to 48% of female respondent.



Graph 2 Percentage for discipline

Graph 2 highlights the academic disciplinary among participants, with a majority, 95% of the respondents are from Science and Technology fields and the minority, 5% are from Social Science.

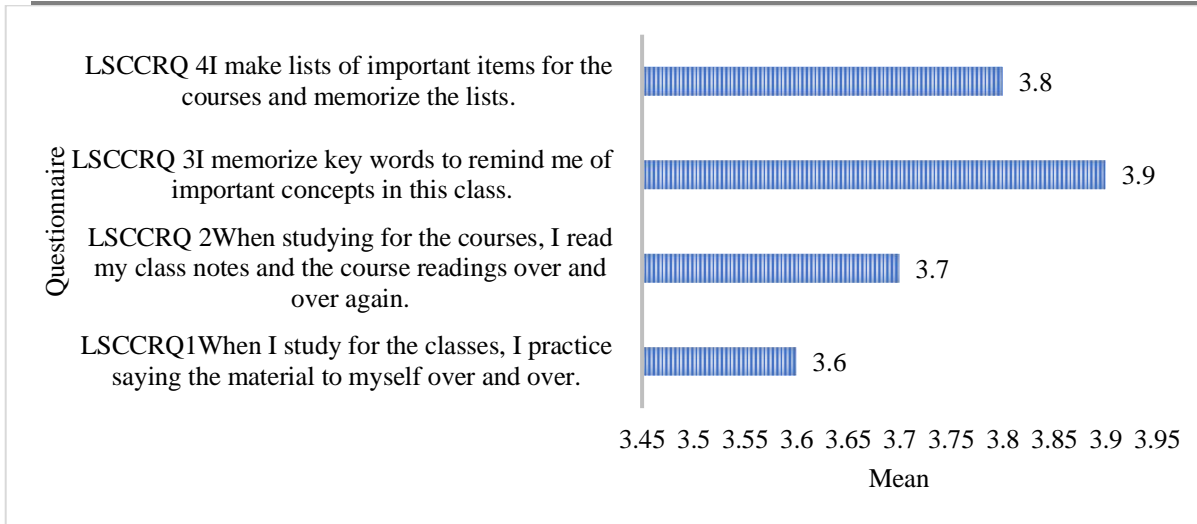


Graph 3 Percentage for year of study

Graph 3 illustrates the distribution of respondents based on year of study. The highest percentage, 64% situated in semester 3 and 4 (year 2), followed by second highest percentage, 26% in semester 5 and 6 (year 3) and the lowest percentage, 10% in semester 1 and 2 (year 1). In general, the findings provide an overview of the demographic profile and academic background of survey respondents, enhancing comprehension of their point of views and experiences within the study’s environment.

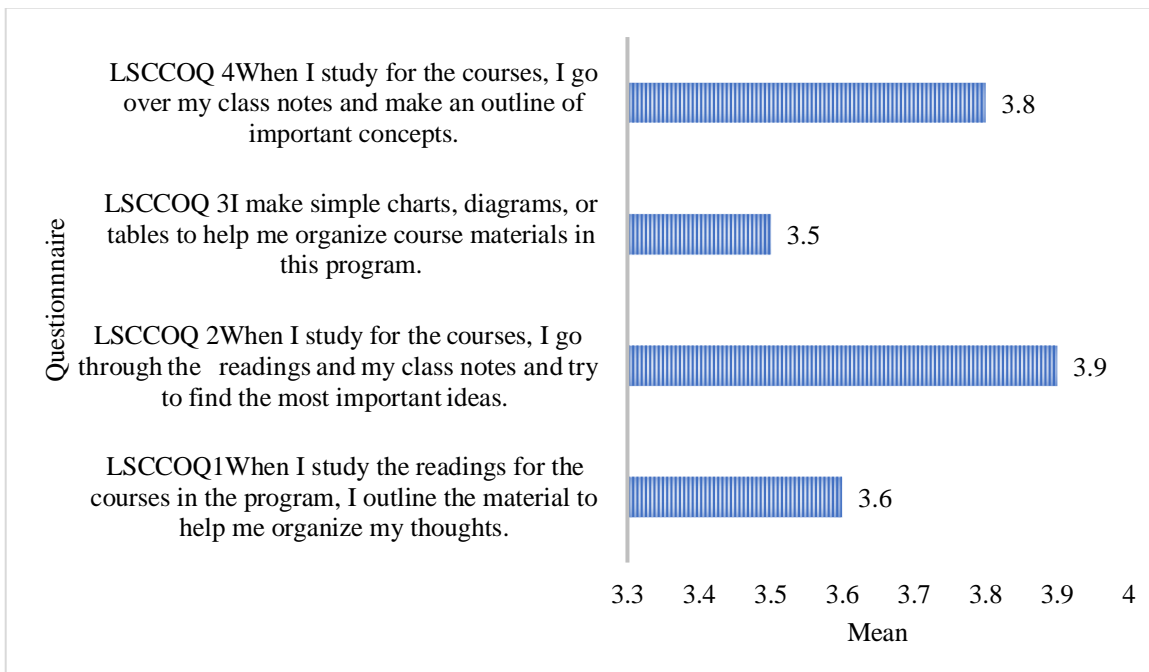
Findings for Cognitive

This section presents data to answer research question 1- How do learners cognitive components in learning? In the context of this study, this is measured by (a)rehearsal, (b) organization, (c) elaboration and (d) critical thinking.



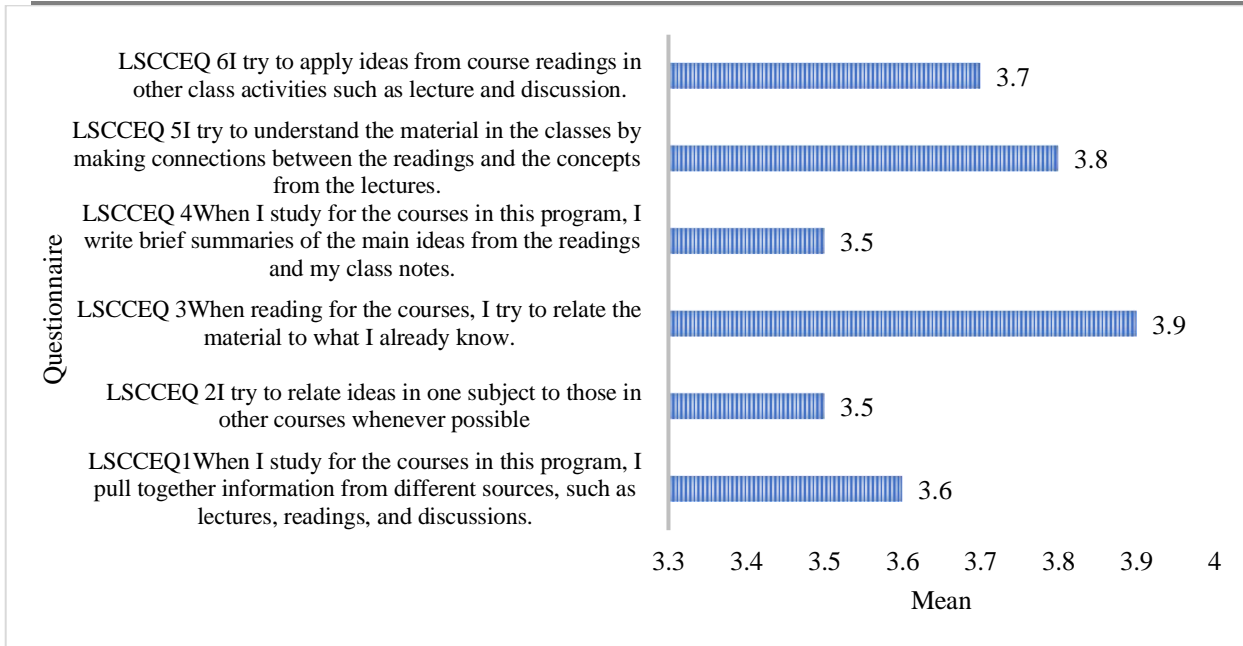
Graph 4 Mean for (a) Rehearsal (4 items)

Graph 4 shows the mean scores for four (LSCCRQ1- LSCCRQ4) different rehearsal component which discovered in this study. From the statistical analysis, the results indicate a high level of agreement among the respondents. The overall mean scores range from 3.6 to 3.9, suggesting that rehearsal components are commonly employed by the respondents. The highest mean score is 3.9 for LSCCRQ3 highlighting it as the most favoured approaches amongst other. The second highest is makes lists of important items for the courses and memorize the lists (LSCCRQ4) with mean score of 3.8 followed by reading class notes and the course readings over and over again. (LSCCRQ2) approach with mean score of 3.7 and practice saying the material to myself over and over (LSCCRQ1) approach with mean score 3.6. However, the close range of the mean scores implies a consistent use of the various rehearsal components approaches.



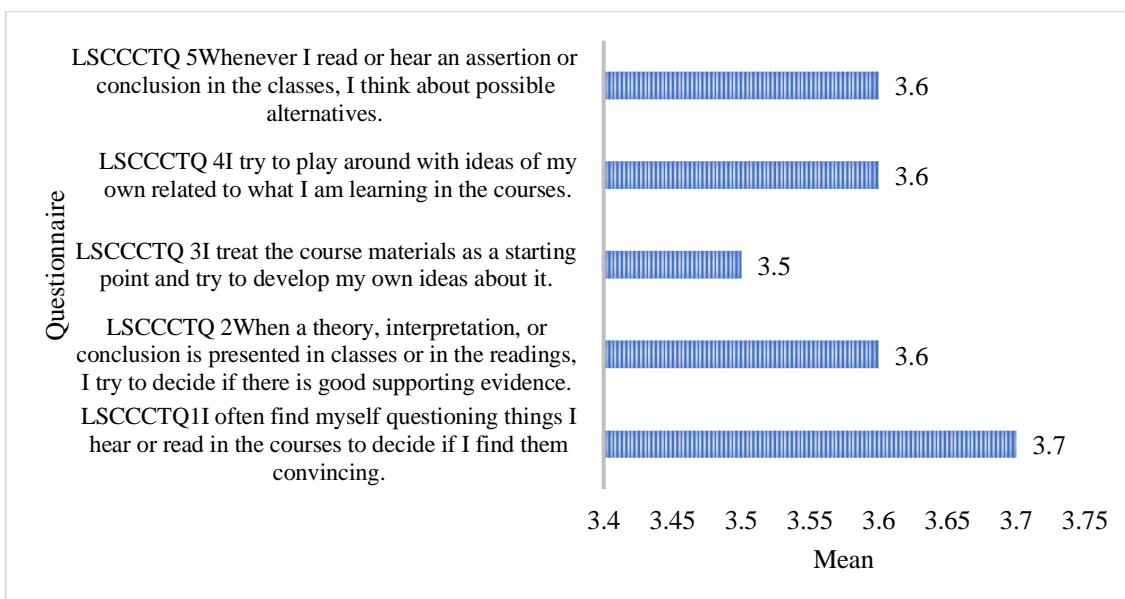
Graph 5 Mean for (b) Organization (4 items)

Graph 5 shows the mean scores for four (LSCCOQ1- LSCCOQ4) different study organization methods practices by respondents. From the analysis, the highest mean score of 3.9 reflects the frequency of going through readings and notes to find important concepts (LSCCOQ 2). This followed by approach of outlining important concepts from class notes indicates a common practice with a mean score of 3.8 (LSCCOQ4). Next, a mean score of 3.6 for organizing their thoughts by outlining course readings (LSCCOQ1) and the lowest mean score of 3.5 suggests less frequent use of charts, diagrams, or tables to organize materials (LSCCOQ3).



Graph 6 mean for (c) Elaboration (6 items)

Graph 6 shows the mean scores for six (LSCCEQ1 – LSCCEQ16) different elaboration components investigated in this study. The highest mean score of 3.9 indicates that relating new material to existing knowledge (LSCCEQ3) is a well-adopted approach. The second highest mean score is 3.8 which is for understanding the material in the classes by making connections between the readings and the concepts from the lectures (LSCCEQ5). Followed by (LSCCEQ5) which is apply ideas from course readings in other class activities such as lecture and discussion approach with mean score of 3.7. Meanwhile, the approach of integrating information from various sources like lectures, readings, and discussions (LSCCEQ1) has a mean score of 3.6. Lastly, there are two approaches which were relating ideas across different subjects (LSCCEQ2) and writing brief summaries of main ideas from readings and class notes (LSCCEQ4) share the same mean score of 3.5, indicating it might be less utilized or effective and could imply room for improvement or varying levels of adoption. However, the overall trend of mean score for elaboration strategy indicates a positive engagement with elaborative learning techniques.



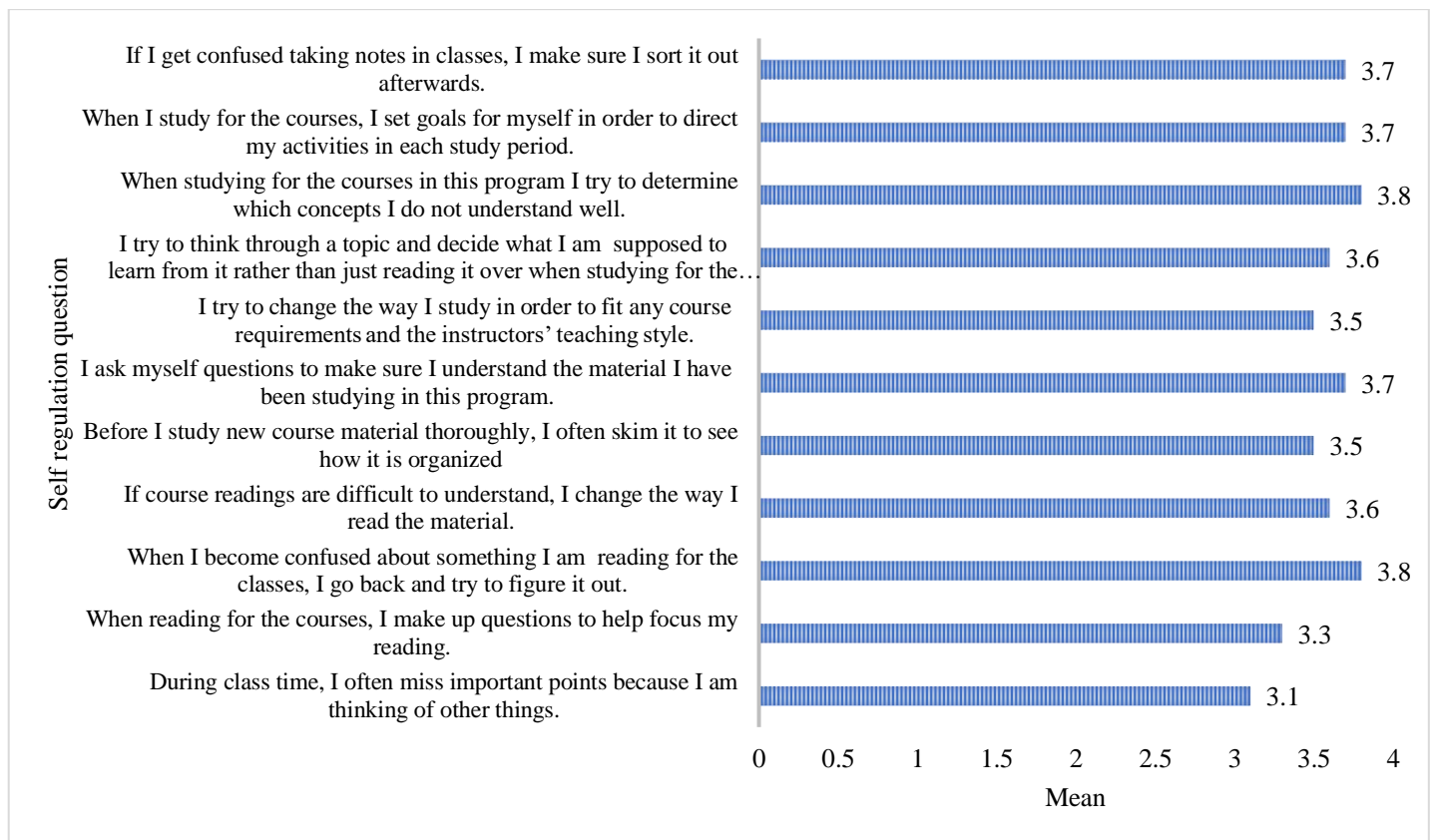
Graph 7 Mean for (d) Critical Thinking (5 items)

Graph 7 shows the mean scores for five (LSCCCTQ 1- LSCCCTQ 5) critical thinking components investigated in this study. From the analysis, the approach of questioning information to assess its persuasiveness (LSCCCTQ

1) has the highest mean score of 3.7. Followed by evaluating supporting evidence for theories or conclusions presented in classes or readings (LSCCCTQ 2), playing around with personal ideas related to course learning (LSCCCTQ 4) and thinking about possible alternatives to assertions or conclusions in classes (LSCCCTQ 5) with shows the same mean score of 3.6. Lastly, for idea development approach where required development one’s own ideas from course materials (LSCCCTQ 3) has the lowest mean score of 3.5, which indicate it might be less practiced. Overall, the scores of critical thinking approaches range from 3.5 to 3.7, reflecting a moderate level of engagement with critical thinking approaches. The data suggests that while there is a consistent application of these strategies, which may be opportunities to enhance their utilization and effectiveness within the program.

Findings for Behaviour

This section presents data to answer research question number 2 on how learners perceive their behaviour in learning? In the context of this study, this is measured by metacognitive self-regulation.

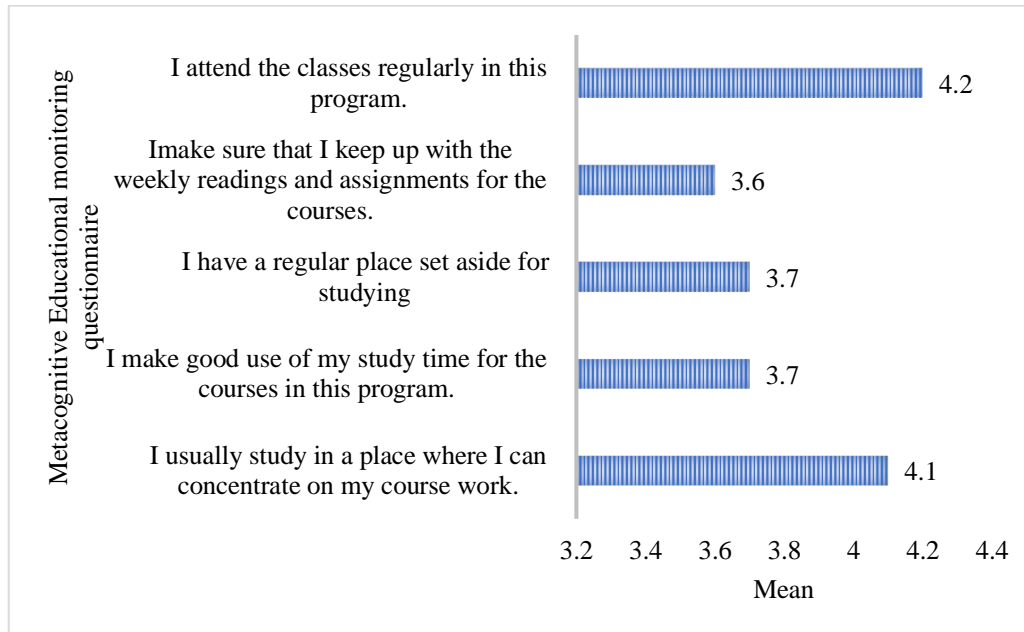


Graph 8 Mean for Metacognitive Self-Regulation (11 items)

In analyzing learners' perceptions of their behavior in learning, measured through metacognitive self-regulation, it's evident that students employ various strategies to enhance their comprehension and engagement. Among the 11 items surveyed as mentioned in Graph 8, certain practices stand out with notably higher mean scores, indicating their prominence in students' learning approaches. Particularly noteworthy is the practice of reflecting on and addressing confusion when encountered during reading (mean = 3.8), demonstrating a proactive effort to clarify understanding. Similarly, the tendency to determine and address comprehension gaps in studied concepts (mean = 3.8) underscores students' commitment to monitoring and enhancing their learning process. Additionally, the habit of setting goals for study sessions (mean = 3.7) reflects students' proactive approach to directing their learning activities, ensuring a structured and purposeful study experience. Conversely, the item with the lowest mean score, indicating relatively less emphasis, pertains to missing important points during class due to distractions (mean = 3.1). While still above the midpoint, this suggests a lesser occurrence of such distractions compared to other metacognitive strategies. These findings highlight the importance of metacognitive self-regulation in students' learning behaviors, emphasizing the role of reflective practices, goal-setting, and continuous monitoring in fostering effective learning outcomes.

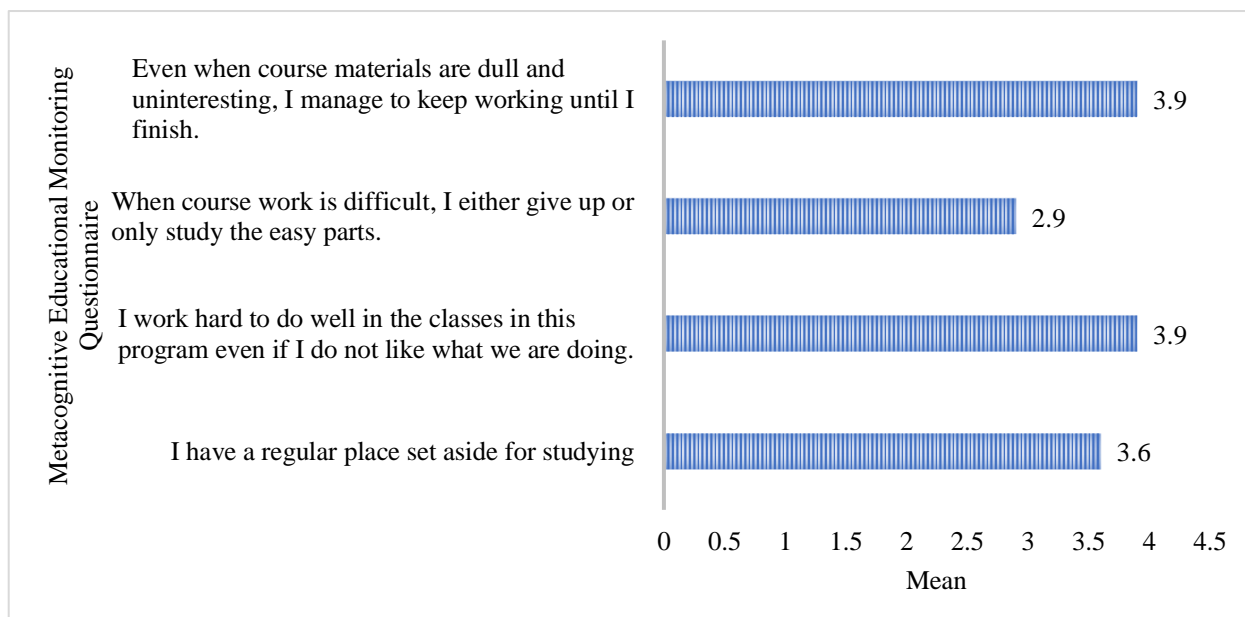
Findings for Environment

This section presents data to answer research question 3- How do learners perceive their environment in learning? In the context of this study, this is measured by resource management components such as (a) environment management, (b) effort management and (c) help-seeking.



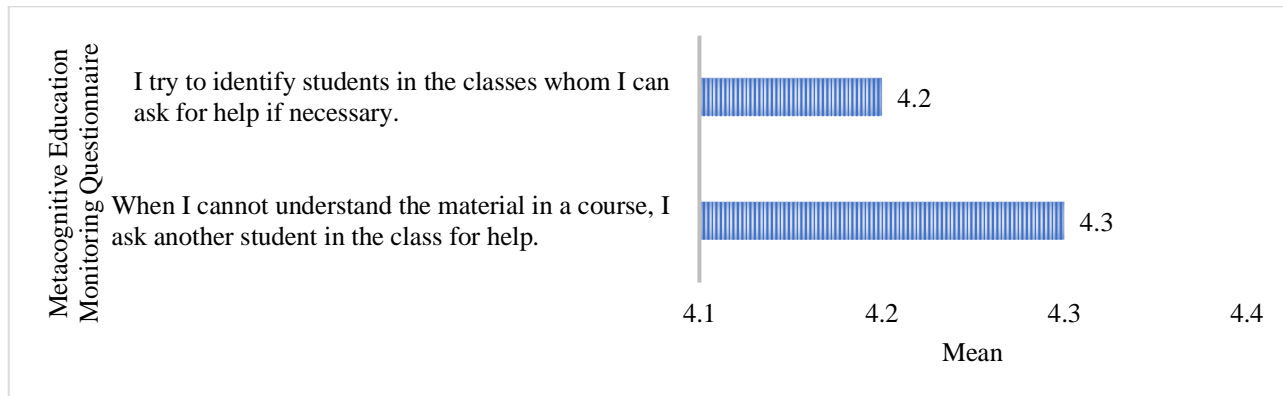
Graph 9 Mean for (a)Environment Management (5 items)

According to Graph 9, five environmental management items were rated based on mean scores within the academic context. Students in the program place a high priority on creating an environment conducive to effective learning. According to the mean score of 4.1, students prefer study environments that promote focus and productivity when concentrating on their course work. Additionally, students who regularly attend classes in this program score 4.2, indicating their commitment to attendance, a critical element of academic success. Furthermore, the mean scores hovering between 3.6 and 3.7 indicate a proactive approach towards time management and setting aside proper study space for academic endeavours. Overall, these findings indicate that students in this program exhibit disciplined behaviour towards managing their study environment, thus creating an atmosphere conducive to learning and achievement.



Graph 10 Mean for (b)Effort Management (4 items)

This study’s analysis of learning strategies includes managing student’s efforts to acquire knowledge. Graph 10 indicates that student’s attitudes towards effort management in their academic endeavours are generally good. Higher mean scores were obtained by the majority of the respondents stated that they had a specific area of study and expressing a strong commitment to studying hard regardless of any personal objections to the course material. However, there seems to be considerable variation in the replies when it comes to struggling with homework. While a significant portion of students indicated a willingness to persist through challenging material, a notable minority reported tendencies to either give up or focus solely on easier aspects of the coursework (mean score 2.9). Nonetheless, a substantial proportion of students demonstrated resilience, showing the ability to persevere even when confronted with dull and uninteresting course materials (mean score 3.9). Overall, these findings emphasise the necessity of encouraging a proactive approach to managing effort and overcoming difficulties in educational environments.



Graph 11 Mean for (c) Help-Seeking (2 items)

The data shown in Graph 11 present information on how students feel about asking help for assistance when they encounter difficulties with their coursework. The results indicate a mostly favourable tendency to reach out for help when necessary. A significant majority of students reported being proactive approach to seeking help, with high mean scores (4.3 and 4.2) for both items. According to the study, students are not only showing a willingness to ask for help when they encounter difficulty understanding the course material, but they also act proactively in locating and identifying possible sources of support within their classes. This proactive approach toward seeking help is indicative of a friendly learning environment where students are comfortable reaching out their peers for explanation and assistance.

Findings for Relationship between all components in learning

This section presents data to answer research question 4- Is there a relationship between all components in learning? To determine if there is a significant association in the mean scores between all components, data is analysed using SPSS for correlations. Results are presented separately in table 13, 14 and 15 below.

Table 2- Correlation between Cognitive and Behaviour

Correlations

		COGNITIVE	BEHAVIOUR
COGNITIVE	Pearson Correlation	1	.747**
	Sig. (2-tailed)		.000
	N	103	103
BEHAVIOUR	Pearson Correlation	.747**	1
	Sig. (2-tailed)	.000	
	N	103	103

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

Table 2 shows there is an association between cognitive and behaviour. Correlation analysis shows that there is a high significant association between cognitive and behaviour ($r=.747^{**}$) 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 behaviour.

Table 3- Correlation between Behaviour and Environment

Correlations

		BEHAVIOUR	ENVIRONME NT
BEHAVIOUR	Pearson Correlation	1	.709**
	Sig. (2-tailed)		.000
	N	103	103
ENVIRONMENT	Pearson Correlation	.709**	1
	Sig. (2-tailed)	.000	
	N	103	103

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

Table 3 shows there is an association between behaviour and environment. Correlation analysis shows that there is a high significant association between behaviour and environment ($r=.709^{**}$) 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 behaviour and environment.

Table 4 -Correlation between Environment and Cognitive

Correlations

		ENVIRONME NT	COGNITIVE
ENVIRONMENT	Pearson Correlation	1	.675**
	Sig. (2-tailed)		.000
	N	103	103
COGNITIVE	Pearson Correlation	.675**	1
	Sig. (2-tailed)	.000	
	N	103	103

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

Table 4 shows there is an association between environment and cognitive. Correlation analysis shows that there is a high significant association between environment and cognitive ($r=.675^{**}$) 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 environment and cognitive.

CONCLUSION

Summary of Findings and Discussions

The findings for this survey are divided into three, cognitive, behaviour and environment. For cognitive, the respondent employs a variety of study strategies, including repetition, organization, synthesis of information,

and critical thinking. They demonstrate proactive engagement with course materials, striving for a holistic understanding and applying concepts across contexts. For behaviour respondent demonstrates a proactive approach to learning, employing strategies like generating questions, clarifying confusion, and adapting reading techniques. They actively monitor their understanding, set study goals, and accommodate course requirements.

Additionally, they ensure clarity in note-taking post-class. The result for environment, respondent effectively manages their coursework by studying in conducive environments, prioritizing study time, maintaining a regular study space, and attending classes regularly. While they show slightly lower engagement with weekly readings and assignments, their overall commitment to their academic responsibilities is commendable, contributing to a positive learning experience and academic success.

Respondent also displays a proactive and determined approach to their coursework, with a dedicated study space and a strong work ethic. They show resilience in dealing with challenging material and seek help when needed, demonstrating both independence and a willingness to collaborate with peers.

Overall, they exhibit qualities of diligence, resourcefulness, and a commitment to academic success. From these findings, it can be concluded that there is a relationship between all components in learning based on the correlation results. There is a strong positive relationship between cognitive and behaviour, behaviour and environment and lastly between environment and cognitive. Overall, the findings indicate a balanced approach to studying that combines these three components as part of learning strategies. The findings results are in line with the findings of Mohammadi et al. (2022) who found a positive correlation between cognitive and behaviour components in learning strategies.

Pedagogical Implications and Suggestions for Future Research

The findings of this study offer several pedagogical implications, highlighting the strengths and areas for growth in students' learning strategies across cognitive, behaviour and environment. For cognitive, findings indicate that students employ a variety of study strategies that integrate traditional methods and higher order thinking skills. This suggests that instructors should encourage the use of diverse study techniques to promote a range of cognitive strategies such as repetition, organization, synthesis, and critical thinking in the curriculum. This can be done through varied assignments and activities that require students to engage with content in multiple ways.

Students demonstrate proactive learning behaviours, such as generating questions, clarifying confusion, and setting study goals. To support these behaviours, educators should promote active learning for example implement instructional strategies that require active engagement, such as group discussions, problem-based learning, and inquiry-based activities. This can help students continue to develop their questioning and clarification skills. For environment, findings reveal that students manage their study environments effectively but show slightly lower engagement with weekly readings and assignments. Pedagogical strategies to address this include create conducive learning environments by encourage students to identify and utilize optimal study spaces. This can be supported by providing quiet study areas on campus or sharing tips for creating productive home study environments. Develop interactive and engaging materials, such as multimedia resources, that can increase students' interest in weekly readings can also be done. Additionally, incorporating regular, low-stakes assessments or discussions on these readings can ensure ongoing engagement.

From the comprehensive nature of the survey findings across cognitive, behavioural and environment management, future research could include actual student performance to explore its alignment with social cognitive theory. Potential findings from the research could identify which strategies are most effective for different types of coursework and learning contexts, providing targeted recommendations for students and educators. The research can be conducted by adapting longitudinal study to track students' use of various study strategies over a semester or academic year, performance metrics by measuring academic performance through grades, test scores, and other assessments and lastly qualitative feedback by gather student feedback on the perceived effectiveness of different strategies through surveys or interviews. By addressing these research area, future studies can build on the current findings to develop more effective educational strategies and tools that support students' diverse learning needs and preferences.

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