DOI: 10.38103/jcmhch.97.1

Original research

LEARNING STRATEGIES AMONG NURSING STUDENTS AT THE UNIVERSITY OF MEDICINE AND PHARMACY AT HO CHI MINH CITY

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ABSTRACT

Background: *Learning strategies play a crucial role in developing professional competencies and practice skills for nursing students. It is important for universities to understand students' learning strategies in order to provide effective support. This study aims to examine the learning strategies of nursing students at the University of Medicine and Pharmacy at Ho Chi Minh city (UMP) and explore the relationship between educational environment factors and students' learning strategies.*

Methods: *A descriptive cross-sectional study was conducted using the Motivated Strategies for Learning Questionnaire (MSLQ) and Dundee Ready Education Environment Measure (DREEM) questionnaires. The online survey involved 331 nursing students from year 1 to year 4. Pearson/Spearman correlation was used to analyze the relationship between educational environment factors and learning strategies.*

Results: *The mean score of students' learning strategies ranged from 4.1 to 4.9. It was found that 98.2% of students had satisfactory learning strategies, with the highest rate in time management and learning environment (99.7%), and the lowest in critical thinking and studying with peers (73.4%). Most learning strategies showed moderate to very strong positive correlations with each other ($r = 0.29 - 0.81$, $p < 0.001$). Factors such as teaching methods, lecturers, and learning atmosphere had weak to moderate positive correlations with most students' learning strategies ($r = 0.15 - 0.45$, $p < 0.01$).*

Conclusions: *Nursing students at UMP generally demonstrate effective learning strategies. However, interventions in teaching and learning environments are needed to enhance students' critical thinking skills and promote collaborative learning. Developing these skills will improve education quality and prepare students for their future professional careers.*

Keywords: *Learning strategies, MSLQ, nursing students.*

I. BACKGROUND

The context of nursing education is constantly evolving, driven by rapid advances in healthcare technology and the increasing complexity of patient care needs. As nursing students navigate this dynamic educational environment, the importance of effective learning strategies becomes increasingly crucial. These strategies not only facilitate the acquisition of knowledge and skills necessary for clinical practice but also prepare students for lifelong learning and adaptation to their future professional careers.

Recent research underscores the importance of learning strategies in enhancing nursing students' educational outcomes and clinical competencies. For instance, studies have shown that self-regulated learning strategies, including goal setting, time management, and self-assessment, are positively correlated with academic success and better clinical decision - making in nursing education [1]. Similarly, metacognitive strategies, which include planning, monitoring, and evaluating one's learning process, have been emphasized as crucial in promoting deeper

Received: 17/4/2024. **Revised:** 31/5/2024. **Accepted:** 12/6/2024.

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understanding and retention of complex medical information [2].

The Motivated Strategies for Learning Questionnaire (MSLQ) has been widely used to assess the cognitive and metacognitive strategies used by students across disciplines, including nursing. MSLQ's comprehensive approach to evaluating learning strategies provides valuable insights into how students approach their learning, which can inform the design of curriculum and teaching practices [3]. Furthermore, the learning environment, including the availability of resources, faculty support, and opportunities for collaborative learning, has been identified as a significant predictor of the adoption of effective learning strategies [4, 5]. The interaction between individual student learning strategies and the broader educational context suggests a complex interplay that warrants further investigation.

A literature review shows that while research on learning strategies among nursing students is a growing trend worldwide, it remains limited in Vietnam. Most of the existing studies focus on disciplines outside of healthcare, such as foreign language learning [6], with few examining strategies among healthcare students, especially nursing. Some studies survey nursing students, but they often concentrate on a specific learning method like self-study, rather than comprehensively assessing various learning strategies [5, 7]. For these reasons, we conducted a study to describe the learning strategies of nursing students at the University of Medicine and Pharmacy at Ho Chi Minh City (UMP). We also aimed to identify the relationship between university environmental factors and these strategies. The research findings will aid nursing educators and schools better understand students' learning strategies. Consequently, they will be able to provide suitable support and interventions, helping students develop more effective learning strategies.

II. MATERIALS AND METHODS

2.1. Participants and study design

The study utilized a descriptive cross-sectional design, collecting data through an online survey via Microsoft Forms. It was distributed to all 650 nursing students, from years 1 to 4, at the University of Medicine and Pharmacy at Ho Chi Minh City between April and May 2023. Exclusions from the study were students who were on leave, absent during the data collection period, or unable to access their university email at the time of the survey.

2.2. Variables and measurements

The self - reported questionnaire includes three parts:

Background information e.g., age, gender, year of study, main place of residence, economic conditions, interest in studying, self-assessment of the effectiveness of current learning strategies, academic performance (GPA).

Learning strategies: Student learning strategies were assessed using the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich (1992) [8, 9]. The MSLQ is divided into two main sections: the motivation section and the learning strategies section. Our study focused on the learning strategies section, which includes 9 subscales with 50 questions. These questions assess students' use of cognitive, metacognitive, and resource management strategies. Respondents were requested to rate each statement on a 7 - point Likert scale, ranging from 1 ("not at all true of me") to 7 ("very true of me"). Subscale scores are calculated by averaging the item scores after reversing the negatively worded items. A higher score indicates a better learning strategy for that subscale. An effective learning strategy is considered when the score is above 3. If a student scores below 3 in six out of nine subscales, the student is considered to have an overall ineffective learning strategy. Prior to the study, a rigorous process of translation-back translation was conducted. Testing of the Vietnamese - translated MSLQ showed an excellent content validity index (S-CVI/Avg) ranging from 0.98 to 1, and Cronbach's alpha values for the subscales ranged from 0.72 to 0.95.

Educational environment: The Vietnamese version of the Dundee Ready Education Environment Measure (V-DREEM) [10, 11] was used to evaluate the educational environment. This tool, validated for the Vietnamese context with a Cronbach's alpha of 0.8, consists of 50 items divided into five domains. Each item is scored on a 5 - point Likert scale, from 0 (completely disagree) to 4 (completely agree). Higher scores reflect greater student satisfaction. In our study, we focused on three domains: Student

Perceptions of Learning (SPL), Student Perceptions of Teaching (SPT), and Student Perceptions of Atmosphere (SPA).

2.3. Data analysis

Completed questionnaires were extracted from Microsoft Forms into Microsoft Excel for cleaning and coding. Data were analyzed using SPSS 25.0 software, with a statistical significance level of $p \leq 0.05$. Qualitative variables were described using frequencies and percentages, while quantitative variables were described using mean and standard deviation (for normal distribution) or median and interquartile range (for non-normal distribution). T-tests, ANOVA, and Pearson correlation were used to identify relationships between personal characteristics and satisfaction with the learning environment in relation to students' learning strategies. Pearson and Spearman correlations were used to determine the relationship between learning strategies and cumulative GPA.

2.4. Ethics

Ethical approval for the study was obtained from the Ethics Research Committee of the University of Medicine and Pharmacy at Ho Chi Minh City (Ethical approval No: 142/HĐĐĐ-ĐHYD).

III. RESULTS

3.1. Participants' characteristics

Out of 650 nursing students, 331 participated in the study, yielding a response rate of 50.9%. The majority of participants were female (85.5%). The distribution of participants across academic years was: second - year students were the largest group (45.6%), followed by third-year (22.1%), fourth - year (18.4%), and first - year students (13.9%). Students' interest in studying was rated at 5.3 out of 7 (SD = 0.96). Their self-assessment of their learning strategies' effectiveness was rated at 4.61 out of 7 (SD = 0.98). The students' cumulative GPA was 2.86 out of 4 (SD = 0.33). The learning environment was evaluated as follows: teaching was rated at 34.54 ± 6.21, teachers at 29.25 ± 4.83, and the learning atmosphere at 30.12 ± 6.05.

3.2. Learning strategies among nursing students

According to the MSLQ questionnaire's guidelines for evaluating learning strategies, the survey results indicated that 98.2% of nursing students at the University of Medicine and Pharmacy at Ho Chi Minh city used effective overall learning strategies, with an average score of 4.50 ± 0.89. Among specific strategies, time management and learning environment management were the most effective (99.7%), while critical thinking and peer learning were the least effective (73.4%). Other highly effective strategies (> 90%) included effort regulation, information seeking, and metacognition, in descending order. Detailed results are presented in Table 1.

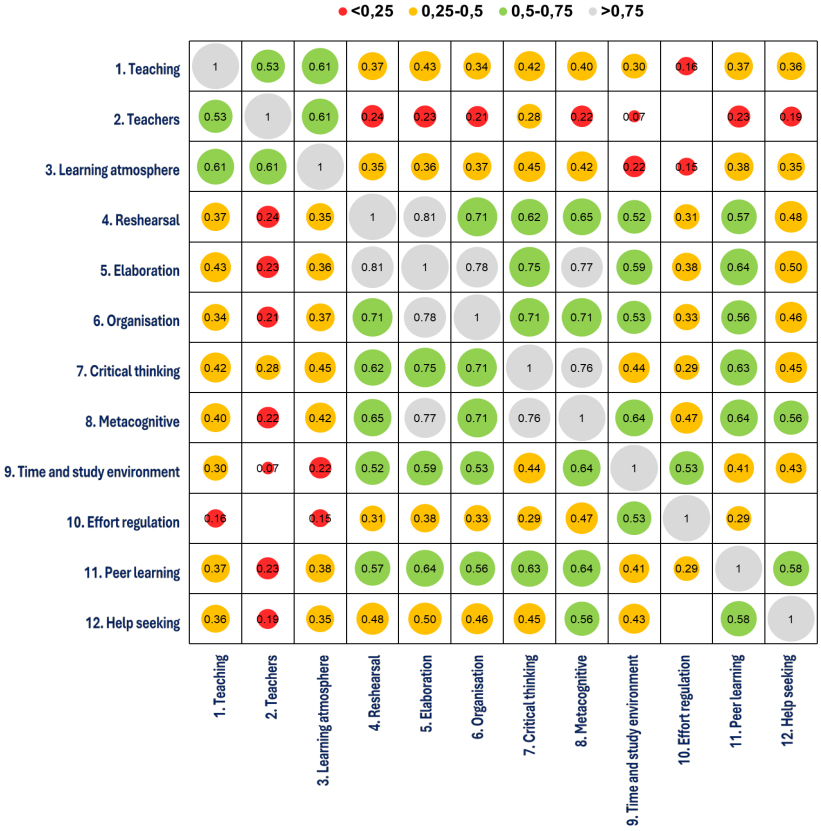
Table 1: Learning strategies among nursing students (n=331)

Learning strategies (1-7)	Mean ± SD	n (%)*
Cognitive strategies		
• Rehearsal	4.65 ± 1.22	290 (87.6%)
• Elaboration	4.61 ± 1.24	286 (86.4%)
• Organisation	4.44 ± 1.35	262 (79.2%)
• Critical thinking	4.09 ± 1.37	243 (73.4%)
Metacognitive Self - Regulation	4.42 ± 0.99	300 (90.6%)
Resource management		
• Time and learning environment	4.90 ± 0.90	330 (99.7%)
• Effort regulation	4.47 ± 0.93	314 (94.9%)
• Peer learning	4.24 ± 1.37	243 (73.4%)
• Help - seeking	4.47 ± 1.03	304 (91.8%)

*For satisfactory learning strategy (score > 3)

3.3. Factors associated with learning strategies among nursing students

Most of the learning strategies were positively correlated with each other at a moderate to strong level, r = 0.29 - 0.81 (p < 0.001). The factors of teaching methods, teachers, and learning atmosphere were positively correlated at a weak to moderate level with most of the nursing students' learning strategies, r = 0.15 - 0.45 (p < 0.01). See Figure 1 for details.



Note: Numerical values represent correlation coefficients (r)

Figure 1: Matrix of relationships between learning environment factors and learning strategies

No significant relationship was found between personal characteristics and students' learning strategies, except for gender and academic year. Specifically, female students had a higher average learning strategies score for effort regulation (4.51 ± 0.92) compared to male students (4.21 ± 0.92), t (329) = 2.06, p = 0.04. ANOVA and Tukey HSD post hoc analysis also revealed that second-year students had a significantly higher mean score of learning strategies for critical thinking (4.34 ± 1.34) compared to first-year students (3.88 ± 1.42) and third-year students (3.81 ± 1.34). However, there was no significant difference compared to fourth-year students (3.95 ± 1.33), F (3, 327) = 3.43, p = 0.02.

3.4. Relationship between learning strategies and academic performance

Pearson correlation results indicated a weak to moderate positive correlation between most learning strategies and students' interest in studying, the effectiveness of learning strategies, and cumulative GPA (2.86/4).

Table 2: Relationship between learning strategies and academic performance

Learning strategies	Interest in studying	Efficacy of current learning strategies	GPA
Cognitive strategies			
Rehearsal	0.34***	0.30***	0.18**

Learning strategies	Interest in studying	Efficacy of current learning strategies	GPA
Elaboration	0.39***	0.36***	0.18**
Organisation	0.32***	0.29***	0.12*
Critical thinking	0.35***	0.27***	0.11*
Metacognitive Self - Regulation	0.40***	0.33***	0.13*
Resource management			
Time and study environment	0.29***	0.32***	0.20***
Effort regulation	0.17**	0.28***	0.21***
Peer learning	0.23***	0.19***	0.19***
Help seeking	0.32***	0.19***	0.09

*p < 0,05, **p < 0,01, ***p < 0,001

IV. DISCUSSION

4.1. Learning strategies among nursing students at University of Medicine and Pharmacy at Ho Chi Minh city

The study results provide a comprehensive view of the learning strategies employed by nursing students at the UMP. The average scores for learning strategies, which range from 4.1 to 4.9, suggest effective usage of these strategies by the students. The mean scores of learning strategies among nursing students in this study are slightly higher than those in a previous study by Luong To Lan which included 646 first - year students from various disciplines [6]. However, the outcomes are similar when comparing first - year student groups across both studies. This difference can be partly attributed to the varying characteristics of our study subjects, which comprised students from the first to the fourth year. Pintrich [12] posited that first - year university students often grapple with effective learning strategies. This struggle may be associated with students' adaptation in terms of academic, social, emotional, and institutional attachment as they transition from high school to university [13].

Interestingly, our study found that third - year nursing students employed the least effective learning strategies, for the most part, although statistical significance was not achieved except for critical thinking and organization. The mean scores for critical thinking and organization were higher among second - year nursing students compared to third - year students, and this difference was statistically significant ($p < 0.05$). Our study results observed a trend of evolving learning strategies throughout the academic years, a pattern also identified in a previous study by Irvine and colleagues [14]. Both nursing and medical students' learning strategies change significantly during their university education due to varied academic and psychological factors. For instance, nursing students often adjust their learning strategies in response to high levels of academic stress and anxiety, which can influence their coping mechanisms and learning approaches. Previous studies have shown that academic stress is linked to the adoption of diverse learning approaches as students attempt to manage their stress effectively [15]. Moreover, the transition to clinical environments introduces new stressors that further influence learning strategies. During their first clinical placements, students must adapt their learning strategies to cope with the immediate demands of the clinical setting, often shifting towards more practical and situational learning techniques [16].

In our study, critical thinking and peer learning tend to be less effective compared to other strategies, with only 73.4% effectively applying them. This aligns with Nguyen's report, which revealed

moderate levels of critical thinking abilities among senior nursing students in Vietnam [17]. The lower effectiveness of critical thinking strategies may indicate a gap in the curriculum or teaching methods requiring attention. Critical thinking is an essential skill for nursing students, as it directly impacts their ability to make informed decisions, provide high-quality patient care, and adapt to complex clinical situations [18]. Recent studies emphasize the importance of fostering critical thinking skills in nursing education. For instance, Wei et al. (2024) [19] and Sterner (2023) [20] highlight that integrating simulation-based learning and problem-based learning (PBL) into the curriculum significantly enhances critical thinking abilities among nursing students. Similarly, a study by Carter et al. (2017) [21] found that the use of reflective practice and clinical reasoning exercises in nursing programs improves students' critical thinking skills, enabling them to better analyze clinical scenarios and develop appropriate care plans.

Peer learning, a process involving collaborative learning and mutual support among students, has been proven to improve students' critical thinking, problem - solving abilities, self - efficacy, and academic performance [22, 23]. However, our study indicates that only 73.4% of students effectively utilized peer learning, suggesting underlying issues that need further exploration. A potential explanation is tied to the context of our research. We found that first-year and third-year students were less effective in peer learning compared to their counterparts. This could be attributed to transitioning from high school to university or clinical placements [13].

4.2. Factors associated with learning strategies among nursing students

The strong interrelationship between various learning strategies can be attributed to the complementary nature of these techniques (see Figure 1). The literature supports these correlations, which emphasizes the interconnectedness of learning strategies in promoting academic success. For instance, a study by Cho et al. (2017) [24] found that students who utilized a combination of self-regulated learning strategies, including goal setting, self - monitoring, and strategic planning, exhibited higher academic performance compared to those who did not. This holistic approach to learning enables students to adapt their strategies based on the demands of different tasks, leading to more effective learning outcomes.

Our study's results also revealed the positive correlation between teaching methods, teachers, and the learning atmosphere with students' learning strategies, highlighting the critical role of the educational environment in shaping learning behaviors. Teaching methods that encourage active learning, such as problem - based learning (PBL) and simulation - based training, have been shown to enhance students' engagement and foster the use of diverse learning strategies. These methods promote critical thinking, collaboration, and practical application of knowledge, which are essential components of effective learning in nursing education. The influence of teachers on students' learning strategies is also significant. Teachers who provide clear instructions, constructive feedback, and supportive mentoring can motivate students to adopt and refine their learning strategies. The quality of teacher - student interactions plays a crucial role in creating a positive learning environment that encourages students to take ownership of their learning and continuously improve their strategies [5, 7].

Our study's findings suggest several implications for nursing education. Firstly, the curriculum should emphasize the development of critical thinking skills. This can be achieved by integrating problem-based learning and case studies, which provide students with opportunities to practice and refine these skills. Secondly, critical thinking can be improved by enhancing peer learning through group activities and collaborative projects. Furthermore, nursing educators should focus on incorporating multiple learning strategies into the curriculum. This encourages students to develop a comprehensive toolkit for academic success, with teaching methods that promote active engagement and practical application of knowledge. Lastly, it is essential to foster a positive learning atmosphere. Institutions should prioritize creating a nurturing and inclusive environment that supports student well - being.

While this study provides valuable insights into nursing students' learning strategies, some

limitations should be acknowledged. The study was conducted at a single institution, which may limit the generalizability of the findings to other nursing schools. Future research should include a more diverse sample of institutions to validate these results. Moreover, the self - reported nature of the survey may introduce response biases, as students may overestimate their use of effective learning strategies. Future studies should also explore the long - term impact of these learning strategies on academic performance and clinical competence. Longitudinal studies tracking students from their first year through to their entry into the nursing profession could provide a more comprehensive understanding of how these strategies evolve and influence professional practice.

V. CONCLUSIONS

Nursing students at UMP typically demonstrate effective learning strategies. However, critical thinking and peer learning tend to be less effective compared to other strategies. Most learning strategies show a moderate to very strong positive correlation with each other. Factors like teaching methods, lecturers, and the learning atmosphere display weak to moderate positive correlations with most of the students' learning strategies. Interventions in teaching and learning environments are necessary to improve students' critical thinking skills and encourage collaborative learning.

Declaration of interest: None

Acknowledge: The authors gratefully acknowledge the financial support from the University of Medicine and Pharmacy at Ho Chi Minh city for this research.

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