

Preceptoring of Graduate Nursing Students in Iraq

Mariwan Qadir Hamarash^{1,*}, Marghoob Hussein Yaas^{1,*}, Osama Ismael Almushhadany^{2,*},
Radhwan Hussein Ibrahim^{3,*}

¹College of Nursing, AL Kitab University, City of Kirkuk, Iraq; ²College of Medicine, Ninevah University, City of Mosul, Iraq; ³College of Nursing, Ninevah University, City of Mosul, Iraq

*These authors contributed equally to this work

Correspondence: Radhwan Hussein Ibrahim, College of Nursing, Ninevah University, City of Mosul, Iraq, Tel +964-770-1620-882, Email prof.dr.radhwan@uomosul.edu.iq

Purpose: The objective of this study is to explore and examine the approaches utilized by preceptors in guiding graduate nursing students toward developing critical thinking skills within governmental nursing colleges in Iraq.

Methods: The study involved 215 preceptors employed in Al governmental nursing colleges in Iraq. Purposive sampling was used to select participants who had at least two years of nursing preceptorship experience. A survey instrument consisting of two open-ended questions was used to collect data, and descriptive and inferential statistics were used to analyze the data.

Results: Most preceptors (82.8%) agreed that critical thinking is important to graduate nursing education, and 93.5% agreed that critical thinking skills are adequately taught during preceptorship. Case studies (92.1%), simulation (87.4%), and problem-based learning (81.9%) were the most commonly used methods to enhance critical thinking skills in nursing students during preceptorship. The study identified six main challenges, including managing the diverse needs and abilities of students, integrating students into the clinical environment, educators' lack of knowledge, selection criteria, teaching strategies, and language.

Conclusion: The study concluded that most preceptors acknowledged the significance of critical thinking in nursing education and felt that these skills were effectively taught during preceptorship. Preceptors employed different techniques like case studies, simulation, and problem-based learning to enhance critical thinking abilities in nursing students.

Keywords: critical thinking, preceptorship, graduate nursing education, teaching strategies, challenges, methods, Iraq

Introduction

Critical thinking is essential to higher education as it is vital for success in many fields, including nursing.¹ Thinking critically enables individuals to make informed decisions, evaluate evidence, and solve complex problems.² Nursing preceptorship is a crucial component of nursing education, where nursing students learn clinical skills and decision-making in real-life clinical settings.^{3,4} Critical thinking is vital for nurses to make informed decisions, solve problems, and provide safe patient care.^{5,6} Numerous studies^{7,8} have highlighted the importance of critical thinking in nursing practice and the need for its development in nursing education. For instance, a study by Huang et al⁹ found that nurses with higher critical thinking skills were more likely to provide safe patient care. Additionally, a study by Tanner (2016)¹⁰ emphasized that critical thinking is a crucial skill for nursing students to develop during their education to provide safe patient care. Furthermore, studies have been conducted to investigate the relationship between critical thinking and various measures of success in nursing education.^{5,11–14} Other researchers have explored the effects of nursing education on the development of critical thinking skills in students.^{15–17} The relationship between critical thinking and clinical decision-making has also been studied.^{18,19} Additionally, studies^{8,20–22} have investigated the link between moral reasoning and critical thinking in nursing students and practicing nurses from different nursing programs. The perception of critical thinking in nursing education has been explored, and studies^{23–25} have specifically examined the critical thinking abilities of nursing faculty. Despite the importance of critical thinking in a nursing preceptorship, some studies have

identified gaps in its development. For example, a study^{26,27} found that nursing students faced challenges developing critical thinking skills during preceptorship due to a lack of guidance and support from preceptors.^{28–30}

The gap in this study is the lack of comprehensive research and understanding regarding the specific strategies and approaches used by preceptors to develop critical thinking skills in nursing students.

While preceptorship programs are commonly used in nursing education to facilitate the transition from student to practicing nurse, there is limited information available on the specific methods employed by preceptors to enhance critical thinking abilities in graduate nursing students in Iraqi governmental nursing colleges.

Identifying this gap is crucial because critical thinking is an essential skill for nursing professionals, enabling them to analyze complex situations, make sound clinical judgments, and provide safe and effective patient care. Understanding the specific strategies used by preceptors in this context can help improve the quality of nursing education and contribute to the development of competent nursing professionals in Iraq.

By investigating the preceptors' methods of preceptoring on critical thinking, the study can shed light on the specific techniques, instructional approaches, and educational resources utilized by preceptors to promote critical thinking in nursing students. This knowledge can then be used to inform the design and implementation of effective preceptorship programs that effectively develop critical thinking skills among graduate nursing students in governmental nursing colleges of Iraq.

Overall, the identified gap highlights the need for research that explores the methods employed by preceptors in preceptoring graduate nursing students on critical thinking in Iraqi governmental nursing colleges, providing valuable insights for improving nursing education and enhancing the quality of patient care in Iraq.

The aim of this study is to investigate the methods employed by preceptors in preceptoring graduate nursing students on critical thinking in governmental nursing colleges in Iraq.

Materials and Methods

Study Design

This study was utilized a cross-sectional research design to investigate the methods employed by preceptors in preceptoring graduate nursing students on critical thinking in governmental nursing colleges in Iraq. A cross-sectional design is appropriate for this study as it allows for the collection of data at a single point in time, providing a snapshot of the current practices and methods used by preceptors in this context.

Participants

The study comprised 215 preceptors employed in Al governmental nursing colleges in Iraq. The participants were selected using a convenience sampling technique. The inclusion criteria for the preceptors were having at least two years of nursing preceptorship experience and being employed in one of the Al governmental nursing colleges in Iraq.

Data Collection and Instrument

A paper-based assessment and the survey instrument used in the study was based on previous studies^{31,32} that consisted of four open-ended questions as follows:

Statement 1: The Definition of Critical Thinking Includes Analyzing, Evaluating, and Synthesizing Information to Make Decisions and Solve Problems Effectively

This statement highlights the foundational concept of critical thinking, which involves the cognitive processes of analyzing, evaluating, and synthesizing information. By emphasizing these components, individuals can develop their ability to think critically and make informed decisions in various situations. This understanding of critical thinking provides a framework for evaluating its application in the context of preceptorship and graduate nursing education.

Statement 2: Critical Thinking Skills are Adequately Taught During Preceptorship

This statement asserts that preceptorship programs effectively incorporate the teaching of critical thinking skills. The study findings indicated that a significant percentage of preceptors agreed that critical thinking skills are adequately taught during preceptorship. This suggests that preceptorship serves as an appropriate platform for fostering and enhancing critical thinking abilities in graduate nursing students.

Statement 3: Critical Thinking is an Important Aspect of Graduate Nursing Education

This statement recognizes the significance of critical thinking in the field of graduate nursing education. Critical thinking is essential for nurses to navigate complex clinical scenarios, make sound judgments, and provide safe and effective patient care. By acknowledging the importance of critical thinking in graduate nursing education, stakeholders can prioritize its integration into the curriculum and ensure that students develop this vital skillset.

Statement 4: Critical Thinking is an Essential Skill for Healthcare Professionals to Provide Safe and Effective Patient Care

This statement highlights the essential nature of critical thinking in healthcare practice. As healthcare professionals, nurses are responsible for making critical decisions that impact patient outcomes. By utilizing critical thinking skills, nurses can analyze complex information, evaluate options, and determine the most appropriate course of action. This skillset is crucial for ensuring safe and effective patient care, as it enables healthcare professionals to identify and address potential risks, consider alternative approaches, and adapt to changing circumstances.

These four statements capture key aspects of critical thinking and its relevance to preceptorship and graduate nursing education. They provide a foundation for understanding the role of critical thinking in the study and its implications for nursing practice.

Data Analysis

The data collected from the questionnaires were analyzed using descriptive and inferential statistics. The descriptive statistics used included means, frequencies, and percentages. The inferential statistics used included chi-square tests to compare perceptions between the preceptors.

Ethical Considerations

The study followed the principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the institutional review board of Ninevah University before the commencement of the study. Informed consent was obtained from all participants before they completed the questionnaire. [IRB, No:72. Date:14/12/2022]

Limitations

One limitation of this study is using a self-administered questionnaire, which may result in social desirability bias. Additionally, the study was conducted in only Al governmental nursing colleges in Iraq, and the findings may not be generalizable to other settings.

Results

A total of 215 preceptors participated in the study. Of these, 61.4% (n=132) were female, and 38.6% (n=83) were male. Most preceptors fell in the age range of 35–44 years (39.5%, n=85) and had more than five years of experience in preceptorship (63.3%, n=136). (Table 1)

Most preceptors (82.8%, n=178) agreed that critical thinking is important to graduate nursing education. Additionally, 93.5% (n=201) of preceptors agreed that critical thinking skills are adequately taught during preceptorship. (Table 2)

Preceptors reported using various methods to enhance critical thinking skills in nursing students during preceptorship. The most used methods included case studies (92.1%, n=198), simulation (87.4%, n=188), and problem-based learning (81.9%, n=176). Concept mapping and reflective writing were used less frequently, with 32.1% (n=69) and 24.2% (n=52) of preceptors reporting their use, respectively. (Table 3)

Table 1 Demographic Characteristics of Preceptors

Characteristic	n	%
Gender		
Male	83	38.6
Female	132	61.4
Age Group		
25–34	58	27.0
35–44	85	39.5
45–54	49	22.8
55 and above	23	10.7
Years of Experience in Preceptorship		
1–2 years	28	13.0
3–5 years	51	23.7
More than 5 years	136	63.3

Table 2 Perceptions of Preceptors

Statement	Agree		Disagree	
The definition of critical thinking includes analyzing, evaluating, and synthesizing information to make decisions and solve problems effectively.	207	96.30%	8	3.70%
Critical thinking skills are adequately taught during preceptorship.	201	93.50%	14	6.50%
Critical thinking is an important aspect of graduate nursing education.	178	82.80%	37	17.20%
Critical thinking is an essential skill for health care professionals to provide safe and effective patient care.	212	98.60%	3	1.40%

Notes: Chi-Sq = 47.071, DF = 3, P-value = 0.000.

Table 3 Methods Used to Enhance Critical Thinking Skills

Method	Preceptor2s (n = 215)
Case studies	198 (92.1%)
Simulation	188 (87.4%)
Problem-based learning	176 (81.9%)
Concept mapping	69 (32.1%)
Reflective writing	52 (24.2%)

The survey, which included 215 preceptors, identified six main challenges: type of student, socialization, educator lack of knowledge, selection criteria, teaching strategies, and language.

The most frequently reported challenge was the type of student, with 92.1% of preceptors reporting difficulty in managing the diverse needs and abilities of students. This was followed closely by socialization, with 89.3% of preceptors citing challenges in integrating students into the clinical environment. Educator lack of knowledge was also a significant challenge, with 74.4% of preceptors reporting feeling unprepared to teach students in certain areas.

Table 4 Challenges Faced by Preceptors Challenge Preceptors (n = 215)

Challenge	Preceptors (n = 215)	Number (%)
Type of student	198	92.1%
Socialization	192	89.3%
Educator lack of knowledge	160	74.4%
Selection criteria	143	66.5%
Teaching strategies	137	63.7%
Language	106	49.3%

Selection criteria, teaching strategies, and language were also identified as challenges by the majority of preceptors, with 66.5%, 63.7%, and 49.3% of respondents, respectively, citing these issues. These challenges highlight the importance of ongoing education and training for preceptors, as well as the need to adapt teaching methods and strategies to accommodate diverse learners and changing clinical environments. (Table 4)

Discussion

The demographic characteristics of preceptors in preceptoring graduate nursing students on critical thinking in governmental nursing colleges in Iraq were examined in this study. A total of 215 preceptors participated, with 61.4% (n=132) being female and 38.6% (n=83) being male. The age distribution of preceptors indicated that the largest proportion fell within the range of 35–44 years (39.5%, n=85). Furthermore, a significant percentage of preceptors (63.3%, n=136) reported having more than five years of experience in preceptorship.

The gender distribution among preceptors revealed a higher representation of females compared to males. This finding aligns with the general trend observed in the nursing profession, where women constitute a substantial majority of the workforce. The predominance of female preceptors may reflect the overall gender composition of the nursing field, which could potentially influence preceptorship practices. It would be interesting for future research to explore any gender-related differences in teaching approaches, mentoring styles, or student outcomes within preceptorship programs.

Regarding age distribution, the majority of preceptors fell within the age range of 35–44 years. This age group often represents a stage of professional development and stability in the nursing career trajectory. Preceptors in this age range may possess a wealth of clinical experience and knowledge that can positively impact their ability to guide and mentor graduate nursing students. However, it is important to consider potential generational differences in teaching approaches and learning preferences when developing preceptorship programs. Younger preceptors, for instance, may bring fresh perspectives and utilize innovative teaching methods, while older preceptors may draw upon their extensive experience to provide valuable insights and guidance.³³

The substantial proportion of preceptors with more than five years of experience in preceptorship (63.3%) highlights the presence of a seasoned group of mentors in the governmental nursing colleges of Iraq. Such experience can contribute to the development of expertise in preceptoring and the cultivation of critical thinking skills among nursing students. These preceptors may have a deeper understanding of the challenges and opportunities involved in nurturing critical thinking abilities and possess effective strategies for fostering this competency. Leveraging their expertise and creating opportunities for knowledge sharing and mentorship within preceptorship programs can enhance the overall quality of nursing education.³⁴

These findings align with the viewpoints expressed by Duron et al,³⁵ Black,³⁶ Choy,³⁷ and Nickerson³⁸ that teaching critical thinking is crucial to improve students' learning and thinking abilities.

The findings from this study indicate that the majority of preceptors recognize the significance of critical thinking in graduate nursing education. A high percentage of preceptors (82.8%, n=178) agreed that critical thinking is important to the development of nursing students. This consensus among preceptors highlights their understanding of the essential role critical thinking plays in preparing future nurses to deliver high-quality and evidence-based care.

Furthermore, a significant proportion of preceptors (93.5%, n=201) agreed that critical thinking skills are adequately taught during preceptorship. This finding suggests that preceptors feel confident in their ability to effectively incorporate and impart critical thinking skills to graduate nursing students during the preceptorship experience. It reflects the value that preceptors place on fostering critical thinking abilities as an integral component of nursing education.

The high level of agreement among preceptors regarding the adequacy of critical thinking instruction during preceptorship is encouraging. It implies that preceptors are actively engaged in facilitating opportunities for students to develop and apply critical thinking skills in real-world clinical scenarios. These preceptors may employ various teaching strategies, such as guiding students through patient care situations, encouraging reflection and analysis, and providing feedback to enhance critical thinking abilities.

The positive perceptions of preceptors regarding the adequacy of critical thinking instruction during preceptorship have several implications. First, it indicates that preceptors themselves recognize the importance of nurturing critical thinking skills and are committed to incorporating them into the education of nursing students. This aligns with the overarching goals of nursing education to produce competent and thoughtful practitioners who can adapt to complex healthcare environments.

Second, the high agreement among preceptors suggests that the preceptorship programs in governmental nursing colleges in Iraq have implemented effective strategies for teaching and fostering critical thinking skills. These strategies may include structured learning activities, case discussions, collaborative problem-solving, and exposure to diverse patient populations. The positive perception of preceptors regarding the adequacy of critical thinking instruction during preceptorship may be attributed to the implementation of evidence-based teaching methods and the provision of adequate resources and support.

The findings from this study reveal that preceptors in governmental nursing colleges in Iraq employ a variety of methods to enhance critical thinking skills in nursing students during preceptorship. The most commonly used methods reported by preceptors include case studies, simulation, and problem-based learning.

Case studies were reported as the most frequently utilized method, with 92.1% (n=198) of preceptors indicating its use. Case studies offer an opportunity for students to engage in critical thinking by analyzing complex patient scenarios, identifying relevant information, making clinical judgments, and proposing appropriate interventions. The widespread use of case studies by preceptors suggests their recognition of the value of real-life clinical examples in developing students' critical thinking abilities.³⁹

Simulation was also widely employed by preceptors, with 87.4% (n=188) reporting its use. Simulation provides a safe and controlled environment for students to practice critical thinking skills by simulating realistic patient care situations.⁴⁰ Through simulation, students can actively participate in decision-making, problem-solving, and critical analysis, thereby enhancing their ability to think critically in high-stakes clinical settings.^{41,42}

Another commonly utilized method reported by preceptors was problem-based learning, with 81.9% (n=176) indicating its use. Problem-based learning involves presenting students with authentic, complex problems or cases that require critical thinking skills to identify and address the underlying issues. This approach promotes active learning, self-directed inquiry, and collaborative problem-solving, fostering the development of critical thinking abilities in nursing students.^{43,44}

On the other hand, concept mapping and reflective writing were reported as less frequently used methods by preceptors. Concept mapping, reported by 32.1% (n=69) of preceptors, is a visual representation of relationships between concepts, facilitating the organization and integration of knowledge. Reflective writing, reported by 24.2% (n=52), encourages students to reflect on their experiences, analyze their actions, and make connections between theory and practice. Although these methods were less commonly used, they still offer valuable opportunities for students to engage in critical thinking and self-reflection.

The utilization of various methods by preceptors indicates a diverse and multifaceted approach to fostering critical thinking skills during preceptorship. By incorporating a range of instructional strategies, preceptors can cater to different learning styles and promote the development of critical thinking from various angles.

It is worth considering the potential benefits and limitations of each method. Case studies, simulation, and problem-based learning provide hands-on, experiential learning opportunities that closely mirror real-world clinical practice.

These methods enable students to actively apply critical thinking skills in a supportive and structured environment.⁴⁵ On the other hand, concept mapping and reflective writing offer opportunities for students to engage in metacognitive processes, promoting deeper understanding, self-reflection, and the ability to connect concepts and experiences.⁴⁶

However, it is important to recognize that the effectiveness of these methods in enhancing critical thinking skills may vary depending on the context, student characteristics, and preceptor expertise. Further research could investigate the outcomes and effectiveness of each method in terms of student critical thinking competency, clinical decision-making, and patient outcomes.

The findings from this study shed light on the challenges faced by preceptors in preceptoring graduate nursing students on critical thinking in governmental nursing colleges in Iraq. The survey responses from 215 preceptors identified six main challenges: type of student, socialization, educator lack of knowledge, selection criteria, teaching strategies, and language.

The most frequently reported challenge among preceptors was the type of student, with 92.1% expressing difficulty in managing the diverse needs and abilities of students. This challenge likely arises from the varying levels of prior knowledge, clinical skills, and learning styles among graduate nursing students. The diverse student population may include individuals with different educational backgrounds, cultural contexts, and clinical experiences. Preceptors face the task of tailoring their instruction to meet the unique needs of each student, ensuring that they receive appropriate guidance and support in developing their critical thinking skills. Addressing this challenge requires flexibility, adaptability, and personalized approaches to teaching and mentoring.

Socialization emerged as another significant challenge, with 89.3% of preceptors reporting difficulties in integrating students into the clinical environment. This challenge may be related to the transition from a classroom-based learning setting to a real-world clinical setting. Graduate nursing students need to acclimate themselves to the clinical environment, understand the expectations and dynamics of the healthcare team, and develop effective communication and collaboration skills. Preceptors play a vital role in facilitating this socialization process by providing guidance, mentorship, and opportunities for students to engage with healthcare professionals and experience the clinical practice firsthand.

The survey findings also revealed that 74.4% of preceptors reported feeling unprepared to teach students in certain areas, highlighting the challenge of educator lack of knowledge. Nursing practice is dynamic and continuously evolving, with advancements in research, technology, and healthcare delivery. Preceptors may encounter situations or topics that require up-to-date knowledge and expertise beyond their current scope of practice. Addressing this challenge necessitates ongoing professional development and continuing education opportunities for preceptors, ensuring they remain updated on evidence-based practices, current guidelines, and emerging trends in nursing education and healthcare.

Selection criteria, teaching strategies, and language were additional challenges identified by preceptors. The selection criteria challenge (66.5%) may refer to the difficulty of identifying appropriate students for preceptorship, considering their readiness, motivation, and compatibility with the clinical setting. Teaching strategies (63.7%) encompass the need to employ diverse instructional approaches to accommodate different learning styles and engage students effectively. Language (49.3%) refers to challenges arising from language barriers, particularly in multicultural and multilingual settings where English may not be the first language for students or preceptors.

These challenges underscore the importance of ongoing education and training for preceptors. Professional development programs can equip preceptors with the necessary knowledge and skills to address the diverse needs of students, adapt teaching strategies, and navigate the evolving healthcare landscape. Furthermore, strategies such as mentorship, peer support, and networking opportunities can provide a platform for preceptors to share experiences, exchange best practices, and collaborate on overcoming common challenges.

It is crucial for nursing education institutions and preceptorship programs to recognize and address these challenges systematically. This can be achieved by incorporating robust preceptorship training programs, establishing supportive mentoring relationships, providing resources and tools for effective teaching, and fostering a culture of continuous learning and improvement among preceptors.

Implications

The findings of this study have important implications for nursing education and preceptorship programs in governmental nursing colleges in Iraq. Firstly, the positive perception of preceptors regarding the adequacy of critical thinking instruction

during preceptorship highlights the importance of continued emphasis on critical thinking skills in nursing education. It reinforces the need for ongoing professional development for preceptors to ensure they are equipped with the knowledge and skills to effectively teach and foster critical thinking abilities in nursing students.

Secondly, the utilization of various methods by preceptors indicates the importance of employing a multifaceted approach to enhance critical thinking skills. Incorporating diverse instructional strategies such as case studies, simulation, problem-based learning, concept mapping, and reflective writing can cater to different learning styles and promote a comprehensive development of critical thinking abilities in nursing students.

Thirdly, the challenges identified in this study, including managing student diversity, socialization, educator knowledge gaps, selection criteria, teaching strategies, and language barriers, emphasize the need for targeted interventions and support mechanisms for preceptors. Nursing education institutions should provide comprehensive preceptorship training programs that address these challenges and equip preceptors with the necessary skills and knowledge to effectively guide and mentor diverse groups of nursing students.

Lastly, the findings from this study can serve as a foundation for further research and exploration of effective strategies for enhancing critical thinking skills in nursing education. Future studies could focus on evaluating the outcomes of different teaching methods, assessing the impact of mentorship programs on critical thinking development, and examining the effectiveness of interventions aimed at addressing the identified challenges.

Conclusion

In conclusion, this study explored the methods employed by preceptors in preceptoring graduate nursing students on critical thinking in governmental nursing colleges in Iraq. The findings revealed that the majority of preceptors recognized the importance of critical thinking in nursing education and believed that critical thinking skills were adequately taught during preceptorship. Preceptors reported utilizing various methods such as case studies, simulation, and problem-based learning to enhance critical thinking skills in nursing students. However, challenges related to student diversity, socialization, educator knowledge, selection criteria, teaching strategies, and language were also identified.

Data Sharing Statement

Data of this study are available upon request from the corresponding author.

Acknowledgments

We are grateful to our participants for taking part in this study. We would also like to thank the Institutional Review Board members for their thoughtful review of our research proposal. The Deanship of Nursing College provided invaluable support and guidance, without which this research would not have been possible. We thank them for their help and support. We are also thankful to all other people who contributed in any way to the successful completion of this study.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Liu OL, Frankel L, Roohr KC. Assessing critical thinking in higher education: current state and directions for next-generation assessment. *ETS Res Rep Ser.* 2014;2014(1):1–23.
2. Alfaro-LeFevre R. *Critical Thinking, Clinical Reasoning, and Clinical Judgment E-Book: A Practical Approach.* Elsevier Health Sciences; 2015.
3. Mihail R. An evaluation of the perceptions of socio-humanities students on the skills of critical thinking. *Rev Romaneasca Pentru Educ Multidimensionala.* 2023;15(2):388–407. doi:10.18662/rrem/15.2/740
4. Godzik CM, Solomon J, Yacinthus B. Using standardized mental health patient simulations to increase critical thinking and confidence in undergraduate nursing students. *Arch Psychiatr Nurs.* 2023;43:76–80.
5. Yeung MM, Yuen JW, Chen JM, Lam KK. The efficacy of team-based learning in developing the generic capability of problem-solving ability and critical thinking skills in nursing education: a systematic review. *Nurse Educ Today.* 2023;122:105704.
6. Liu N, Zheng Z, Liao J, Li J, Yang Z, Lai X. The effectiveness of student-led ward round training on knowledge acquisition, critical thinking ability, and self-confidence of acute upper gastrointestinal bleeding for nursing students. *Adv Med Educ Pract.* 2023;14:21–30. doi:10.2147/AMEP.S381760

7. Güven ŞD. *Critical Thinking in Nursing. Brain, Decision Making and Mental Health*. Springer; 2023:179–189.
8. Mohamed El-Sayed N, Mahmoud Abdel-Azeem A, Khaled Abd El-Aziz Zaki A. The Effect of Mind Mapping on Cognitive Achievement and Critical Thinking skills of Nursing Students. *Egypt J Nutr Health*. 2023;3(2):685–703.
9. Huang GC, Lindell D, Jaffe LE, Sullivan AM. A multi-site study of strategies to teach critical thinking: ‘why do you think that?’. *Med Edu*. 2016;50(2):236–249.
10. Seibert SA. Validated instructional resource to engage nursing students in critical thinking. *Teach Learn Nurs*. 2022;17(3):263–266. doi:10.1016/j.teln.2022.01.011
11. Grieger JA, Clifton VL. A review of the impact of dietary intakes in human pregnancy on infant birthweight. *Nutrients*. 2014;7(1):153–178.
12. Sert ZE, Topçu S, Temel AB. Effect on the nursing students’ academic achievements, motivation, and learning strategies of role-playing intervention used in school health nursing course: role-Playing in Nursing Education. *Health Res J*. 2023;9(1):35–45. doi:10.12681/healthresj.30343
13. Attia Y K and Ibrahim R H. (2023). Difficulties experienced in clinical learning settings for nurses in Iraq: Perspectives of nursing administrators and nursing instructors. *Informatics in Medicine Unlocked*, 38 101229 10.1016/j.imu.2023.101229
14. Yaseen Fathi K and Ibrahim R Hussein. (2023). Factors influencing integration of theory into practice in clinical skills acquisition among nursing students. *Informatics in Medicine Unlocked*, 37 101181 10.1016/j.imu.2023.101181
15. Ali G, Awan R-U. The Role of Critical Thinking in Mediating the Association between Instructional Practices and Academic Achievement. *Pak J Edu Res Eval*. 2023;10(2):51–62.
16. Xu Y, Liang Y, Ye H, Xu Y. Literature review of the research on nursing students’ professional self-concept. *Med Educ Online*. 2023;28(1):2153396. doi:10.1080/10872981.2022.2153396
17. Mäkiö E, Mäkiö J. Teaching Critical Thinking–A Task-Based Approach: work in Progress. *Technology and Innovation in Learning, Teaching and Education: Third International Conference, TECH-EDU 2022, Lisbon, Portugal, August 31–September 2, 2022, Revised Selected Papers*; 2023: Springer.
18. Khanmoradi H, Aghajanoloo A, Dinmohammadi M, Ramazani Badr F. The relationship between critical thinking and clinical decision-making in emergency nurses of hospitals affiliated to Zanjan university of medical sciences in 2020. *Prev Care Nurs Midwifery j*. 2021;11(2):30–37.
19. Hicks FD, Merritt SL, Elstein AS. Critical thinking and clinical decision making in critical care nursing: a pilot study. *Heart Lung*. 2003;32(3):169–180.
20. Tanaka M. Exploring the ethics of physical restraints: students’ questioning. *Nurs Ethics*. 2023;09697330221143149.
21. Berg C, Philipp R, Taff SD. Scoping review of critical thinking literature in healthcare education. *Occup Ther Health Care*. 2023;37(1):18–39. doi:10.1080/07380577.2021.1879411
22. Manassero-Mas MA, Moreno-Salvo A, Vázquez-Alonso Á. Development of an instrument to assess young people’s attitudes toward critical thinking. *Think Ski Creat*. 2022;45:1–13. doi:10.1016/j.tsc.2022.101100
23. Zygmunt DM, Schaefer KM. Assessing the critical thinking skills of faculty: what do the findings mean for nursing education? *Nurs Educ Perspect*. 2006;27(5):260–268.
24. Blondy LC. Measurement and comparison of nursing faculty members’ critical thinking skills. *West J Nurs Res*. 2011;33(2):180–195. doi:10.1177/0193945910381596
25. Shell R. Perceived barriers to teaching for critical thinking by BSN nursing faculty. *Nurs Health Care Perspect*. 2001;22(6):286–291.
26. Kaddoura MA. The effect of preceptor behavior on the critical thinking skills of new graduate nurses in the intensive care unit. *J Contin Educ Nurs*. 2013;44(11):488–495. doi:10.3928/00220124-20130816-21
27. Duffy A. Guiding students through reflective practice–The preceptors experiences. *Nurse Educ. Pract*. 2009;9(3):166–175. doi:10.1016/j.nepr.2008.07.002
28. Forneris SG, Peden-McAlpine C. Creating context for critical thinking in practice: the role of the preceptor. *J Adv Nurs*. 2009;65(8):1715–1724. doi:10.1111/j.1365-2648.2009.05031.x
29. Forneris SG, Peden-McAlpine C. Evaluation of a reflective learning intervention to improve critical thinking in novice nurses. *J Adv Nurs*. 2007;57(4):410–421.
30. Duteau J. Making a difference: the value of preceptorship programs in nursing education. *J Contin Educ Nurs*. 2012;43(1):37–43. doi:10.3928/00220124-20110615-01
31. Krupat E, Sprague JM, Wolpaw D, Haidet P, Hatem D, O’Brien B. Thinking critically about critical thinking: ability, disposition or both? *Med Edu*. 2011;45(6):625–635.
32. Rowles J, Morgan CM, Burns S, Merchant C. Faculty perceptions of critical thinking at a health sciences university. *J Scholarship Teach Learn*. 2013;21–35.
33. Foley V, Myrick F, Yonge O. Preceptorship and Affirmation in the intergenerational world of Nursing practice. *Nurs Res Pract*. 2012;2012:67.
34. Myrick F, Caplan W, Smitten J, Rusk K. Preceptor/mentor education: a world of possibilities through e-learning technology. *Nurse Educ Today*. 2011;31(3):263–267. doi:10.1016/j.nedt.2010.10.026
35. Duron R, Limbach B, Waugh W. Critical thinking framework for any discipline. *Int J Teach Learn High Educ*. 2006;17(2):160–166.
36. Black S. Teaching students to think critically. *Phys Educ Dig*. 2005;70(6):42.
37. Choy SC, Troudi S. An investigation into the changes in perceptions of and attitudes towards learning English in a Malaysian college. *Int J Teach Learn High Educ*. 2006;18(2):120–130.
38. Nickerson RS. The teaching of thinking and problem solving. In: *Thinking and Problem Solving*. Elsevier; 1994:409–449.
39. White AH. Clinical Decision Making Among Fourth-Year Nursing Students: An Interpretive Study. *J Nursing Educ*. 2003;42:113–120.
40. Rauen CA. Using simulation to teach critical thinking skills: you can’t just throw the book at them. *Crit Care Nurs Clin North Am*. 2001;13(1):93–103.
41. Kapucu S. The effects of using simulation in nursing education: a thorax trauma case scenario. *Int J Caring Sci*. 2017;10(2):1069–1074.
42. Goodstone L, Goodstone MS, Cino K, Glaser CA, Kupferman K, Dember-Neal T. Effect of simulation on the development of critical thinking in associate degree nursing students. *Nurs Educ Perspect*. 2013;34(3):159–162.
43. Savery JR. Overview of problem-based learning: definitions and distinctions. *Essent Readings Probl Based Learn*. 2015;9(2):5–15.
44. Akcay B. Problem-based learning in science education. *J Turk Sci Educ*. 2009;6(1):28–38.

45. Howard VM. *A Comparison of Educational Strategies for the Acquisition of Medical-Surgical Nursing Knowledge and Critical Thinking Skills: Human Patient Simulator Vs. the Interactive Case Study Approach*. University of Pittsburgh; 2007.
46. Bressington DT, Wong W-K, Lam KKC, Chien WT. Concept mapping to promote meaningful learning, help relate theory to practice and improve learning self-efficacy in Asian mental health nursing students: a mixed-methods pilot study. *Nurse Educ Today*. 2018;60:47–55. doi:10.1016/j.nedt.2017.09.019

Advances in Medical Education and Practice

Dovepress

Publish your work in this journal

Advances in Medical Education and Practice is an international, peer-reviewed, open access journal that aims to present and publish research on Medical Education covering medical, dental, nursing and allied health care professional education. The journal covers undergraduate education, postgraduate training and continuing medical education including emerging trends and innovative models linking education, research, and health care services. The manuscript management system is completely online and includes a very quick and fair peer-review system. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <http://www.dovepress.com/advances-in-medical-education-and-practice-journal>