







ORIGINAL

## Role of Learning Approaches and Reflective Thinking on Academic Performance among Nursing Students

### El papel de los enfoques de aprendizaje y el pensamiento reflexivo en el rendimiento académico de los estudiantes de enfermería

Elsayed Hamdy Nasr Abdelhalim<sup>1,2</sup>  , Mohamed Gamal Elsehrawy<sup>1,3</sup>  , Samah Alsaid Ahmed Moawd<sup>4</sup>  

<sup>1</sup>College of Nursing, Prince Sattam Bin Abdulaziz University. AlKharj 11942, Saudi Arabia.

<sup>2</sup>Faculty of Nursing, Port Said University, Department of Maternity, Obstetric and Gynecological Nursing. Port Said 42526, Egypt.

<sup>3</sup>Faculty of Nursing, Port Said University, Nursing Administration Department. Port Said 42526, Egypt.

<sup>4</sup>College of Applied Medical Sciences, Prince Sattam Bin Abdulaziz University, Department of Physiotherapy and Health Rehabilitation. AlKharj 11942, Saudi Arabia.

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Corresponding author: Mohamed Gamal Elsehrawy 

#### ABSTRACT

**Introduction:** one of the most crucial metrics for assessing education is academic achievement. Students' academic performance is known to be influenced by a number of factors. The purpose of this study was to investigate factors associated with nursing students' good academic achievement.

**Method:** a descriptive cross-sectional study was carried out with 168 male and female students chosen from various nursing faculty levels at Prince Sattam Bin Abdulaziz University. Students' grade point average, the Reflective Thinking Questionnaire, and the Revised Study Process Questionnaire were used to gather data directly from the students. A student was considered to have great academic accomplishment if their cumulative final grades over time had a high average value.

**Results:** the results showed that excellent academic achievement was present in 77,4 % of the overall student body. While body mass index was the only independent negative predictor of higher academic achievement (0,049), students' learning approaches, reflective thinking, and lack of chronic disease were statistically significant independent positive predictors of higher academic achievement.

**Conclusions:** according to the study's findings, there was a highly significant statistical relationship between students' academic accomplishment and their learning strategies and reflective thinking. Higher academic achievement is positively predicted by students' learning styles, introspective thinking, and lack of chronic illnesses.

**Keywords:** Academic Performance; Learning Approaches; Reflective Thinking; Nursing Students.

#### RESUMEN

**Introducción:** uno de los parámetros más importantes para evaluar la educación es el rendimiento académico. Se sabe que el rendimiento académico de los estudiantes está influido por una serie de factores. El objetivo de este estudio era investigar los factores asociados al buen rendimiento académico de los estudiantes de enfermería.

**Método:** se llevó a cabo un estudio descriptivo transversal con 168 estudiantes de ambos sexos elegidos entre los distintos niveles de la facultad de enfermería de la Universidad Príncipe Sattam Bin Abdulaziz. Se utilizaron la media de notas de los estudiantes, el Cuestionario de Pensamiento Reflexivo y el Cuestionario Revisado de Proceso de Estudio para recabar datos directamente de los estudiantes. Se consideró que un

estudiante tenía un gran rendimiento académico si sus calificaciones finales acumuladas a lo largo del tiempo tenían un valor medio alto.

**Resultados:** los resultados mostraron que el 77,4 % del alumnado en general presentaba un excelente rendimiento académico. Mientras que el índice de masa corporal fue el único predictor negativo independiente de un mayor rendimiento académico (0,049), los enfoques de aprendizaje de los estudiantes, el pensamiento reflexivo y la ausencia de enfermedades crónicas fueron predictores positivos independientes estadísticamente significativos de un mayor rendimiento académico.

**Conclusiones:** según los resultados del estudio, existe una relación estadística altamente significativa entre el rendimiento académico de los estudiantes y sus estrategias de aprendizaje y pensamiento reflexivo. Los estilos de aprendizaje de los estudiantes, el pensamiento introspectivo y la ausencia de enfermedades crónicas predicen positivamente un mayor rendimiento académico.

**Palabras clave:** Rendimiento Académico; Enfoques de Aprendizaje; Pensamiento Reflexivo; Estudiantes de Enfermería.

## INTRODUCTION

Many students are being left behind by an educational system that some people believe is in crisis.<sup>(1)</sup> Improving educational outcomes will require efforts on many fronts, but instructors need to provide solutions involve helping students think effectively with proper thinking techniques.<sup>(2)</sup> Fortunately, cognitive and educational psychologists have been developing and evaluating easy-to-use learning approaches that could help students achieve their learning goals.<sup>(3)</sup> Learning approaches are described as the learner's preferred pattern when trying to take in, process, and assimilate knowledge and information; a set of personal characteristics, which can be matched effectively to identical instruction methods.<sup>(2)</sup>

Higher education institutions need to create opportunities for students to work across disciplinary and cultural boundaries and learn from those experiences.<sup>(1)</sup> Experiential learning offers an interesting point of departure to achieve these goals.<sup>(3)</sup> There is a growing interest in higher education in reflection and different ways to promote reflection in Experiential learning have been proposed, e.g., reflective journals, reflective pre-assessments, and reflective post-assessments.<sup>(4)</sup> Active learning approaches, such as engaging in discussions, problem-solving, and hands-on activities, have been shown to improve knowledge retention and understanding compared to passive learning methods like lecture-based instruction.<sup>(5)</sup>

Student's approaches to learning were identified in two major categories: deep and surface. In the case of surface approach, the student engages in learning the text itself with the intention of reproducing it without any further analysis.<sup>(4)</sup> Students who take a deep approach to learning, on the other hand, focus on comprehending the authors' meaning and connecting it to their prior knowledge and life experiences. In summary, the discourse in deep approach is towards comprehension as opposed to reproduction conception of learning demonstrated in surface approach.<sup>(6)</sup>

The standard assessment of competence, which is the student's capacity to convert information into skills, is used to gauge how well nursing students perform academically. Teaching and learning approaches are important in developing and achieving the desired performance and level of competence.<sup>(7)</sup> Although teaching strategies are highly valued, students' learning strategies have also been considered crucial. Several learning approaches have been utilized and recognized as necessary considerations in the preparation and development of teaching-learning activities.<sup>(8)</sup>

Tailoring the learning approach to individual student needs, interests, and learning styles can enhance academic achievement. Personalized learning strategies, such as adaptive learning technologies, allow students to progress at their own pace and focus on areas where they need more support.<sup>(5)</sup> The integration of technology, such as digital learning resources, online collaboration tools, and educational software, can enhance the learning experience and support academic achievement.<sup>(9)</sup> Effectively incorporating technology into the learning approach can provide opportunities for interactive, personalized, and data-driven instruction.<sup>(10)</sup>

Reflective thinking, on the other hand, is defined as "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the conclusion to which it tends".<sup>(11)</sup> According to Dewey, reflective thinking practice emphasizes the consequences of ideas and suggests future physical action to confront and solve a variety of personal and professional obstacles.<sup>(12)</sup> Reflective thinking is an education technique that is increasingly recognized as playing a significant role in students' academic learning in higher education.<sup>(8)</sup> Similarly, students' approaches to learning are considered as determinant factors in the prediction of student academic performance.<sup>(13)</sup> While these propositions seem logical as theoretical frameworks for teaching and learning process, they have not been investigated within the discipline.<sup>(14)</sup> This study aimed to exploring predictors for high academic performance among nursing students.

## METHOD

*Design:* Descriptive cross-sectional research design was used.

*Setting:* This study performed at Nursing College, Prince Sattam Bin Abdulaziz University, Alkharj.

*Subjects:* Study participants consisted of 168 Students of both gender in different academic levels. Convenience sampling technique was employed. Available students who wish to participate in the study were sent the questionnaire. Sample size was calculated with G\* Power version 3.1.9.7 software program. To calculate the sample size, the specified parameters for the calculation included a correlation coefficient of 0,23,  $\alpha$  error probability of 0,05, Power (1- $\beta$  error probability) of 0,90. The program recommended a minimum of total sample size of 153. However, the researchers decided to recruit 168 student for this study, adding 10 % to the total subjects in case of the possibility of withdrawal, dropout rates, or the incompleteness of the study tools. The questionnaire was sent to 237 students, the number of students who responded was 194, and the response rate was 81,8 %. Incomplete responses (26) was deleted. So, the number of completed responses was 168.

### Data collection

Data collected from students directly through named as; Revised Study Process Questionnaire.<sup>(15)</sup> Reflective Thinking Questionnaire<sup>(16)</sup> and the academic achievement measured by grade point average (GPA) representing the average value of the accumulated final grades earned in courses over time. High academic performers were defined as those who scored 70 % or above described in the results as high GPA (high achievers), while those below 70 % of total score that were described as low academic achievers (low GPA).

Each participant was given a questionnaire that contains sociodemographic characteristics, statements of study behavior and reflective thinking practice. Study behavior - student approaches to learning - was measured with the Revised Study Process Questionnaire recently developed. It consists of 20 items description of two learning approaches - deep and surface. Each approach has two subscales, motive and strategy, comprising 5 items on a 5 - point Likert scale rating ranging from 1 (always true of me) to 5 (only rarely true of me). Reflective thinking practice was measure by reflective thinking questionnaire that consists of 16 items description of the four types of reflection thinking. Participating students were instructed to rate each item on a five-point scale ranging from (1) definitely agree to (5) definitely disagree. Academic performance in property valuation was measured by students' overall mark at the end of year.

The internal reliability of questionnaire was measured using Cronbach's alpha coefficient test resulted in 0,87 which indicating high internal consistency. Clearance of tools for subjects was assured through the pilot study. A pilot study was conducted on a group of 17 students whose given the google format, then asked to fill the questionnaire. It was conducted in March 2022 prior to data collection to assess the feasibility, duration, and cost of a full-scale research project. No modification was carried out on the tool, so their responses included at the study. The first and second tool were structured questionnaire that sent to students using Google form. We conduct study from 1st May to 30th September 2022.

### Ethical Considerations

Ethical approved by the institutional review board of Prince Sattam bin Abdulaziz University (SCBR-025-2022). Participation in this study was voluntary. Students were assured that their feedback would not affect their performance evaluations. The data was collected from the students via Google Form. The first question at the beginning of the questionnaire is mandatory. This question asked the students about their consent to participate in this study, approval for publishing results the research before starting to answer the rest of the questionnaire questions. The following part explained the purpose of the research, the voluntary nature of student participation, and how their responses would be used. There was also questions within the questionnaire asking about the student's cumulative average, university performance, and academic achievement rate. In addition, the mere fact that the student clicked on the link sent was considered implicit consent to participate in the research, so no one was forced or lured to fill out the questionnaire by the researchers. The survey was completed anonymously, and the information was kept private and used exclusively for research.

### Data Analysis

The results were displayed in tables after the data was categorized and sorted. On an appropriate personal computer, the data was analyzed using the Statistical Package for the Social Sciences (SPSS Inc; version 23; IBM Corp., Armonk, NY, USA). Descriptive statistics were used to characterize participants' demographic details using mean with standard deviation and number with frequency. Kruskal-Wallis test and chi-square test used to determine the relation between socio-demographic characteristics and academic achievement. Also, t-test for independent samples used to determine differences between low and high achievers, ordinal logistic multivariate regression was used for predicting higher student's academic achievement. Statistical significance was set at  $p < 0,05$ .

## RESULTS

168 students participated in this study. Most students (84,5 %) were unmarried, almost two-thirds were in the 21-25 age range, males were younger than females, 84,5 % had no children, and one-third were juniors. Lastly, table 1 shows that there are no statistically significant differences between the students' GPA levels and personal traits.

Variable	Total sample	Low GPA	High GPA	Significance	
	N=168	N=38	N=130	H	P
Age in Years					
≤20 years	37(22,0)	7(18,4)	30(23,1)	0,416	0,812
21: >25	117(69,6)	28(73,7)	89(68,5)		
25-30	14(8,4)	3(7,9)	11(8,5)		
Mean±SD	22,33±2,404	22,47±2,1	22,28±2,5	t=0,181	0,671
Marital Status					
Single	142(84,5)	33(86,8)	109(83,8)	0,336	0,846
Married	19(11,3)	4(10,5)	15(11,5)		
Divorced	7(4,2)	1(2,6)	6(4,6)		
Gender					
Male	82(48,8)	18(47,4)	64(49,2)	0,041	0,856
Female	86(51,2)	20(52,6)	66(50,8)		
No, of children					
No children	142(84,5)	32(84,2)	110(84,6)	0,009	0,995
Only one	17(10,1)	4(10,5)	13(10,0)		
More than one	9(5,4)	2(5,3)	7(5,4)		
Educational level					
Third	53(31,5)	12(31,6)	41(31,5)	2,060	0,841
Fourth	11(6,5)	2(5,3)	9(6,9)		
Fifth	6(3,6)	1(2,6)	5(3,8)		
Sixth	37(22,0)	11(28,9)	26(20,0)		
Seventh	11(6,5)	3(7,9)	8(6,2)		
Eighth	50(29,8)	9(23,7)	41(31,5)		
*Significant (P<0,05). x <sup>2</sup> chi-square test. H Kruskal-Wallis test. t= independent t-test					

Table 2 displays those two thirds of students living with 6-10 persons in the home, one half of them have 1-5 rooms, less than half of them have normal BMI. One quarter of students have a chronic disease. Also, socio-demographic findings of students didn't show statistically significant differences with the students' levels of GPA. This means that those sociodemographic variables not associated with increasing or decreasing the GPA.

Variable	Total sample	Low GPA	High GPA	Significance	
	N=168	N=38	N=130	H	P
No. of persons in the home					
1-5 persons	44(26,2)	8(21,1)	36(27,7)	2,93	0,231
6-10 persons	111(66,1)	29(76,3)	82(63,1)		
More than 10 persons	13(7,7)	1(2,6)	12(9,2)		
Mean±SD	7,15±2,93	6,71±2,4	7,28±3,1	t=1,130	0,289
No. of the rooms in the home					
1-5 rooms	86(51,2)	20(52,6)	66(50,8)	0,421	0,810
6-10 rooms	69(41,1)	16(42,1)	53(40,8)		
More than 10 rooms	13(7,7)	2(5,3)	11(8,5)		
Mean±SD	6,39±4,37	6,08±4,1	6,48±4,5	t=0,252	0,616



## DISCUSSION

It's crucial to equip nursing students with 21st century skills like critical thinking and self-directed learning so they may be creative problem solvers and handle the difficulties of the healthcare industry in the future. By its very nature, the nursing profession requires the ability to make vital judgments swiftly. Reflective thinking is a skill that helps the nurse to take critical decisions and is intended to be developed during the nursing education process.<sup>(17)</sup>

The current study revealed that the majority of students were single, more than two thirds with age group 21: >25 years of age, male are less than female, majority of students have no children, one third of them was in the third level. Finally, there are no statistically significant differences between the students' levels of GPA with personal characteristics at  $p > 0,05$ . These results inconsistent with the study which states that the mean scores of the academic achievement of students statistically significantly ( $p < 0,000$ ) increased as they proceeded to next grade.<sup>(18)</sup> Also, a disagreement with the study by age of participants did not have significant association with effective clinical practice ( $p = 0,606$ ).<sup>(19)</sup>

While cohort with the study reported that Majority of studied students were female and ranged age between 19-23 years, younger students may struggle with certain academic concepts compared to their older peers. They may also face challenges in terms of maturity and time management skills.<sup>(20)</sup> Additionally, another research reported that multiple regression equation including age, academic progress, academic engagement, motivation and engagement facilitators significantly explained 24 % of variance in GPA ( $F(5, 226) = 14,209, p < 0,001$ ) and 22 % of the variance in GPA ( $F(5, 214) = 12,202, p < 0,001$ ).<sup>(21)</sup> Older students might have more life experience and better study habits, which could positively impact their academic achievement. However, they may also have additional responsibilities such as work or family commitments that could hinder their academic performance.<sup>(22)</sup>

Furthermore, our study revealed that two thirds of students living with 6-10 persons in the home, one half of them have 1-5 rooms, less than half of them have normal BMI. One quarter of students have a chronic disease. Also, socio-demographic findings of students didn't show statistically significant differences between the students' levels of GPA. The results were contrary to our expectations, as it is assumed that chronic diseases affect the performance of students, especially practical training. These results disagreement with the study revealed that Academic performance and BMI were found to be inversely correlated, with participants in the normal BMI group achieving noticeably better GPAs.

On the other hand, physical activity had a direct impact on the subjects' intellectual achievement; cultural factors can also play a role in academic achievement. Students from certain ethnic backgrounds may face discrimination, stereotype threat, or lack of representation in the curriculum, which can impact their motivation and performance.<sup>(23)</sup> Also, a significant positive correlation ( $r = 0,142$ ) was found between BMI and academic performance at  $P < 0,05$ . The study concluded that majority of the students had normal BMI and maximum had good academic performance which showed that if the child is healthy and having normal BMI; then, academic performance can be better.<sup>(24)</sup> Furthermore, Low-income kids may not have as much access to resources like technology, instructional materials, or tutoring, which might affect their academic performance. Higher learning capacity and a lower body mass index (BMI) were linked to higher GPA. They may also face stressors related to poverty that can affect their ability to focus on academic tasks.<sup>(25)</sup>

Moreover, the present results showed that students with high scores of students learning approaches and reflective thinking get high mean scores in their academic achievement. Also, Students' academic achievement and their learning styles and reflective thinking were highly statistically significant. These findings may be explained by the fact that reflection is a powerful and essential learning concept that supports students' critical thinking, self-reflection, and the growth of their professional ideals and abilities. These results supported with the study who revealed that critical thinking, reflective thinking and creative thinking correlated with each other in a positive and significant way and these variables all predicted academic achievement positively and significantly.<sup>(26)</sup> Likewise, Critical thinking, broadly defined as the objective analysis and evaluation of an issue in order to form a judgement, has not been previously studied, to the best of our knowledge, in relation to the academic performance of MBA students.<sup>(27)</sup> While, a significant negative correlation between the surface approach to learning and academic achievement was found, with the summary effect size of  $r = -0,247$  (95 % CI:  $-0,318, -0,174$ ).<sup>(28)</sup>

Regarding academic achievement, more than three quarters from subjects had high academic achievement, while only less than one quarter of them had low academic achievement. These results may be due to reflective thinking among students improve access to the information and improve acquisition of information and enhance academic performance. Engaging in group-based learning activities, such as peer-to-peer discussions and team-based projects, can foster critical thinking, problem-solving skills, and a deeper understanding of the subject matter.<sup>(8)</sup> These results regular with the study found that more than half had high academic achievement.<sup>(29)</sup> Also, another study concluded that the experimental group had significantly higher satisfaction than the control group ( $t = 3,91, p < 0,001$ ). Collaborative learning can improve academic performance by promoting knowledge

sharing, social interaction, and the development of interpersonal skills.<sup>(30)</sup>

Concerning to the best fitting model for student's academic achievement. It shows that the only independent positive predictors of higher academic achievement that were statistically significant were students' learning approaches, reflective thinking, BMI, and absence of chronic diseases, learning approaches that foster intrinsic motivation and engagement, such as incorporating real-world applications, giving students choice and autonomy, and providing meaningful feedback, can positively impact academic achievement, students who are motivated and engaged in the learning process are more likely to put in the effort required to succeed academically. While increasing age, marriage, increasing number of children can be considered as independent negative predictors for student's academic achievement. This could be attributed to Teaching students to use metacognitive strategies, such as self-reflection, goal-setting, and monitoring their own learning progress, can enhance their ability to regulate their learning and improve academic outcomes. Students who are aware of and can effectively manage their own learning processes tend to perform better academically.

These results supported with the study detected that education based on learning styles, particularly for college students, can not only enhance students' academic achievement and teachers' professional satisfaction, but can help with training professional nurses.<sup>(31)</sup> Also, the most common learning style was Collaborative. Academic performance was negatively correlated with Avoidant score ( $p < 0,001$ ,  $r = -0,317$ ) and positively correlated with Participant score ( $p < 0,001$ ,  $r = 0,400$ ). The academic performance of the Participant learning style group was significantly higher than that of all the other groups ( $p < 0,003$ ).<sup>(32)</sup> Meanwhile, findings of study revealed that the bivariate analysis showed that psychological distress was associated with decreased risk of low performance. Being a poor sleeper was statistically associated with poor academic performance ( $\beta = -0,07$ ; 95 % CI =  $-0,14$  to  $-0,002$ ;  $P = 0,04$ ) in the multivariate analysis.<sup>(33)</sup>

## CONCLUSION

Based on our current study, it was concluded that more than three quarters of the total students had high academic achievement, while only less than one quarter of them had low academic achievement. Higher academic achievement was statistically significantly predicted by students' learning approaches, reflective thinking, and lack of chronic illness. While, BMI was the only independent negative predictor for higher student's academic achievement. The relationship between students' academic performance and their learning strategies and reflective thinking was highly statistically significant.

Future recommendations for further research studies are needed to make generalizable conclusions about the relationship between the reflective thinking skills and their academic achievement. In addition, providing a training program for nursing students about reflective thinking and different learning style is advisable. Besides, further research is needed to assess the other factors affecting academic achievement among nursing students.

## Strengths of the study

Understanding the relation can lead to the development of more effective teaching methods tailored to different learning styles. Moreover identifying productive learning approaches and enhancing reflective thinking may enhance overall academic success and critical thinking skills in nursing students. Also, Reflective thinking is integral to nursing practice, so research in this area prepares students to become better practitioners by fostering essential skills needed in their field. Finally this study provide a comprehensive view of how cognitive processes (like learning approaches) influence practical applications (like academic performance), which is crucial in nursing education.

## Limitations of the study

Reliance on self-reported measures for learning approaches and reflective thinking might lead to biases, as students may overstate their abilities or reflectiveness. External factors such as personal circumstances, mental health, or institutional factors (like teaching quality and resource availability) could affect both learning approaches and academic performance, complicating the analysis. Academic performance might change over time, and capturing these dynamics in a cross-sectional study may miss important trends or shifts in student learning or thinking.

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#### **CONFLICT OF INTEREST**

The authors declare that there is no conflict of interest.

#### **AUTHORSHIP CONTRIBUTION**

*Conceptualization:* Elsayeda Hamdy Nasr Abdelhalim, Samah Alsaïd Ahmed Moawd.

*Data curation:* Mohamed Gamal Elsehrawy.

*Formal analysis:* Mohamed Gamal Elsehrawy.

*Research:* Samah Alsaïd Ahmed Moawd, Elsayeda Hamdy Nasr Abdelhalim.

*Methodology:* Elsayeda Hamdy Nasr Abdelhalim, Mohamed Gamal Elsehrawy.

*Project management:* Elsayeda Hamdy Nasr Abdelhalim.

*Resources:* Samah Alsaïd Ahmed Moawd.

*Software:* Mohamed Gamal Elsehrawy.

*Supervision:* Samah Alsaïd Ahmed Moawd.

*Validation:* Samah Alsaïd Ahmed Moawd.

*Display:* Mohamed Gamal Elsehrawy.

*Drafting - original draft:* Mohamed Gamal Elsehrawy.

*Writing - proofreading and editing:* Samah Alsaïd Ahmed Moawd, Elsayeda Hamdy Nasr Abdelhalim.