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Relation among Critical Thinking, Peer Learning, Help-Seeking Strategies and Academic Performance in Undergraduate Medical Students of Bangladesh

Kabir MA¹, Alam K K², Talukder MHK³, Das B K⁴, Azim E⁵, Hossain MS⁶

Abstract

Background: Critical thinking, peer learning, and help-seeking are key to academic performance because they help students solve problems, build understanding, and get support when needed.

Objective: Medical students rely on rote memorization in their studies, which limits their deep understanding. Deep and analytical skill is essential for clinical application of medical knowledge. For this reason, effective learning strategies such as critical thinking, peer learning, and help-seeking are essential.

Method: This study was conducted on MBBS students and intern doctors. The sample size was 840, taken from 8 medical colleges in Bangladesh. It was a cross-sectional descriptive study. A self-administered structured questionnaire was used for data collection, and data were statistically analyzed.

Results: The mean scores of students' agreement on various statements related to critical thinking ranged from 4.36 to 5.6, with an overall score of 5.04. For peer learning, the mean scores ranged from 4.98 to 5.68, with an overall score of 5.39. Regarding help-seeking, the mean scores ranged from 4.32 to 5.98, with an overall score of 5.34. The critical thinking, peer learning, and help-seeking learning strategies showed a statistically significant association with academic performance ($p < 0.05$); however, the strength of correlation was consistently weak ($r < 0.3$).

Conclusion: These strategies improved academic performance despite weak correlations. Study habits, social environment, and other factors also play important roles in academic success

Keywords: Critical thinking, Peer learning, Help-seeking, Academic performance, Undergraduate medical students of Bangladesh

1. Dr. Md. Ashraful Kabir, Associate Professor (Anatomy) in situ, OSD (Directorate General of Health Services), Mohakhali, Dhaka.
2. Dr. Kazi Khairul Alam, Former Professor (Teaching Methodology), Centre for Medical Education (CME), Mohakhali, Dhaka.
3. Professor Dr. Md. Humayun Kabir Talukder, Registrar, Bangladesh Medical Education Accreditation Council, Former Professor of Curriculum Development Evaluation, Centre for Medical Education (CME), Mohakhali, Dhaka.
4. Dr. Biplab Kumar Das, Associate Professor (Cardiology) in situ, OSD (Directorate General of Health Services), Mohakhali, Dhaka.
5. Dr. Ehsamul Azim, Professor (Community Medicine), Green life Medical College, Dhaka
6. Dr. Md. Shakaoath Hossain, Assistant Professor (General Surgery), OSD (Directorate General of Health Services), Mohakhali, Dhaka.

Address of correspondence: Dr. Md. Ashraful Kabir, Associate Professor (Anatomy) in situ, OSD (Directorate General of Health Services), Mohakhali, Dhaka. Email: ashraulkabir@mc37@gmail.com

Introduction

According to Longman Advanced American Dictionary the word 'learning' means knowledge gained through reading and study, and 'strategy' means a well plan actions used

in learning and thinking for achieving an aim. The learning strategies is a desired behavior and thoughts that are used by the learners during learning for better understanding, learning or remembering new information. These focus on analyzing, organizing new

information during learning to increase understanding and evaluating learning¹. The term used in the literature to describe the mode of learning that students adopt in higher education vary widely. ‘Learning strategies’, ‘approaches to learning’ and ‘learning methods’ are terms that are used in an interchangeable manner. Learning strategies define the approaches taken by students to learn their text content². The ability of student to apply prior information to novel or new circumstances in order to solve issues, come to conclusions, or critically assess concepts is known as critical thinking³. Peer learning is the process, working with classmates for improving their learning. Talking to peers can help students understand course material better and gain new perspectives⁴. Help seeking refers to a student’s ability to ask for help from peers or instructors, such as peer tutoring or teacher support, which can enhance their academic success³. Students who possess strong critical thinking skills engage in research, ask questions, think independently, make decisions based on logical reasoning, resolve issues, value others’ opinions, demonstrate confidence, and are open to working collaboratively. Focus, judgement, presumption, situational awareness, clarity, and overview or summary are the six essential or key components of critical thinking. There is substantial evidence that the elaboration learning approach affects learning outcomes and critical-thinking abilities in distinct ways⁴. Peer learning has grown in popularity as a teaching strategy during the last 30 to 40 years. Peer learning has several important benefits for students. It creates a cooperative learning environment where students can teach each other. This improves communication skills. Most of the students are more comfortable with their

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peers than with their teacher for discussion. This reduces their performance anxiety. Thus, it helps improve their motivation and academic performance⁵. Help-seeking is a learning method that can affect students’ learning results and is primarily used in educational, counselling, and healthcare contexts. When students see a gap in their understanding, they seek help to close the gap. This is known as help-seeking. Asking for assistance from reliable sources, such as more seasoned or informed individuals or locations where they feel direction is available, is a good strategy for students to close the gap⁶. These multi-strategy approaches help students improve their learning and academic performance.

Undergraduate medical students in Bangladesh experience notable challenges in education due to ineffective learning strategies, though they spend a substantial time studying. They rely on rote memorization. Without effective strategies, they feel stressed and frustrated, which diminishes their motivation in medical studies. Research showed that well-chosen learning strategies such as critical thinking, peer learning, and help-seeking can reduce these issues and enable more efficient study and better academic results.

Methods

The study was cross-sectional and descriptive. The study took place between July 2024 and June 2025. Four government, three non-government, and one army medical college in Bangladesh served as the research locations. The study population consisted of intern doctors and medical students from the chosen medical colleges. MBBS students and intern doctors from all four phases made up

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the sample size. The sample size was 840. The study employed a straight forward sampling approach to gather data from intern doctors and undergraduate medical students using a self-administered structured questionnaire, the MSLQ Bangla translated version adapted by Khanom and Ahmed⁷. In this case, the learning techniques were

identified using descriptive statistics. Academic performance (self-reported percentage scores on several professional exams) and students' critical thinking, peer learning, and academic help-seeking were compared using simple linear regression.

Results

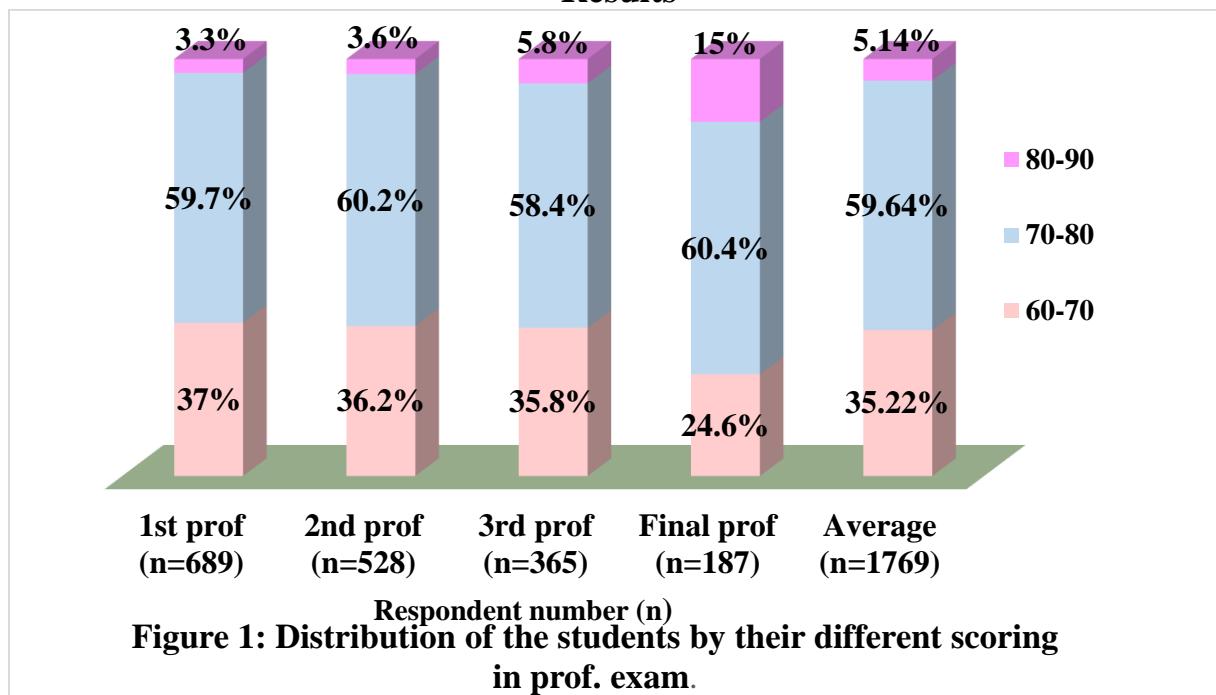


Figure 1: Distribution of the students by their different scoring in prof. exam.

Figure 1 Component bar diagram shows that students obtained 60 to 70 marks more in first professional examination (37%), then second professional examination (36.2%). Students also obtained 70 to 80 marks more in final professional examination (60.4%), then

second professional examination (60.2%). Marks, 80 to 90 was more in final professional examination that was 15%. Here, average marks 70 to 80 was more (59.64%) then, 60 to 70 was (35.22%) and less was 80 to 90 (5.14%).

Table 1: Distribution of the students by their agreement on the statements related to critical thinking of their learning strategies

Statement related to critical thinking	Frequency (%) of level of agreement							Mean (±SD)
	1	2	3	4	5	6	7	

	Original Article							
“I often find myself questioning things I hear or read in this course to decide if I find them convincing.”	143 (17)	83 (9.9)	50 (6)	84 (10)	130 (15.5)	233 (27.7)	117 (13.9)	4.36 (2.093)
“When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.”	66 (7.9)	61 (7.3)	59 (7)	70 (8.3)	190 (22.6)	238 (28.3)	156 (18.6)	4.9 (1.815)
“I treat the course material as a starting point and try to develop my own ideas about it.”	21 (2.5)	32 (3.8)	42 (5)	70 (8.3)	179 (21.3)	330 (39.3)	166 (19.8)	5.39 (1.435)
“I try to play around with ideas of my own related to what I am learning in this course.”	14 (1.7)	30 (3.6)	34 (4)	34 (4)	178 (21.2)	345 (41.1)	205 (24.4)	5.6 (1.347)
“Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.”	54 (6.4)	51 (6.1)	52 (6.2)	74 (8.8)	207 (24.6)	266 (31.7)	136 (16.2)	4.36 (1.697)
Overall	298 (7.1)	257 (6.14)	237 (28.2)	332 (7.9)	884 (21)	1412 (33.6)	780 (18.5)	5.04 (1.137)

Table 1 shows that on a seven-point scale (1 to 7), the mean scores of the students' agreement on different statements related to critical thinking were within the range of 4.36 to 5.6, and the overall score was 5.04. The most prominent ways were 'I try to play around with ideas of my own' (mean 5.6),

then 'I try to develop my own ideas' (mean 5.39), and then 'I try to decide if there is good supporting evidence' (mean 4.9). The least prominent ways were 'I often find myself questioning things' (mean 4.36) and 'I think about possible alternatives' (mean 4.36).

Table 2: Distribution of the students by their agreement on the statements related to peer learning of their learning strategies

Statement related to peer learning	Frequency (%) of level of agreement							Mean (±SD)
	1	2	3	4	5	6	7	
“When studying for this course, I often try to explain the material to a classmate or friend.”	27 (3.2)	23 (2.7)	22 (2.6)	30 (3.6)	174 (20.7)	307 (36.5)	257 (30.6)	5.68 (1.426)
	42	23	28	50	164	269	264	

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“I try to work with other students from this class to complete the course assignments.”	(5)	(2.7)	(3.3)	(6)	(19.5)	(32)	(31.4)	5.54 (1.590)
“When studying for this course, I often set aside time to discuss course material with a group of students from the class.”	75	54	56	42	194	242	176	4.98 (1.861)
Overall	144	100	106	122	532	818	697	5.39 (1.262)

Table 2 shows that on a seven-point scale (1 to 7), the mean scores of the students' agreement on different statements related to peer learning were within the range of 4.98 to 5.68, and the overall score was 5.39. The most prominent ways were 'I often try to

explain the material to a classmate or friend' (mean 5.68) and 'I try to work with other students' (mean 5.54). The least prominent way was 'I often set aside time to discuss course material with a group of students' (mean 4.98).

Table 3: Distribution of the students by their agreement on the statements related to help seeking of their learning strategies

Statement related to help seeking	Frequency (%) of level of agreement							Mean (\pmSD)
	1	2	3	4	5	6	7	
“Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone.”*	223	154	81	15	98	120	149	4.32 (2.324)
“I ask the instructor to clarify concepts I don't understand well.”	60	52	39	49	151	297	192	5.19 (1.783)
“When I can't understand the material in this course, I ask another student in this class for help.”	15	12	21	16	132	311	333	5.98 (1.237)
“I try to identify students in this class whom I can ask for help if necessary.”	18	20	19	31	131	294	327	5.89 (1.343)
Overall	316	238	160	111	512	1022	1001	5.34 (1.105)

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* Reverse scoring done

Table 3 shows that out of a seven-point scale (1 to 7), the mean scores of the students' agreement on different statements related to help seeking were within the range of 4.32 to 5.98, and the overall score was 5.34. The most prominent ways were 'I ask another student in this class for help' (mean 5.98),

then 'I try to identify students in this class whom I can ask for help' (mean 5.89), and 'I ask the instructor to clarify concepts' (mean 5.19). The least prominent way was 'I try to do the work on my own, without help from anyone' (mean 4.32).

Table 4: Comparison of the students by their agreement on the different statements related to critical thinking of their leaning strategies with their academic performance

Agreement on the different statements related to critical thinking	Academic performance				
	1st Prof.	2nd Prof.	3rd prof.	Final Prof.	Overall
"I often find myself questioning things I hear or read in this course to decide if I find them convincing."	r=.016 P=.673	r=.126 p=.004	r=.097 p=.065	r=.262 p<.001	r=.052 p=.172
"When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence."	r=.053 p=.166	r=.134 p=.002	r=.151 p=.004	r=.154 p=.036	r=.131 p<.001
"I treat the course material as a starting point and try to develop my own ideas about it."	r=.087 p=.023	r=.140 p=.001	r=.191 p<.001	r=.290 p<.001	r=.168 p<.001
"I try to play around with ideas of my own related to what I am learning in this course."	r=.143 p<.001	r=.210 p<.001	r=.279 p<.001	r=.298 p<.001	r=.241 p<.001
"Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives."	r=.138 p<.001	r=.199 p<.001	r=.240 p<.001	r=.212 p=.004	r=.214 p<.001
Overall	r=.106 p=.005	r=.224 p<.001	r=.253 p<.001	r=.319 p<.001	r=.221 p<.001

Table 4 shows that comparison of the students by their agreement on the different statements related to critical thinking of their leaning strategies with their academic performance. Here significant relationship were found between different statements related to critical thinking and academic performance of the students (<0.05), except,

'I often find myself questioning things I hear or read in this course' with first prof., third prof. and with overall, then, 'I try to decide if there is good supporting evidence.' with first prof. Overall critical thinking of their leaning strategies with their academic performance was significant relationship (<0.05). But the correlation was always weak (r=< 0.3).

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Table 5: Comparison of the students by their agreement on the different statements related to peer learning of their leaning strategies with their academic performance

Agreement on the different statements related to peer learning	Academic performance				
	1st Prof.	2nd Prof.	3rd prof.	Final Prof.	Overall
“When studying for this course, I often try to explain the material to a classmate or friend.”	r=.051 P=.179	r=.154 P<.001	r=.190 P<.001	r=.144 P=.049	r=.116 P=.002
“I try to work with other students from this class to complete the course assignments.”	r=.032 P=.405	r=.099 P=.023	r=.076 P=.145	r=.195 P=.008	r=.086 P=.024
“When studying for this course, I often set aside time to discuss course material with a group of students from the class.”	r=.081 P=.033	r=.118 P=.007	r=.181 P<.001	r=.236 P=.001	r=.145 P<.001
Overall	r=.073 P=.056	r=.159 P<.001	r=.191 P<.001	r=.270 P<.001	r=.151 P<.001

Table 5 shows that comparison of the students by their agreement on the different statements related to peer learning of their leaning strategies with their academic performance. Here significant relationship were found between different statements related to peer learning and academic performance of the students (<0.05), except, ‘I often try to explain the material to a

classmate or friend.’ with first prof. then, ‘I try to work with other students’ with first and third prof. and lastly, overall peer learning strategies with first prof, beside this overall, peer learning of their leaning strategies with their academic performance was significant relationship (<0.05). But the correlation was always weak (r=< 0.3).

Table 6: Comparison of the students by their agreement on the different statements related to help seeking of their leaning strategies with their academic performance

Agreement on the different statements related to help seeking	Academic performance				
	1st Prof.	2nd Prof.	3rd prof.	Final Prof.	Overall
“Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone.”	r=.031 P=.411	r=.010 P=.821	r=.010 P=.850	r=.136 P=.064	r=.036 P=.345
“I ask the instructor to clarify concepts I don't understand well.”	r=.126 P<.001	r=.201 P<.001	r=.178 P<.001	r=.251 P<.001	r=.208 P<.001

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“When I can't understand the material in this course, I ask another student in this class for help.”	r=.124 P=.001	r=.190 P<.001	r=.231 P<.001	r=.211 P=.004	r=.180 P<.001
“I try to identify students in this class whom I can ask for help if necessary.”	r=.122 P<.001	r=.160 P<.001	r=.236 P<.001	r=.191 P=.009	r=.198 P<.001
Overall	r=.138 P<.001	r=.174 P<.001	r=.204 P<.001	r=.282 P<.001	r=.212 P<.001

Table 6 shows that comparison of the students by their agreement on the different statements related to help seeking of their leaning strategies with their academic performance. Here significant relationship were found between different statements related to help seeking and academic performance of the students (<0.05), except,

Discussion

Study finding (Figure 1) showed that students obtained 60 to 70 marks more in first professional examination (37%), then second professional examination (36.2%). Students also obtained 70 to 80 marks more in final professional examination (60.4%), then second professional examination (60.2%). Marks, 80 to 90 was more in final professional examination that was 15%. Here, average marks 70 to 80 was more (59.64%) then, 60 to 70 was (35.22%) and less was 80 to 90 (5.14%). This trend suggests improved academic performance in later phases, possibly due to accumulated knowledge, better adaptation to study strategies, and increased clinical relevance enhancing motivation⁸. Critical thinking strategies received moderate endorsement among Bangladeshi undergraduate medical students, positioned at the lowest end of the three learning strategies examined. Scores

‘I try to do the work on my own, without help from anyone.’ with all academic performance, beside this overall, help seeking of their leaning strategies with their academic performance was significant relationship (<0.05). But the correlation was always weak ($r=< 0.3$).

ranged from 4.36 ± 2.093 to 5.6 ± 1.347 , with an overall mean was 5.04 ± 1.137 . Students showed a preference for generating and developing their own ideas, a pattern that partially aligns with Pintrich et al. who identified “playing around with ideas” as the most prominent behavior within this domain³. However, lower scores for questioning assumptions and considering alternatives suggest limited engagement with deeper analytical thinking. Sabri et al. reported differing trends, underscoring the influence of contextual factors⁹. In the present study, exam-focused instruction, minimal inquiry-based learning, and restricted classroom dialogue may have contributed to the comparatively low scores, potentially hindering the cultivation of analytical and evaluative thinking in medical education settings. Peer learning was frequently reported, particularly in the form of explaining material to classmates, indicating a preference for informal collaboration. This pattern aligns with

Pintrich et al. whereas Sabri et al. observed stronger endorsement of structured peer interaction^{3,9}. The findings suggest that students favor spontaneous collaboration over organized group learning, possibly reflecting cultural and institutional influences on classroom dynamics. Agreement scores for peer learning ranged from 4.98 ± 1.861 to 5.68 ± 1.426 , with an overall mean of 5.39 ± 1.262 . In the present study, this strategy ranked first in mean score sequence, highlighting its moderate prominence among the learning strategies assessed. In the present study, students' agreement with statements related to the help-seeking strategy yielded mean scores ranging from 4.32 ± 2.324 to 5.98 ± 1.237 , with an overall mean of 5.34 ± 1.105 . This strategy ranked second in mean score sequence. Help-seeking behaviors appeared moderately strong, with students most likely to seek help from peers and, to a lesser extent, from instructors. These findings are consistent with Sabri et al. and partially align with Pintrich et al. Variations across studies may reflect contextual factors such as instructor accessibility, peer support culture, and student confidence. Notably, the consistent presence of this domain across diverse educational settings underscores its robustness as a component of self-regulated learning^{3,9}.

The findings (Tables 4-6) demonstrated that each of the three learning strategies showed a statistically significant association with academic performance ($p < 0.05$); however, the strength of correlation was consistently weak ($r < 0.3$). This suggests that while learning strategies are related to academic

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outcomes, they alone do not strongly predict performance. Students also engage in self-observation, noting how much time they spend studying to better understand their time management⁸. This could explain why the use of strategies alone is not a strong predictor of success. This aligns with previous research, which indicates that learning strategies are only one component of a larger, complex system influencing student success^{8,10}. According to a study by Ekwochi et al. medical students' academic performance might be impacted by their study habits, behaviour, and social surroundings¹¹. A comparable investigation by Khan, explored the link between academic performance and various learning strategies, revealing a statistically significant positive correlation across all measured domains. Among these, help-seeking behavior ($r = .456$), peer learning ($r = .440$), and critical thinking ($r = .386$) showed moderate associations¹².

Conclusion

The study found a trend of improved academic performance in later professional examinations, likely due to accumulated knowledge, better study strategies, and increased clinical relevance. While critical thinking, peer learning, and help-seeking strategies positively impacted performance, the correlation remained weak ($r < 0.3$). Critical thinking was linked to idea development, peer learning to explaining material, and help-seeking to seeking clarification. However, these strategies alone are not strong predictors of academic success, supporting the idea that performance is influenced by a combination of factors, including study habits, other cognitive and social factors also play an important role.

Further research is needed to explore the interaction of these strategies with other variables.

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