A Study on the Effects of Critical Thinking Disposition and Nursing Professionalism on Learning Flow among Nursing College Students

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Abstract

The purpose of this study is to examine the relationships between nursing college students' critical thinking disposition, nursing professionalism and learning flow and identify factors influencing the learning flow. Descriptive research was used as a research method, and a structured questionnaire was used to examine the relationships between nursing college students' critical thinking disposition, nursing professionalism and learning flow and identify factors affecting the learning flow. The SPSS/WIN 24.0 program was used for data analysis, which comprised descriptive statistics, t-test, ANOVA, Schéffe's test, Pearson's correlation coefficients, and multiple regression. The analysis found statistically significant positive correlations between nursing students' critical thinking disposition, nursing professionalism and learning flow; and identified that grade, personality and major satisfaction among the general characteristics of the subjects and nursing professionalism, are statistically significant factors influencing their learning flow. Therefore, this study suggests that improving nursing college students' learning flow requires fostering critical thinking disposition and establishing desirable nursing professionalism in students through nursing curriculums by using a range of teaching and learning strategies and making continuous efforts to improve curriculums.

Keywords: *Critical Thinking Disposition, Nursing Professionalism, Learning Flow, Nursing College Students*

INTRODUCTION

Research Necessity

In a changed healthcare environment where artificial intelligence is used by virtue of the development of science and technology, nurses should have the ability to respond to high demands of patients and deal with their health problems. For this reason, the Korean Accreditation Board of Nursing Education demand nursing educational institutions to improve the quality of nursing education they provide through a learning performance-based education system so as to produce competent nursing personnel (KABONE, 2017). However, the population of college entrants continues to decrease and there is a widening variance in academic performance among nursing college entrants. This deepens concerns in the field of nursing education. Moreover, since nursing students are more likely to feel uninterested in their studies and give up their studies than students of other disciplines as they feel stressed due to the excessive load of study and clinical practice (Arcand, 2012), the importance of learning flow is emphasized as a strategy to improve the efficiency of nursing students' academic performance and lead them to become more interested in their studies (Quan & Kim, 2018).

Learning flow is defined as a psychological process in which learners constantly interact during a learning process to achieve a learning goal (Carini, Kuh, & Klein, 2006) and is an essential factor in leading students to concentrate in their studies with an interest and improve their academic performance (Seok, 2004). It has been found that students who use more cognitive strategies have better learning flow (Kang, Song, & Park, 2008) and that learning flow increases students' initiative to address a problem and therefore affects the way they address a problem (Kim, Kwon, & Lee, 2017). In addition, learning flow has been reported to be a factor influencing clinical performance competence in simulation practice class (Noh, 2018), which confirms the importance of learning flow in both theory and practice classes. As suggested by previous studies, more efforts need to be made to reduce the variance in students' academic ability in the field of nursing education by developing strategies to improve the learning flow and thus increase the learning effect of nursing college students.

Critical thinking disposition is an essential competency required of nurses as it is needed for them to make a

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clinical decision in dealing with health problems of patients, and nurturing the disposition can be considered a key task in nursing education (Park, Chung, Kim, 2016). Clinical thinking disposition is a competency to adjust one's own judgment in problem-solving and decision-making when handling personal affairs or performing professional tasks (Yoon, 2004). For nurses who should demonstrate nursing expertise in a rapidly changing clinical environment, critical thinking disposition is a competency that can help improve their competency to make clinical decisions. It is also an important quality that needs to be nurtured in nursing college students who are prospective nurses (Park, Chung, Kim, 2016). Since nurses should make ethical decisions based on accurate assessment and judgment in solving patients' problems in clinical settings, the competency needs to be nurtured in nursing students through curriculums (Zhang, Luk, Arthur, & Wong, 2001). Previous studies reported that critical thinking disposition is a factor influencing nurses' clinical performance competency (Lee, 2018) and is closely related to their nursing professionalism (Yoo, 2021).

Nursing professionalism reflects the belief, value or view held by a professional nurse regarding nursing (Yeun, Kwon, & Ahn, 2005). It is a competency essential to nurses performing holistic nursing, and it begins to form as nursing students take theory and practice nursing courses and after graduation, affects their nursing performance (Jang et al., 2017). Since desirable nursing professionalism formed in nurses affects their moral sensitivity and allows them to effectively address ethical problems that they face in clinical settings (Kim & Joung, 2019) curricular and extracurricular activities are offered to nursing students so that desirable nursing professionalism can be formed in them (Park, Choi, & Kim, 2019). It has been found that nursing professionalism formed through an undergraduate course continues when students become professional nurses after graduation (Kwon & Yeun, 2017) and that higher nursing professionalism leads to higher job satisfaction and a lower turnover rate (Kwon, 2020). It is therefore necessary to explore curriculum strategies to improve nursing professionalism so that nursing college students can have higher adaptability to clinical settings after graduation.

Whereas there are many previous studies that dealt with the critical thinking disposition and nursing professionalism of nursing students (Yoo, 2021; Jung, 2020; Cho, 2021; Ha, Seo, & Lee, 2023; Mun, 2022; Woo & Song, 2020; Ju, 2022; Hyun & Kim, 2022), no study has been found that dealt with both learning flow and critical thinking (Hong, 2021) or identified the relationship between learning flow and nursing professionalism. This study therefore intends to examine the relationships between the critical thinking disposition, nursing professionalism and learning flow of nursing college students, as well as factors influencing their learning flow, thus providing basic data for nursing curriculums.

Research Purpose

 The purpose of this study is to examine the relationships between nursing college students' critical thinking disposition, nursing professionalism and learning flow and identify factors influencing their learning flow, thus providing basic data in developing intervention measures to help with the learning flow.

First, examine the levels of nursing college students' critical thinking disposition, nursing professionalism and learning flow.

Second, identify the differences in the critical thinking disposition, nursing professionalism and learning flow of nursing college students.

Third, identify the relationships between the critical thinking disposition, nursing professionalism and learning flow of nursing college students.

Fourth, identify factors influencing nursing college students' learning flow.

RESEARCH METHODS

Research Design

This study uses descriptive research to examine nursing college students' critical thinking disposition, nursing professionalism and learning flow and identify factors influencing the learning flow.

Research Subjects

The subjects of this study were randomly sampled from among the students of a nursing college who understood the purpose of this study and agreed to participate. The number of subjects was calculated to be 132 by entering 6 general characteristics and 3 independent variables and using G*Power 3.1 with an effect size of .15, a significance level of .05, and a power of .80 and. A total of 170 questionnaires were distributed and 160 of them were used for the final analysis, excluding 10 with non-earnest responses.

Research Instruments

Critical Thinking Disposition

Critical thinking disposition was measured using an instrument that was developed by Yoon (2004) to measure critical thinking disposition. The measurement instrument consists of 27 questionnaire items under 7 sub-categories: prudence (4 items), intellectual passion/curiosity (5 items), confidence (4 items), systematicity (3 items), intellectual fairness (4 items), sound skepticism (4 items), and objectivity (3 items). Each item was scored on a five-point Likert scale from 1 ('not at all') to 5 ('very much') with two negative items scored reversely, and the total scores ranged from 27 to 135. With regard to the reliability of the instrument, the Cronbach's α was .84 when it was first developed and .90 in this study.

Nursing Professionalism

To measure nursing professionalism, this study used an instrument (18 items) that was developed by Han et al. (2008) by reducing and adapting the original version (29 items) developed by Yeun et al. [14] through construct validity based on factor analysis. The instrument is divided into five sub-categories: self-concept (6 items), social awareness (5 items), nursing expertise (3 items), roles of the nursing community (2 items), and nursing independence (2 items). The items were scored on a five-point Likert scale ('not at all' = 1, 'very much' = 5) with negative items scored reversely, and a higher score indicated higher nursing professionalism. Regarding the reliability of the instrument, the Cronbach's α was .91 in the study by Han et al. (2008) and .90 in this study.

Learning Flow

Learning flow was measured using an instrument that was developed by Lee (2009) by revising and supplementing the original version developed by Seok (2004). The instrument has 35 items in total and is composed of 2 sub-categories: conditions of learning flow (11 items) and experiences of learning flow (24 items). Each item was scored on a five-point Likert scale from 1 ('not at all') to 5 ('very much'), with a higher score indicating a higher level of learning flow. The Cronbach's α was .89 in the study by Lee (2009) and .96 in this study.

DATA COLLECTION AND ANALYSIS

Data Collection

Data collection was performed during the period from November 13 to 17, 2023, using a structured questionnaire with students of a nursing college who understood the purpose of this study and agreed to participate. Before distributing the survey sheets, the researcher explained the purpose and content of this study. It was also explained that the collected data would be processed anonymously, the data would not be used for purposes other than this study, and respondents may withdraw their participation at any time if they want to. The respondents took about 15-20 minutes to complete the survey. After then, the completed survey sheets were collected and coded by the researcher.

Data Analysis

The collected data was analyzed, using the SPSS/WIN 24.0 program, as follows.

· The general characteristics of research subjects were measured in real numbers and percents, while their

critical thinking disposition, nursing professionalism and learning flow were measured in means and standard deviations.

· The t-test and ANOVA were used to analyze differences in the critical thinking disposition, nursing professionalism and learning flow of the subjects in relation to their general characteristics, and the Schéffe's test was used as a post hoc test.

· The correlations between the critical thinking disposition, nursing professionalism and learning flow of the subjects were analyzed using Pearson's correlation coefficients.

· Multiple regression was used for the analysis to identify factors influencing the subjects' learning flow.

RESEARCH RESULTS

General Characteristics of the Subjects

Of the 160 respondents, the majority were females (106) and 130 responded that they have a "optimistic" personality. A majority responded "satisfied" for major satisfaction (93) and chose "employment guarantee" as application motivation (75) [Table 1].

[Table 1] General Characteristics of the Subjects (N=160)

Characteristics	Categories	n	%
Sex	Female	106	66.3
	Men	54	33.8
Grade	Freshman	74	46.3
	Junior	86	53.8
Personality	Optimistic	130	81.3
	Pessimistic	30	18.8
Major satisfaction	Very unsatisfied	2	1.3
	Unsatisfied	4	2.5
	Moderate	22	13.8
	Satisfied	93	58.1
	Very satisfied	39	24.3
Application motivation	Employment guarantee	75	46.9
	Aptitude	32	20.0
	High school record	3	1.9
	Recommendation of parent or others	35	21.9
	service to others	15	9.3

Levels of the Critical Thinking Disposition, Nursing Professionalism, Learning Flow of the Subjects

The critical thinking disposition, nursing professionalism and learning flow of the subjects were measured as follows. These three variables averaged 3.69 points, 3.97 points and 3.47 points, respectively [Table 2].

[Table 2] Levels of the Critical Thinking Disposition, Nursing Professionalism, Learning Flow of the Subjects (N=160)

Variables	Mean±SD	Min	Max	Skewness	Kuttosis
Critical Thinking Disposition	3.69±0.45	2.56	4.85	.315	.044
Nursing Professionalism,	3.97±0.53	2.61	5.00	.042	-.384
Learning Flow	3.47±0.63	1.89	5.00	.246	.140

Differences in the Critical Thinking Disposition, Nursing Professionalism, Learning Flow of the Subjects according to Their General Characteristics

There were statistically significant differences in critical thinking disposition in relation to grade (t=-2.513, p=.012), major satisfaction (F=4.637, p=.001) and application motivation (F=3.199, p=.015) among the general characteristics. Nursing professionalism showed statistically significant differences according to sex (t=2.964, p=.004), personality (t=2.534, p=.012) and major satisfaction (F=8.015, p=<.001). As for learning flow, there were statistically significant differences in relation to grade (t=-2.954, p=.006), personality (t=2.954, p=.004), major satisfaction (F=9.038, p<.001), and application motivation (F=5.063, p=.001) [Table 3].

The post-hoc analysis found that for critical thinking disposition, respondents "very satisfied" with their major had a higher average score than those who responded "moderate" on a statistically significant level. As for learning flow, respondents "very unsatisfied" with their major had a higher average score than those who responded "moderate" about major satisfaction. And, those who responded "satisfied" had a higher average score than those who responded "moderate"; and those who responded "satisfied" had a higher average score than those who responded "very satisfied."

[Table 3] Differences in Critical Thinking Disposition, Nursing Professionalism, Learning Flow of the Subjects (N=160)

Characteristics	Categories	Critical Thinking Disposition			Nursing Professionalism			Learning Flow		
		M±SD	t or F (Scheffe)	*p*	M±SD	t or F (Scheffe)	*p*	**M±SD**	**t or F (Scheffe)**	***p***
Sex	Female	3.48±0.44	-0.431	.667	4.06±0.49	2.964	.004	3.48±0.60	0.324	.747
	Men	3.71±0.47			3.81±0.55			3.45±0.68		
Grade	Freshmen	3.59±0.44	-2.531	.012	3.96±0.49	-0.220	.826	3.32±0.56	-2.792	.006
	Junior	3.77±0.44			3.98±0.56			3.60±0.66		
Personality	Optimistic	3.71±0.46	1.043	.299	4.02±0.49	2.534	.012	3.54±0.62	2.954	.004
	Pessimistic	3.61±0.40			3.76±0.60			3.19±0.58		
Major satisfaction	Very unsatisfied[a]	4.22±0.24	4.637 (c< e)	.001	4.07±0.34	8.015	<.001	4.33±0.50	9.038 (a>c, c< d<e)	<.001
	Unsatisfied[b]	3.71±0.40			4.44±0.68			3.14±0.48		
	Moderate[c]	3.58±0.43			3.74±0.53			3.22±0.64		
	Satisfied[d]	3.64±0.43			3.94±0.41			3.44±0.55		
	Very satisfied[e]	3.93±0.45			4.32±0.54			3.90±0.52		
Application motivation	Employment[a] guarantee	3.65±0.41	3.199	.015	3.96±0.56	1.613	.174	3.40±0.58	5.063	.001
	Aptitude[b]	3.84±0.44			4.08±0.44			3.77±0.60		
	High school record[c]	3.93±0.37			4.39±0.31			3.50±0.34		
	Recommendation of parent or others[d]	3.51±0.39			3.80±0.45			3.19±0.60		
	service to others[e]	3.86±0.45			4.01±0.53			3.73±0.69		

Correlations among the Critical Thinking Disposition, Nursing Professionalism, Learning Flow of the Subjects

The analysis of correlations between nursing students' critical thinking disposition, nursing professionalism and learning flow found that learning flow has statistically significant positive correlations with critical thinking disposition (r=.660, p<.001) and nursing professionalism (r=.444, p<.001) and that critical thinking disposition is positively correlated with nursing professionalism (r=.463, p<.001) [Table 4].

[Table 4] Correlations among the Critical Thinking Disposition, Nursing Professionalism, Learning Flow of the Subjects (N=160)

Variables	Critical Thinking Disposition r*(p)*	Nursing Professionalism r*(p)*	Learning Flow r*(p)*
Critical Thinking Disposition	1		
Nursing Professionalism	.463(<.001)	1	
Learning Flow	.660(<.001)	.444(<.001)	1

Factors Influencing the Learning Flow of the Subjects

To identify factors influencing the learning flow of the subjects, grade, personality, major satisfaction and application motivation among general characteristics, which are variables found to show statistically significant differences in terms of learning flow, were input into a regression model, along with critical thinking disposition and nursing professionalism. As a result, it was found that factors influencing learning flow on a statistically significant level include grade (β=.139, t=2.340, *p*=.021), personality (β=-.140, t=-2.295, *p*=.023), major satisfaction (β=.544, t=8.244, *p*<.001) and nursing professionalism (β=.135, t=2.021, *p*=.045). The multicollinearity between independent variables was assessed. There was no problem with the multicollinearity since the variance influence factor (VIF) value was 1.081-1.368, which is less than the generally accepted threshold value of 10. The tolerance limit was .731-.925 (> 0.1). The residual analysis found that the Durbin-Watson value was 1.802, which is close to 2, indicating no problem with the autocorrelation of the residuals. Consequently, the assumptions of regression analysis were met. The regression model was statistically significant (F=26.174, *p*<.001) and had an explanatory power of 49.0% [Table 5].

[Table 5] Factors influencing the Learning Flow of the Subjects (N=160)

Variables	B	SE	β	t*(p)*	Tolerance	VIF
Constant	-7.589	13.972		-.543(..588)		
Grade	3.060	1.308	.139	2.340(.021)	.925	1.081
Personality	-7.524	3.279	.135	-2.295(.023)	.876	1.141
Major Satisfaction	.983	.119	.544	8.244<.001)	.746	1.340
Nursing Professionalism	.313	.155	.135	2.021(.045)	.731	1.368
F*(p)* =26.174(<.001), R2=.510, Adj R2=.490, Durbin-Watson=1.802						

DISCUSSIONS

This study intended to examine the relationships between the critical thinking disposition, nursing professionalism and learning flow of nursing college students and identify factors influencing the learning flow. The study found statistically significant positive correlations between the three variables mentioned above, and identified grade, personality, major satisfaction and nursing professionalism as factors influencing learning flow on a statistically significant level.

The subjects had an average score of 3.69 out of 5 in critical thinking disposition. The average score was higher than the score of 83.9 (3.10 when converted into a five-point scale) obtained from nursing college students from freshmen to seniors using the same instrument in Jung's study (Jung, 2020) and the score of 3.43 obtained from junior and senior nursing students in Hong's study (Hong, 2021). The average score in this study was similar to the score of 3.70 in Ju's study (2022) targeting sophomore, junior and senior nursing students and the score of 3.70 in Cho's study (2021) on nursing students from freshmen to seniors. However, it was lower compared to the score of 3.72 in Mun's study (2022) for junior and senior nursing students with clinical practice experience; the score of 3.73 in the study by Hyun and Kim (2022); the score of 3.75 obtained from senior nursing students by Woo and Song (2020); the score of 3.78 in Yoo's study (2021) targeting junior and senior students who experienced clinical practice for at least one semester; and the score of 3.87 obtained from junior and senior students with clinical practice experience in the study by Ha, Seo and Lee (2023). The average score of the subjects in this study was slightly higher than 3.55, a score obtained from nurses who had worked at small- and medium-sized hospitals for at least six months, using the same instrument, by Lee and Lee (2018), although the difference in the subjects between the two studies makes it somewhat inappropriate to directly compare the scores. This needs to be validated through research on a larger group of subjects that covers a larger area.

The subjects of this study had an average score of 3.97 out of 5 in critical nursing professionalism. The average score was far higher than the score of 64.8) (3.60 when converted into a five-point scale) obtained from nursing college students from freshmen to seniors using the same instrument in Jung's study (2020) the score of 3.75 in the Mun's study (2022) on junior and senior nursing students with clinical experience; the score of 3.83 obtained by Hyun and Kim (2022); the score of 3.78 in the study by Woo and Song (2020)] targeting senior nursing students; and the score of 3.89 obtained by Cho (2021). On the other hand, the average score in this study was similar to the score of 3.95 obtained from junior and senior nursing students in Yoo's study (2021); the score of 3.95 in Ju's study (2022) targeting sophomore, junior and senior students; and the score of 3.96 obtained from junior and senior nursing students in the study by Ha, Seo and Lee (2023). Given the results of those previous studies, it seems unreasonable to say that students' nursing professionalism improves as they move on to the next grade or that clinical experience affects their nursing professionalism. It needs to be determined whether those varying scores were attributable to differences in the personal characteristics of the subjects or subject sampling (Jam et al., 2016). This can be done by creating a sample of freshman and sophomore nursing students without clinical experience and another sample of junior and senior students with clinical experience or by creating a sample that includes equal numbers of nursing students by grade from freshmen to seniors for comparison analysis.

The subjects of this study had an average score of 3.47 out of 5 in learning flow in priori analysis. The average score was similar to the score of 3.41 obtained from sophomore, junior and senior nursing students, using the same instrument, in the study by Oh and Kim (2020). On the other hand, it was much higher than the score of 2.84 in the study by Jeong and Han (2019) targeting junior and senior nursing students and the score of 2.70 obtained from senior nursing students in Han's study (2020), although the use of different measurement instruments makes it inappropriate to directly compare these scores. This needs to be validated through further research in which students of the same grades are compared and the sample is enlarged to cover larger areas.

This study found statistically significant positive correlations between the critical thinking disposition, nursing profession and learning flow of the subjects. The study also found that a student with higher scores in critical thinking disposition and professional nursing had a higher score in learning flow, and that a student with a higher score in critical thinking disposition had a higher score in nursing professionalism. No previous studies were found that included all the variables covered in this study, thus making it impossible to compare the results of this study with those of previous studies.

The factors influencing the learning flow of the subjects included grade, personality, major satisfaction and nursing professionalism. The learning flow of the juniors was higher than that of the freshmen on a statistically significant level. Respondents "satisfied" with their major had a higher average score in learning flow than those who responded "moderate," and respondents "satisfied" with their major had a higher average score than those

who responded "very satisfied" on a statistically significant level. Contrary to expectations, respondents who were "very unsatisfied" had a higher average score in learning flow than those who responded "moderate." This needs to be checked through repeated research. No previous studies were found that dealt with the same factors influencing learning flow covered in this study; therefore it was impossible to compare the results of this study with those of previous studies. In the quasi-experimental research conducted by Song (2020) on nursing students in the first to fourth semesters of college in California, the US to examine the effects of integrative simulation practice on immersion, the critical thinking disposition of the experimental group was identified as a statistically significant factor influencing immersion. Consequently, to enhance nursing college students' learning flow, constant efforts need to be made to improve teaching and learning strategies and curricula for nurturing critical thinking disposition in nursing students and helping them to establish desirable nursing professionalism through nursing curriculum.

CONCLUSION AND SUGGESTIONS

This study aimed to examine the relationships between the critical thinking disposition, nursing professionalism and learning flow of nursing college students. The correlations of the variables were analyzed, confirming that critical thinking disposition, nursing professionalism and learning flow were positively correlated on a statistically significant level. Nursing professionalism was identified as a factor influencing learning flow. In conclusion, improving the learning flow of nursing college students requires constant efforts to improve nursing curricula for them to establish desirable nursing professionalism by applying a range of teaching and learning strategies.

This study found the need for interventions that can help nursing students in an undergraduate course establish desirable nursing professionalism so that as nurses, they can make ethical decisions in addressing different health problems of patients in clinical settings and provide holistic nursing care through quality nursing performance. This study also confirmed the importance of nursing educational institutions playing a role in helping nursing college students improve their learning flow and thus effectively study their major and enhance their expertise so that after graduation, they can serve as professional nurses with increased adaptability to clinical settings.

As the nursing education community is having difficulty managing classes due to a shrinking population of college entrants and a widening variance of academic performance among nursing college entrants, the results of this study will hopefully provide basic data for developing various teaching and learning strategies and programs that can help improve students' learning flow.

Based on the results described above, this study makes the following suggestions.

First, this study convenience sampled freshman and junior students from a nursing college and therefore, the generalization of the results is limited. The study results need to be validated through repeated research on nursing students of all grades and from different areas.

Second, this study suggests further research to identify a difference in nursing college students' nursing professionalism before and after clinical practice.

Acknowledgements

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