

## Comparing the Level of Critical Reflection Among Nursing Students

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### Abstract

The research aimed to investigate the critical reflection of nursing students at the Faculty of Nursing, Rajamangala University of Technology Thanyaburi during the 2021 academic year. A total of 169 students were selected as the specific purposive sample group who consented to provide data. The research used a questionnaire comprising personal information and the level of critical reflection analysis. The data was analyzed using frequency, percentage, mean, standard deviation, one-way ANOVA, and LSD post hoc test. The findings revealed that nursing students had a high overall level of critical reflection (mean = 3.93). When examining specific aspects, it was found that their technical rationality, reflectivity, and critical reflection were also high (mean = 3.91, mean = 3.95, and mean = 3.92, respectively). This research highlights the nursing students' capability for critical reflection, which can contribute to the enhancement of their learning and development of analytical skills.

**Keywords:** Critical reflection, Student nurses, Nursing Students.

### Introduction

Currently, the world was rapidly changing in various aspects, especially due to technological advancements that foster new innovations, resulting in digital disruption. This transformation affects changes in diverse areas, including the economy, society, culture, and the evolution of healthcare technology, leading to improved patient care and longer, healthier lives (Inchaithep, 2019). Consequently, there are higher expectations and satisfaction levels among service users. Nursing is a profession that needs continuous development to adapt to this ever-changing global landscape to cater to patients with complex, severe health conditions or emerging diseases (Thailand Nursing and Midwifery Council, 2019). Nursing practice involves providing healthcare services by utilizing observational data to accurately and appropriately implement nursing procedures in addressing patients' health issues while considering ethical aspects. Therefore, professional nurses need analytical and critical reflection abilities to solve problems and make decisions in their practice, ensuring the safety and well-being of patients.

Nursing education faces significant challenges in aligning its curriculum with the practical nursing environment, as well as within various organizational settings as part of the healthcare workforce (Fawaz, et al, 2018). Coping with technological advancements, the economy, and cultural diversity are crucial to maintaining the quality of nursing graduates' caregiving abilities while ensuring patient safety and satisfaction. Therefore, the teaching-learning process in nursing education in the 21st century emphasizes student-centered learning, integrating knowledge, analytical thinking skills, problem-solving, linking theoretical knowledge with practical applications in different situations, and selecting appropriate nursing activities based on both theoretical and practical knowledge. Moreover, it emphasizes ethical conduct and excellent practical skills to maximize the benefits of caregiving (Pinjai, et al, 2019). It's essential to provide students with learning experiences that facilitate critical thinking, self-awareness, and curiosity, enabling them to gain a comprehensive perspective on specific issues (Kim, Min, Kim, & Shin, 2018). This includes systematic thinking, creativity, critical decision-making, and innovative problem-solving abilities. The field of nursing continually evolves to meet the demands of a dynamic world, and education plays a pivotal role in shaping competent and adaptable nurses to provide safe and effective patient care.

Transformative Learning was the process of education designed to prompt changes within learners in terms of their worldview, knowledge, understanding, and behaviors, resulting in personal transformation. It encompasses five key components: 1) Collaboration: Considering learning as a social process, emphasizing cooperation. 2) Deep learning: Achieving a profound understanding of various facets of the subject matter. 3) Reflective thinking:

Linking new knowledge with existing knowledge and life experiences. 4) Engagement: Learning through discussions or knowledge exchange. 5) Caring: Listening and understanding others to learn both similarities and differences in learning approaches. This learning process involves four types of mechanisms: 1) Reviewing existing knowledge. 2) Learning new meanings. 3) Changing existing meanings. 4) Transforming the framework of meaning delivery. "Transformative Learning" occurs through critical reflective thinking (Critical Reflection). It involves scrutinizing ethical reasoning, morals, and values across social, legal, political, cultural, contextual, and relevant situations (Khemmani, 2016). This leads to creating broader new meanings, distinct clarifications, and genuine understanding from personal experiences. Moreover, this learning is translated into practice (Panich, 2015).

The study on reflective thinking in nursing students still focuses on describing reflective practices without delving into the level that leads to critical reflection. This was significantly crucial for transforming learning within students themselves. Developing critical reflection through education becomes exceptionally essential in obtaining insightful evidence beneficial for instructional management aimed at enhancing nursing students. Researchers, in their educational roles within nursing, are particularly interested in exploring the level of critical reflection among nursing students. This is vital in obtaining fundamental data to advance the learning management of nursing students, ensuring their increased capacity for critical reflection. Such enhancement is beneficial for students in providing future healthcare.

### Research Objectives

The aim of study the level of critical reflection among nursing students and compare the level of critical reflection among nursing students across different academic years.

The research framework for this study utilizes the critical reflection framework proposed by Zeichner & Liston (1987). This framework consists of three levels of abilities: Level 1 - Technical Rationality, Level 2 - Reflectivity involving reasoning and hypothesis testing according to theory, and Level 3 - Critical Reflection, used for evaluating the level of critical reflection.

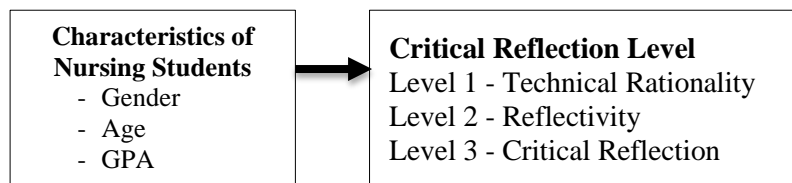


Figure 1 Research Framework

### Literature Review

The teaching approach for nursing students in the 21st century should revolve around student-centered learning. It emphasizes imparting knowledge, analytical thinking skills, problem-solving abilities, and integrating theoretical knowledge into various practical settings. It involves selecting nursing activities that incorporate fundamental theoretical and practical knowledge. (Thailand Nursing and Midwifery Council, 2019; Inchaithep, 2019) Additionally, it emphasizes critical reflection, which raises awareness of the consequences of thoughts leading to actions. This involves considering ethical principles simultaneously with the impact of one's actions on society. This teaching approach is rooted in two primary concepts: The analytical approach derived from Critical Theorists aims to grant education a pivotal role in fostering change. It leads to transformative learning by developing skills to critically examine one's own frameworks of thought and beliefs through life experiences, both past and present. This process leads to a transformation in one's thinking. Learning occurs individually and through the exchange of knowledge with others, translating knowledge into practice, and collectively reflecting, resulting in transformative learning (Vijarn, 2015; Khemmani, 2016).

The concept of reflection by Dewey is a significant inspiration in learning. It originates from Dewey's "How We Think," which presents the distinction between routine action and reflective action. (Dewey, 1933). Routine action involves conforming to conventions, and behaviors dictated by institutions or society, while reflective action is thoughtful, reasoned, and leads to analyzable outcomes. Schon (1983) expanded on this, suggesting that reflection creates a path linked to complex problems through dialogue, fostering improvements in practice. Being mindful and contemplating personal experiences leads to action, informed by advice from experienced individuals. This reflective approach has been applied across various professions to effectively enhance learning through practical experiences. In the level of critical reflection, Zeichner and Liston (1987, cited in Jermtaisong, 2011) categorized levels of reflection based on Van Manen's concepts into three tiers: Level 1: Technical Rationality involves providing details and reasoning explicitly. Reflecting at this level involves explaining with clear reasons and considering past experiences to achieve set objectives. Level 2: Reflectivity includes reasoning against original thoughts, presenting new ideas with clear reasoning, and aligning these arguments with theoretical principles. This level of reflection considers the context of situations and how organizational factors impact teaching and learning.

Educators also consider the value of each educational objective. Level 3: Critical Reflection is the ability to articulate the reasoning behind actions in practice, considering the impact of implementing those thoughts based on international ethical principles and professional ethics. Engaging in critical reflective practice reflects ethical aspects in both teaching and education.

### Methodologys

This research was descriptive research. The population was Nursing students of the Bachelor of Nursing Science program at Rajamangala University of Technology Thanyaburi, Pathum Thani Province, in the academic year 2021. The population comprises all four academic years totaling 294 individuals. The sample size was determined using Yamane's formula (1973), with a confidence level of 95% and a margin of error of 5% ( $e = .05$ ). This calculation yielded a sample size of 169 individuals. Afterward, a simple random sampling will be conducted from each academic year to obtain the sample group. The selection criteria for the sample group will include nursing students who were enrolled in the academic year 2021 (2564 BE), can participate in answering the questionnaire through Microsoft Form, and have consented to participate in the research project. The exclusion criteria will encompass students who were not enrolled in the academic year 2021 and did not consent to be part of the research project.

Research instrument: section 1: Personal Information consisting of 4 items: Gender, Age, Year of Study, Cumulative Grade Point Average (CGPA), section 2: Assessment of Critical Reflection in Students. The researcher applied Jermtaisong (2018) measurement tool for reflective thinking among university students. This tool comprises 20 questions divided into 3 levels: 1) Reasoning, 2) Reasoning and Hypothesis Testing based on Theory, and 3) Critical Reflection. The questionnaire format is a Likert Scale of 5 points (Rating Scale), ranging from 1 to 5.

The evaluation of the tool: Once the researcher completed the tool and it was reviewed by the advisor, it was sent to 5 experts for content validity evaluation. The experts assessed the congruence between the questions and the objectives, yielding an Item-Objective Congruence Index (IOC) of 0.93. Following this, the questionnaire underwent a reliability test (Try Out) with 30 nursing students possessing similar characteristics to the sample group. The assessment of critical reflection in these students indicated a Cronbach's Alpha Coefficient of 0.93, signifying strong internal consistency.

The Data Collection Process: following the research ethics approval, before commencing data collection, the researcher sought permission to collect data for research purposes from the Faculty of Technical Education, Rajamangala University of Technology Thanyaburi. Additionally, a request was made to the Dean of the Faculty of Nursing, Rajamangala University of Technology Thanyaburi, who served as the sample group. The researcher provided documentation outlining the research procedures and sought their consent by clicking "Consent to Participate" before completing the questionnaire on Microsoft Form. The data collection was conducted between March 29, 2022, and April 30, 2022.

Data Analysis: 1) basic personal data of the sample group will be analyzed using fundamental statistics such as frequency, percentage, mean, and standard deviation regarding the level of critical reflection, 2) analysis of the differences in the level of critical reflection among students in each academic year will employ a One-way ANOVA (Analysis of Variance). If differences are found, pairwise comparisons will be conducted using the Least Significant Difference (LSD) method.

Ethics: the research has been reviewed and approved by the Human Research Ethics Committee, Rajamangala University of Technology Thanyaburi, with certification granted on January 2, 2022, under the reference number RMUTT\_REC No. Exp 57/64.

### Findings

The characteristics of the surveyed nursing students across the four academic years are primarily as follows: predominantly female, comprising 94.70% of the sample. Additionally, around 54.40% fall within the age range of 18 to 20 years old. Half of the students have a cumulative GPA ranging from 3.00 to 3.49, accounting for 51.50% of the sample, as shown in Table 1.

Table 1 Percentage of personal information of 1st - 4th year nursing students.

Characteristics	Number	%
Gender		
- Male	9	5.30
- Female	160	94.70
Age		
- 18 – 20 Year	92	54.40
- 21 – 25 Year	74	43.80
- 26 – 30 Year	3	1.80

Characteristics	Number	%
GPA		
- 2.00 – 2.49	1	0.60
- 2.50 – 2.99	57	33.70
- 3.00 – 3.49	87	51.50
- 3.50 – 4.00	24	14.20

The overall critical reflection level among nursing students of all academic years was found to be high with an average score of 3.93 (S.D. = .448). When broken down, the aspects of reasoning, reasoning with theoretical evidence, and critical reflection among nursing students from all academic years were rated as high, with average scores of 3.91 (S.D. = .495), 3.95 (S.D. = .513), and 3.92 (S.D. = .513), respectively, as shown in Table 2.

Table 2 The average scores and standard deviations of critical reflection levels of nursing students at Rajamangala University of Technology Thanyaburi, categorized by academic year and overall (n=169).

Level of Critical Reflection	1st year	2nd year	3rd year	4th year	total	Level
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	
Technical Rationality	4.01 (.077)	3.92 (.078)	3.75 (.062)	3.97 (.079)	3.91 (.495)	high
Reflectivity	4.03 (.082)	3.92 (.077)	3.75 (.059)	4.11 (.083)	3.95 (.513)	high
Critical Reflection	3.85 (.072)	3.96 (.084)	3.77 (.072)	4.09 (.077)	3.92 (.513)	high
Total	3.95 (.070)	3.94 (.074)	3.76 (.055)	4.06 (.064)	3.93(.448)	high

For critical reflection in terms of providing reasons and proving hypotheses based on theories and overall critical thinking among nursing students at Rajamangala University of Technology Thanyaburi, there were statistically significant differences among the academic years at a .05 significance level. However, there was no significant difference in reasoning ability, as indicated in Table 3.

Table 3 Comparing the level of critical and overall reflection of nursing students at Rajamangala University of Technology Thanyaburi (n=169).

Level of Critical Reflection	Group	Sum of Squares	df	Mean Square	F-value	P-value
Technical Rationality	between groups	1.69	3	.56	2.35	.07
	within the group	39.48	165	.23		
	total	41.17	168			
Reflectivity	between groups	2.85	3	.95	3.79	.01*
	within the group	41.38	165	.25		
	total	44.23	168			
Critical Reflection	between groups	2.32	3	.77	3.04	.03*
	within the group	42.00	165	.25		
	total	44.32	168			
Total	between groups	1.87	3	.62	3.21	.02*
	within the group	31.97	165			
	total	33.84	168			

\*p<.05

When comparing pairwise differences in critical reflection skills, there were statistically significant differences in two pairs at the .05 level. The differences were observed between first year and third-year students, and between third year and fourth-year students. In terms of specific aspects of critical reflection, there were differences in reasoning and hypothesis testing based on theoretical principles. First-year students differ significantly from third-year students and first-year students also differ significantly from fourth-year students. Additionally, third-year students differ significantly from fourth-year students in terms of critical reflection. These differences are significant at the .05 level, as indicated in Table 4.

Table 4 Compare the differences in pairs in the level of critical reflection of nursing students Rajamangala University of Technology Thanyaburi Classified by year.

Level	year	1st year	2nd year	3rd year	4th year
Reflectivity Critical Reflection	1st year			.28*	.35*
	1st year				.23*
	3rd year				.32*
Total	1st year			.19*	
	3rd year				.30*

\*p<.05

### Conclusions

The research findings reveal that nursing students at Rajamangala University of Technology Thanyaburi demonstrate a high level of critical reflection skills overall. This was attributed to the educational management system focusing on nursing professionalism and teaching strategies aimed at developing essential skills for learning in the 21st century (Songwatthanayuth and Polin, 2019). These factors contribute to enhancing the students' reasoning processes and analytical thinking. Reflective learning from theoretical studies and practical experiences leads to the exploration of new nursing practices that encompass personalized patient care (Shin, et al, 2022; Klaeson, et al, 2017).

When evaluating each academic year, it's observed that third-year nursing students had the lowest overall critical thinking scores among the four years. This is because third-year students begin more serious clinical rotations in patient wards (IPD). The learning process in the first and second years mainly involves theoretical studies with minimal exposure to practical training (Khorphon, et al, 2019). As a result, third-year students, who start engaging more with real patient scenarios, initially experience a higher level of critical thinking due to their practical training. However, this might also be situations where students lack prior experience or formal learning, leading to a decrease in their critical thinking levels upon encountering new situations. As students adapt and gain more experience from various clinical settings, their overall analytical thinking may improve over time. Fourth-year nursing students, having completed comprehensive practical nursing experiences in various specialties such as pediatric nursing, geriatric nursing, psychiatric nursing, maternal and child health nursing, obstetrics, among others, tend to demonstrate a more holistic approach to evaluating and assessing past experiences, forming the basis for analytical thinking. This influences their current decision-making processes (Riangrila, 2020). These findings align with Kaya, et al (2017) study, which found that third-year students had the lowest overall critical thinking scores, while those in the final year exhibited the highest levels of critical thinking among the four academic years.

The overall critical reflective of nursing students at Rajamangala University of Technology Thanyaburi differs significantly across different academic years at the .05 level. This difference was attributed to the critical reflection process, which involves scrutinizing, examining various aspects, and deriving deeper meanings that are more encompassing. It also involves synthesizing understandings from genuine experiences. The learning process incorporates the application of clinical nursing processes aimed at facilitating analytical thinking and clinical decision-making (Sawangchit, et al, 2019). As students' progress through higher academic years, they accumulate more experiences and understanding, leading to an enhanced critical reflective thinking process. This resonates with the findings of Shirazi and Heidari (2019), who discovered a significant correlation between academic years and the level of critical reflective thinking at the .05 level. Similarly, Kaya, et al (2017) study found a statistically significant positive relationship between academic years and critical thinking at the .01 level. While experiences in various clinical settings can influence the level of critical reflective thinking among nursing students in different academic years, the teaching methods used to develop this aspect need not solely rely on real-life experiences. Educational institutions can design learning activities to aid nursing students in enhancing their critical reflective thinking skills. These activities can prepare students before entering real-world scenarios, utilizing case studies and other methods to foster analytical thinking development.

### Research Suggestions

1. Nursing instructors can use research findings to develop various teaching methodologies that promote critical reflective thinking among nursing students. This development aims to enhance students' abilities to engage in critical reflective thinking effectively.
2. There should be an advancement in the assessment methods for critical reflective thinking, particularly in the practical nursing aspect among nursing students. This is crucial as the assessment used in this research was a general assessment, which revealed a decrease in the level of critical reflective thinking when students transitioned to clinical practice.
3. It's advisable to conduct qualitative research studies focusing on critical reflective thinking during clinical rotations in patient wards (IPD). This type of research could provide deeper insights and understanding into the

nuances and complexities of critical reflective thinking in real-life clinical scenarios.

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