The Correlation of Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students

Dr. Abeer Refaat Kabeel [1*]   Dr. Sahar Abd El-Mohsen Mosa Eisa [2]

1.Nursing Administration Department, Faculty of Nursing, Modern University for Technology & Information (MTI)

2.Psychiatric-Mental Health Department, Faculty of Nursing, Modern University for Technology & Information (MTI)

Abstract

Background: Part of the 21st century skills is critical thinking and learning approaches of students. A part of that resurgence can be attributable to several studies on critical thinking, logic, and thinking skills. Health care professionals are challenged by the complexities of the health care environment. The practice of nursing requires critical thinking and clinical reasoning to define a client's problem, examine the evidence-based practice in caring for the client, and make choices in the delivery of care. **Aim of the study:** The aim of the study is to determine the relation between critical thinking dispositions and learning approaches among baccalaureate nursing students. **Research design:** Quantitative descriptive correctional design was selected for this study. **Setting** The study was conducted at faculty of nursing, Modern University for Technology & Information (MTI) in Egypt. Nursing students (N=120) of baccalaureate program who were enrolled at the academic year 2015-2016. **Tools of data collection:** Tool 1: Demographic Data: The Demographic Data included age, gender, level of education program (semester), nationality, pre-university qualification and pre/current experience at hospital or health agency. Tool 2: CCTDI: The California Critical Thinking Disposition Inventory (CCTDI) to measure the dispositional dimension of critical thinking. Tool 3: The study process questionnaire (SPQ): to assess the approaches of students in tertiary institutions towards learning and studying. **Result:** Finding of this study showed that there was a positive correlation between Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students *(p=0.000)*. **Conclusion:** There was an evidence of positive correlation between learning approaches and critical thinking among Baccalaureate Nursing Students. **Recommendations:** Nurse educators must understand and integrate students' learning approaches into nursing curricula to promote critical thinking and satisfying learning experiences.

Keywords: Critical Thinking Disposition, Approaches to Learning, Nursing Students

Introduction

The term "thinking like a nurse" was introduced by Tanner in 2006. To think like a nurse, critical thinking and clinical reasoning must be defined and understood. Critical thinking (CT) has been a long-standing interest of scholars, educators, psychologists, and health care professionals (Ku, 2009). It is a desired outcome across the educational spectrum, particularly in higher and professional education, and a common goal that most educators aspire to achieve (Gul et al., 2010; Kalb, 2008; Mundy & Denham, 2008; Ovais, 2008). CT is a phenomenon of worldwide importance (Ku, 2009) and has been identified as an important skill to be assessed and nurtured in higher education and professional programs (Ku, 2009; Mundy & Denham, 2008). Critical thinking has now been accepted as the fundamental component of every education system. Currently health care is facing rapid changes and overwhelming increase in the information. It is mandatory for nurses and other health care providers to use critical thinking for making decision in clinical settings (Hongladarom, 2007).

Critical thinking is a self-regulatory process of judgment that help one decide to how to deal with (and solve) problems. Critical thinking is the process of thinking that questions assumptions. It is a way of deciding whether a claim is true, false; sometimes true, or partly true. Critical thinking is an important component of most professions. It is a part of the education process and is increasingly significant as students' progress through university to graduate education, although there is debate among educators about its precise meaning and scope (Nelson & Thomas, 2005). As such, critical thinking is a liberating force in education and a powerful resource in one's personal and civic life. While not synonymous with good thinking, critical thinking is a pervasive and self-rectifying human phenomenon. The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit (Gul et al., 2010). Thus, educating good critical thinkers means working toward this ideal. It combines developing critical thinking skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society (Facione & Facione, 2007).Critical thinking is the basis of professional nursing practice and is essential in the current complex health care delivery system. The need for critical thinking in nursing has been accentuated in response to the rapidly

changing health-care environment. Nurses must think critically to provide effective care while coping with the expansion in role associated with the complexities of current health-care systems (Simpson & Courtney, 2002). CT is a significant component of nursing education and integral to the discipline of nursing (Kim et al., 2014).

In a contemporary healthcare environment characterized by rapidly-changing developments and relentlessly-increasing knowledge, professional nurses need to develop critical thinking skills that will provide them with expertise in flexible, individualized, situation-specific problem solving. Therefore, nursing education strives to facilitate the development of students" critical thinking through the appropriate instructional approaches (Yuan et al., 2008). Developing critical thinking skills in nursing is essential in establishing a scientific foundation for the profession, for creating a discipline in which truth is sought and implemented, and where use of theoretical perspectives are increasingly being tested and utilized. The power of critical thinking allows nurses to logically assess their own experiences and training and apply the results of this evaluation to patient care. The ability of nurses to cope with problems, their skills in determining patient needs and providing systematic care are all dependent upon their critical thinking skills (Kelly et al., 2010).

Most researchers assert that in addition to skills, CT also involves dispositions. Critical thinking dispositions (CTDs) are attributes or habits of the mind that are integrated into an individual's beliefs or actions conducive to critical thinking (Profetto-McGrath et al., 2003). Critical thinking dispositions are requisite for thinking critically and for developing sound critical thinking skills. Dispositions toward thinking critically have been portrayed as the unswerving internal inclination to problem solving and decision making achieved by thinking (Facione & Facione, 2007). An individual with critical thinking dispositions display a inquiring inquisitiveness, a enthusiastic intellect, a zealous dedication to reason, a hunger for reliable information, and are more apt to use their critical thinking skills than are those who do not have strong critical thinking dispositions (Zhang, 2008).

The conceptualization of critical thinking disposition was described in terms of seven traits namely; inquisitiveness, open mindedness, systematicity, analyticity, truth-seeking, critical thinking self-confidence, and maturity. These descriptions indicate that dispositional influences on thinking are multifaceted. In the first place, an interest in or enjoyment of thinking is a prerequisite for active engagement in thinking (inquisitiveness, need for cognition). Secondly, an open attitude underlies the willingness to consider different viewpoints and options before arriving at conclusions (open-mindedness, flexibility). Thirdly, a careful approach in thinking would certainly contribute to effective decision-making and problem-solving (conscientiousness, systematicity). Finally, values such as upholding fairness and truth fuel the striving for judgments that are sound and unbiased (truth-seeking, fair-mindedness). These four dimensions of thinking disposition emphasize different aspects of an individual's response to situations that call for thinking (Facione et al., 2001; Soeherman, 2010). Critical thinking skills and dispositions are also vital in developing evidence-based nursing practice. Several authors assert that critical thinking skills reduce the research-practice gap and foster evidence-based nursing practice (Profetto-McGrath, et al., 2009). CTDs are core for nurses who work as scientific practitioners because using research is an essential element of their practice. Nurses who are disposed to think critically are more likely to critically interpret the available evidence and, based on that critical interpretation, are able to make high quality judgments and draw valid inferences (Profetto-McGrath, 2003). Moreover, nurses who are disposed to think critically are proficient in critiquing the available evidence and the practice based on that evidence, remain open minded, interpret and evaluate the effectiveness of practice, and search for the evidence which is most suitable and applicable in given context (Profetto-McGrath et al., 2009).

The learning process consists of the way in which the learning takes place and involves primarily the capacities by the activities by means of which knowledge is gained, skill is produced habits, attitudes, and ideas are required. Learning approach are always the major concerns of school teachers and college professors (Dunn & Musolino, 2011). Understanding how students learn is very important especially in the Higher Education. The concept of approach to learning is a "key concept in teaching and learning". Knowing the learning approach of the nursing students would help the students, teachers and administrators identify areas or strategy that is not facilitative of learning and gear the students to adopt a more meaningful learning. The learning approach can be described as what students usually do while learning and studying (Entwistle & McCue, 2004). Strategies to learn are considered important elements. Researchers have done numerous studies of student's study approaches since the late 1970's. The approaches to learning are seen by many educators as powerful means of modeling student learning and the quality of learning outcomes (Duff et al., 2002). An approach to learning is a concept about students' motivation on learning and the use of appropriate strategies by students (Zhang & Stenberg, 2000). It describes the nature of the relationship between the student, context, and task (Biggs et al., 2001). Learning approaches are the patterns followed by students in order to achieve higher quality learning. Basically, two approaches to learning have been identified: the "surface" approach and the "deep" approach. A surface approach describes the intention to reproduce information in compliance with externally imposed task demands while deep approach involves the intention to understand. Deep processing also labeled elaboration or critical thinking involves challenging the veracity of information encountered and attempting to integrate new information with prior knowledge and experience (Biggs et al., 2001). Biggs et al. (2005) had identified achievement approach as a

third learning approach.

Surface processing also labeled rehearsal or memorization; involves the repetitive rehearsal and rote memorization of information. Students who adopt surface approach to learning are referred to as surface learners and deep approach students are referred to as deep learner (Dunn & Musolino, 2011). On the other hand, surface approach is the intention of a student to fulfill the task requirements such as rote memorization of such information needed to pass an examination. Surface approach leads to increase in knowledge through memorization of information and by following certain procedures. It generally leads to low retention and an inability to use information in new contexts. Surface approach is encouraged by (1) assessment methods emphasizing recall of the application of trivial procedural knowledge; (2) assessment methods that create anxiety; (3) cynical or conflicting messages about rewards; (4) excessive amount of materials and (5) poor or absent feedback. The deep approach to learning can result in good learning outcome. Deep processing, involves the intention of a student to understand and attempt to relate incoming information to previous knowledge and experiences in order to come up with a personal meaning (Biggs et al., 2005).

On the other hand, deep approach is task-centered and task-appropriate. Deep approach to learning is encouraged by (1) teaching and assessing methods; (2) stimulating and considerate teaching specially teaching which demonstrate the teacher's personal commitment to the subject matter and stresses its meaning and relevance to students; (3) clearly stating academic expectations; (4) opportunities to exercise responsible choice in the content of the study; (5) interest in and background knowledge and (6) previous experiences of educational settings that encourage deep approach (Biggs et al., 2005). For example those individuals who follow the mastery goal orientation utilize deep approach, requiring a lot of cognitive effort but leads to better understanding (Rahman & Mokhtar, 2012). The strategic or achieving approach is that approach which students are said to take when they wish to achieve positive outcomes in terms of obtaining a pass or better in the subject. This approach when allied to a deep approach to learning in the subject would seem likely to deliver both an intelligent engagement with the subject as well as success in the subject (Biggs et al., 2005). Critical thinking is after seen as a universal goal of higher education but is seldom confirmed as an outcome. In order to develop critical thinking in the educational setting, students need to adapt an appropriate learning approach. The proper approach to learning facilitates critical thinking (Magno, 2010).

Significance of the study

Students differ in their ability to think, memorize, reason, read and process information. It is important for critical thinkers to execute their own learning to be able to generate and evaluate conclusions from related evidence. The students who are considered as high critical thinkers have a better implementation of their learning approach (Magno, 2010). Effective assessment of nursing students during university education would ensure their competency, professional satisfaction as well as their patients' safety (Shipman et al., 2012). Previous research regarding learning approaches, suggests that it is found to be an influential element for motivation and achievement. Studies exemplifying the relationship between critical thinking and learning approaches are still few. The relationship between learning approach and critical thinking makes a good basis for explaining learning but they were investigated with different correlates. Establishing the possibility of linking these two variables has been neglected. This present study examines the relationship between critical thinking and learning approaches among Baccalaureate Nursing Students. The relationship will establish construct validation of the outcome of learning approach as an appropriate mechanism to propel critical thinking.

Aim of the study

The aim of the study is to determine the relation between critical thinking dispositions and learning approaches among baccalaureate nursing students.

Research questions

The specific research questions are:
1. What are the critical thinking dispositions and learning approaches of baccalaureate nursing students?
2. What is the relationship between the variables of critical thinking dispositions and learning approaches among Baccalaureate Nursing Students?

Subjects and Methods
    1. Technical design
    1.1 Research design
Quantitative descriptive correctional design was selected for this study.
    1.2 Setting
The study was conducted at faculty of nursing, Modern University for Technology & Information (MTI) in Egypt.

1.3 Sample

Nursing students (N=120) of baccalaureate program who were enrolled at the academic year 2015-2016, at the eight semesters were participated in this quantitative descriptive study.

1.4 Tools of data collection

Tool 1: Demographic Data

The Demographic Data included age, gender, level of education program (semester), nationality, pre-university qualification and pre/current experience at hospital or health agency.

Tool 2: CCTDI

The California Critical Thinking Disposition Inventory (CCTDI) is the first instrument designed to measure the dispositional dimension of critical thinking. The CCTDI is conceptually grounded in the Delphi Report on Critical Thinking (American philosophical Association, 1990). It was developed by Facione et al., (2001) update. The CCTDI is a 75-items Likert scale tool with seven subscales, these seven subscales are truth-seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and cognitive maturity.

The *truth-seeking* subscale in the CCTDI measures intellectual honesty, the desire to seek the best knowledge, the inclination to ask challenging questions, and the willingness to pursue reasons and evidences wherever they lead (12 items).

The *open-mindedness* subscale in the CCTDI measures one's tolerance for new ideas and divergent views. The open-mindedness refers to "being tolerant of divergent views and sensitive to the possibility of one's own bias" (12 items).

Analyticity is about "prizing the application of reasoning and the use of evidence to resolve problems, anticipating potential conceptual or practical difficulties, and consistently being alert to the need to intervene'. The Analyticity subscale measures one's alertness to potential difficulties and sensitivity to the need to intervene. Someone who is disposed to analyticity would be inclined to value the use of reasons and evidence in solving problems (11 items).

"Being organized, orderly, focused, and diligent in inquiry" is a feature of *systematicity*. As a subscale of the CCTDI scale of systematicity measures the inclination to be organized, focused, diligent and persevering. A person with a disposition toward systematicity would plan his/her approaches in problem solving in focused and organized ways and work with complexity in an orderly manner (11 items).

Critical thinking self-confidence, as a subscale of the CCTDI scale, refers to the faith that one has in one's own reasoning processes. It is suggested that critical thinking self-confidence "allows one to trust the soundness of one's reasoned judgments and to lead others in the rational resolution of problems". The critical thinking self-confidence measures trust in one's own reasoning and ability to guide others to make rational decisions (9 items).

Inquisitiveness is "one's intellectual curiosity and one's desire for learning even when the application of the knowledge is not readily apparent". The subscale of inquisitiveness measures intellectual curiosity and the intention to learn even if the knowledge has no immediate application (10 items).

The *cognitive mature* person is characterized as someone who "approaches problems, inquiry, and decision making with a sense that some problems are necessarily ill-structured, some situations admit of more than one plausible option, and many times judgments must be made based on standards, contexts and evidence which preclude certainty". Cognitive maturity as a subscale of the CCTDI measures judiciousness which inclines one to see the complexity in problems and to desire prudent decision making, even in uncertain conditions (10 items).

Validity Considerations

The reliability coefficients for the California Critical Thinking Disposition Inventory (CCTDI) range between Cronbach's Alpha = 0.80 and 0.91, demonstrating very strong internal consistency. The reliability of the individual subscaleshas ranged between .71 and .80 (Facione et al., 2001; Ip et al., 2000; Profetto-McGrath, 1999; Smith-Blair & Neighbors, 2000; Gupta et al., 2012). It seems that the CCTDI is a proper instrument for nursing and midwifery students.

Scoring system

The items for the seven scales are interspersed throughout the CCTDI. Respondents are invited to express the extent to which they agree or disagree with each of the 75 item statements. A five-point Likert scale ranging from 'strongly agree' to 'strongly disagree' is used .There is no neutral option on the scale.

Tool 3: The study process questionnaire (SPQ)

The SPQ was developed by Biggs (1987) to measure students' approaches to learning. An explanation of the SPQ and its construction, with reliability and validity of the instrument, and updated by Biggs (1993).Biggs distinguishes between a "surface approach" and a" deep approach" to learning. Biggs''s SPQ was developed to assess the approaches of students in tertiary institutions towards learning and studying. Biggs based his model on three ways in which students attack learning: deep, surface, and achievement approaches.

The SPQ comprises of forty-two items, which jointly measure the respondents' approaches to learning. An approach to learning has two components: motive and strategy. Motive is about 'Why am I engaging in learning?' while strategy refers to 'How, in that case, will I go about my learning. In the SPQ, an approach to learning is referred to as a scale, and a motive or strategy is known as a subscale. There are three approaches to learning

measurable with the SPQ: surface, deep, and achieving; each one has 14 items. A breakdown of the motives and strategies are that form the approaches to learning.

Validity Considerations

The overall alpha value of study process questionnaire (0.91) and the alpha value for each sub-scale (0.65- 0.84) indicated a high level of internal consistency. The internal consistency and factorial validity of the SPQ are comparable. Therefore, the questionnaire can be used with confidence to assess learning approaches in educational systems (Emilia et al., 2012; Zeegers, 2001; Fox etal., 2001; Biggs, 1993).

Scoring system

Responses were measured on a 5-point Likert rating scale ranging from (1) strongly disagree to (5) strongly agree.

2.   Administrative design

2.1   Written approval

Official Permission to conduct this study was obtained from the dean of the faculty of Nursing, Modern University for Technology & Information (MTI).

2.2   Ethical consideration

The purpose of the study was explained to each student and oral consent to participate in the study was obtained from them. Confidentiality and anonymity were ensured to participants.

3.   Operational design

3.1   Data collection procedure

 Data was collected through self-administered questionnaires sheet that were distributed among the subjects during the studying day. The data was collected for a period of 2 months during semester spring-2016, in academic year of 2015-2016, started from the beginning of April 2015 to the end of 31st of May 2016.

3.2   Statistical Analysis

After data were collected it was revised, coded and fed to statistical software SPSS version 20. All statistical analysis was done using two tailed tests and *P* value equals to or less than 0.05 was considered to be significant. As for the tool, scores were given according to Likert scale items; then the sum of scores for each dimension and total score was calculated by summing the scores given for its responses. Descriptive statistics were done using numbers, percentage, mean with standard deviation. Analytical statistics were done using significance test for independent samples t-test, person test, and inter-scale correlations.

Result

Table (1): Demographic characteristics of baccalaureate nursing students. It showed that the majority of students were in their early twenties (78.3 %); while the minority had more than 28 years old (1.7 %). However, the mean of age (main ±SD) was 21.98 ±2. 541. Nearly more than half of the subjects were male (56.7%) and 43.3% were female. Regarding to the level of education, about 20% of students were enrolled of semester two as well as the same percentage of semester seven while semester four was 9.2%. The majority of the subjects had secondary school certificate as pre-university qualification (64.2%) the minority has nursing diploma certificate (4.2%). About Pre/current experience at hospital or health agency, approximately half of the subjects had Pre/current experience at hospital or health agency (58.3%), while half of them had not (41.7%). The majority of the subjects were Egyptian (79.2%), while the Nigerian was 20% and Palestinian was 0.8%.

Table (2): Mean and standard deviation of California Critical Thinking Disposition Inventory (CCTDI) among baccalaureate nursing students. It stated that highest mean and standard deviation agreement score of subscale was Inquisitiveness (51.62±5.501).The subscale of Critical thinking self confidence had mean and standard deviation strongly agreement score of (36.50±11.237). On the other hand, the lowest subscale mean and standard deviation agreement score was Open-mindedness (30.46±7.785) followed by Truth-seeking and Analyticity **(**8.77±7.780).

Table (3): Mean and standard deviation of study process questionnaire (SPQ) among baccalaureate nursing student. It revealed that the highest dimension of subscale mean and standard deviation agreement score was deep motive (59.69±3.543). The dimension of subscale of surface motive had mean and standard deviation strongly agreement score of (34.05±4.037). On the other hand, the lowest dimension of subscale mean and standard deviation agreement score was Achieving strategy (24.45±3.169).

Table (4): The relationship between the sub-scales of California Critical Thinking Disposition Inventory and study process questionnaire among baccalaureate nursing students. It presented the correlations of subscales of California Critical Thinking Disposition Inventory (CCTDI) with subscales of study process questionnaire (SPQ). There was a statistically significant correlation among the three subscales of SPQ and the seven subscales of CCTDI (*P<0.05*).

Table (5): The relationship between Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students. It showed that there was a positive correlation between Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students *(p=0.000).*

Table (6): The relationship between Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students and their demographic data. It revealed that, there was a positive correlation between Critical Thinking Disposition and demographic data of semester and nationality. In addition, there was a positive correlation between Approaches to Learning and demographic data of age, semester and nationality ($P<0.05$).

Table (1): Demographic characteristics of baccalaureate nursing students (n=120)

Demographic characteristics	No	%
Age:		
Less than19	6	5
19 <24	94	78.3
24 - 28	18	15
>28	2	1.7
Mean ±SD	21.98 ±2. 541	
Gender		
Male	68	56.7
Female	52	43.3
Level of education		
Semester 1	12	10
Semester 2	20	16.7
Semester 3	18	15
Semester 4	11	9.2
Semester 5	13	10.8
Semester 6	12	10
Semester 7	20	16.7
Semester 8	14	11.6
Pre-university qualifications		
Sec. School Certificate	77	64.2
Technical nursing institute	26	21.6
Faculty-Not nursing	12	10
Nursing Diploma Certificate	5	4.2
Pre/current experience at hospital or health agency		
Yes	70	58.3
No	50	41.7
Nationality		
Egyptian	95	79.2
Nigerian	24	20
Palestinian	1	0.8

Table (2): Mean and standard deviation of California Critical Thinking Disposition Inventory (CCTDI) among baccalaureate nursing students (n=120)

The subscales of California Critical Thinking Disposition Inventory (CCTDI)		Strongly Disagree Mean±SD	Disagree Mean±SD	Undecided Mean±SD	Agree Mean±SD	Strongly Agree Mean±SD
Truth-seeking	T	8.77±7.780	9.38±5.485	23.15±7.358	46.15±7.647	32.69±9.978
Open-mindedness	O	8.23±7.213	10.54±5.33	23.69±4.803	46.31±4.906	30.46±7.785
Analyticity	A	8.77±7.780	9.38±5.485	23.01 ±7.116	46.15±7.647	32.69±9.978
Systematicity	S	6.83±7.534	10.77±5.819	23.08±7.106	45.85±4.432	33.62±12.353
Critical thinking self confidence	C	4.58±6.022	6.58±4.562	21.42±7.833	50.58±6.908	36.50±11.237
Inquisitiveness	I	3.85±4.562	8.08±4.562	25.38±5.253	51.62±5.501	31.85±6.644
Cognitive maturity	M	4.85±3.976	9.38±4.464	26.01 ±7.223	46.77±4.622	33.33 ±9.443

Table (3): Mean and standard deviation of study process questionnaire (SPQ) among baccalaureate nursing students (n=120)

The study process questionnair (SPQ)		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Subscale	**Dimension**	**Mean$\pm$SD**	**Mean$\pm$SD**	**Mean$\pm$SD**	**Mean$\pm$SD**	**Mean$\pm$SD**
Surface approach	**Surface motive (SM)**	2.33$\pm$0.816	8.67$\pm$1.033	19.67$\pm$3.011	57.83$\pm$2.787	34.05$\pm$4.037
	Surface strategy (SS)	2.56$\pm$0.961	7.45$\pm$1.604	16.57$\pm$2.106	58.26$\pm$2.912	31.51$\pm$3.956
Deep approach	**Deep motive (DM)**	2.31$\pm$0.994	9.12$\pm$2.946	11.15$\pm$4.452	59.69$\pm$3.543	32.75$\pm$4.357
	Deep strategy (DS)	3.33$\pm$0.914	10.73$\pm$2.039	10.67$\pm$3.101	56.97$\pm$4.873	33.55$\pm$5.212
Achieving approach	**Achieving motive (AM)**	4.40$\pm$2.510	9.63$\pm$1.871	30.05$\pm$2.915	51.2$\pm$5.020	25.40$\pm$3.912
	Achieving strategy (AS)	3.09$\pm$2.011	8.09$\pm$1.564	29.15$\pm$2.754	52.1$\pm$5.457	24.45$\pm$3.169

Table (4): The relationship between the sub-scales of California Critical Thinking Disposition Inventory and study process questionnaire among baccalaureate nursing students (n=120)

The subscales of study process questionnaire (SPQ)	The subscales of California Critical Thinking Disposition Inventory (CCTDI)						
	Truth-seeking	**Open-mindedness**	**Analyticity**	**Systematicity**	**Critical thinking self confidence**	**Inquisitiveness**	**Cognitive maturity**
Surface approach (S)	.003*	.001*	.003*	.003*	.003*	.002*	.005*
Deep approach (D)	.002*	.004*	.001*	.001*	.000*	.005*	.004*
Achieving Approach (A)	.013*	.006*	.013*	.015*	.021*	.004*	.007*

(*) Statistically significant at p<0.05

Table (5): The relationship between Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students (n=120)

Tools	Mean$\pm$SD	T test			Correlations	
		t	**P**	**Total Mean (Min-Max)**	**person**	**P-value**
CCTDI	215.88$\pm$219.473	5.17	0.000*	187 (114.117-259.98)	-.411**	.003*
SPQ	28.80$\pm$70.316					

(*) Statistically significant at p<0.05   (**) Statistically significant at p<0.01

Table (6): The relationship between Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students and their demographic data (n=120)

Tools	Value	Age	Gender	Semester	Nationality	Pre-university Qualifications	Health Experience
CCTDI	P	.196	.334	.005*	.039*	.659	.601
SPQ	P	.018*	.232	.000*	.000*	.370	.082

(*) Statistically significant at p<0.05

Discussion

For the past twenty years, the process of thinking is again experiencing one its periodic resurgences as a legitimate topic of education because of the assertion that schools need to develop 21st century skills among their students. Part of the 21st century skills is critical thinking and learning skills of students. A part of that resurgence can be attributable to several studies on critical thinking, logic, and thinking skills. Most students do not score well on the tests that measures ability to recognize assumptions, evaluate arguments and appraise inferences (Neuschmidt, et al., 2008; Ramirez, 2006). Previous studies believe that the thinking of students will remain "invisible" to them unless they are supportively challenged to discover the problems in their thinking. This is not possible unless they

receive careful introduction into the intellectual workings of the human mind. Critical thinking involves several skills, including the ability to listen and read carefully, evaluate arguments, look for and find hidden assumptions, and to trace the consequences of a claim. Critical thinking is after seen as a universal goal of higher education but is seldom confirmed as an outcome. In order to develop critical thinking in the educational setting, students need to adapt an appropriate learning approach. The proper approach to learning facilitates critical thinking. Previous research regarding learning approaches, suggests that it is found to be an influential element for motivation and achievement (Magno, 2010).

In nursing, the rapidly changing health care delivery and practices require sound critical thinking and decision making skills. It is necessary to provide students with the skills to seek analyze and utilize information effectively. (Yuh-Shiow Li et al., 2011). One of the objectives of nursing education is to produce nurses with the ability to think critically and thus be able to provide safe nursing care (Suliman, 2006). Therefore, Shin et al., (2006) recommended nursing educators must be teaching students how to think critically in nursing. And Walsh & Seldomridge, (2006) urged faculties to debate how content could be taught to foster the development of CT rather than what should be taught.

Therefore, the critical thinking dispositions and learning approach of student nurses are of major concern to nurse educators because it affects the nursing education outcome and professional development. Assessment for learning approaches and critical thinking are necessary in order for teachers to truly determine if these skills are present and how of them needs to be further developed. Having assessed the level of critical thinking of students allows teacher to determine the extent of instruction of deep approach needed when facilitating.

Studies exemplifying the relationship between critical thinking and learning approaches are still few. The relationship between learning approach and critical thinking makes a good basis for explaining learning but they were investigated with different correlates. Establishing the possibility of linking these two variables has been neglected. This present study examines the relationship between critical thinking and learning approaches among baccalaureate nursing students. The relationship will establish learning approach as an appropriate mechanism to propel critical thinking.

Findings of the present study revealed that highest mean and standard deviation score of subscale was Inquisitiveness and critical thinking self confidence, which measure the intellectual curiosity and desire for learning and reflect curiosity and eagerness to obtain knowledge even when it may not have immediate use. This finding is both encouraging and desirable. In a practice discipline such as nursing, it is important that students maintain a curious nature and continue in the pursuit of knowledge. In addition, findings of the present study revealed that the lowest subscale mean and standard deviation score was Open-mindedness, Truth-seeking and Analyticity. Open-mindedness measures tolerance of new ideas and divergent views. Truth-seeking measures intellectual honesty which is the desire to seek the best knowledge objectively; even if the findings do not support one's self-interest or preconceived opinions. Analyticity measures alertness to the need to use reason and evidence to solve problems. These gauge intellectual honesty, courage to acquire the best knowledge, inclination to ask challenging questions, and willingness to pursue evidence and proof regardless of where it may lead.

Similarly the findings of this study indicate that inquisitiveness was a strength among nursing faculty with a highest mean score (Raymond & Profetto- McGrath, 2005). According to the study of Salima and her colleges (2015) they found that the highest subscale score was achieved on the self-confidence and inquisitiveness and the lowest mean score were achieved for the truth-seeking and maturity subscales. This is agreed with Hala (2012) who found that there was significant difference among nursing students for overall mean score of critical thinking dispositions as a result of a statistically significantly difference of the truth seeking, systematicity, self-confidence and critical thinking inquisitiveness. As same as Profetto-McGrath (2003) who found that differed significantly on the truth seeking, self confidence, analyticity, and inquisitiveness subscales and truth-seeking disposition is responsible for the lower scores of hat critical thinking disposition. In the same line, Shin et al., (2006) reported that Korean students tended to score high in inquisitiveness, self-confidence, and analyticity, but demonstrated poor ability in truth-seeking. McCarthy (2001) found that Nursing students' mean scores were high in Analyticity and Inquisitiveness. And Ghada et al., (2007) found that Nursing students' mean scores were high in Analyticity and Inquisitiveness but low in truth seeking and open mindedness.

In contrast,   Ozturk et al., (2008) who a high score of truth-seeking sub-scale and open-mindedness for nursing students in the two nursing schools where different educational models were being implemented. Kong, Qin, Zhou, Mou, and Gao (2014) make the point that the success of an inquiry-based learning approach has much to do with the role of the facilitator across the full program. Facilitators who enable students' learning by performing multiple roles, creating mutually beneficial norms in the classroom, respecting students, providing them with opportunities to challenge others' ideas, promoting their participation, and empowering them to partner in their learning are much more likely to promote CT (Akyuz & Samsa, 2009; Choy & Cheah, 2009).

With the internationalization of higher education, tertiary institutions in many countries have now become extremely diverse. Despite this diversity and the implications for teaching and learning, there is insufficient understanding of how students from diverse backgrounds approach their learning, or how they may differ in their

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learning behavior Sabzevari et al., (2013). The present study revealed that deep approach had the highest mean and standard followed by surface approach and the lowest approach was achieving. In the same line Tickle, (2001) concluded that students who adopt deep learning strategies are motivated by mastery - oriented goals. Surface level learning adopted by students who are motivated by pass only aspirations and hence, develop minimum effort learning strategies, often dictated by rote learning, only what is necessary. Also Chan and Lai (2002) found that students who scored higher on learning goal orientation were more likely to cognitively engage in deep strategy. Moreover, students who scored higher on performance goal orientation were likely to engage in both surface and deep learning strategies. Moreover, Emilia , et al., (2012) found that the scores for the deep learning approach were higher than those for the surface or achieving approach.

In similarity, the study of Dasari, (2009) indicated that Hong Kong Chinese students demonstrated a higher mean for the deep approach learning and a lower mean for the surface approach, similar to other Hong Kong studies conducted in other tertiary institutions in Hong Kong and Australia. Robin et al., (2001) have found a higher order deep- achieving approaches to fit the data well, for both the longitudinal study of over five years duration as well as with the three other cohorts of British medical students. John & Beverley, (2007) found that the Chinese students were found to be significantly higher on deep motive and significantly lower on surface motive. Also, Sabzevari et al., (2013) reported that the results of their study showed that mean grade for deep learning approaches were a bit higher than surface learning approaches.

In contrast, Dev et al., (2016) reported that Medical students were found to have significantly higher score on deep approach and its subscales compared to dental and nursing students. In contrast to medical students, dental and nursing students had higher score on surface approach and its subscales. In Contrary more than one third of students adopted the surface approach compared to the deep approach learning. Students who were unsure of their approach or who use both styles were near quarter Kumar and Sethuraman, (2013).

Felder & Brent, (2005) mentioned that students can take different approaches to learning and studying: deep learning (understanding material); surface learning (memorizing details), strategic learning (motivated by assessments). Students' approaches to learning can vary according to students' perceptions of their learning environment. Students' learning approaches do not have fixed characteristics. A student, who takes a deep approach to one subject, or even part of a subject, may take a surface approach in relation to something else. The researchers chose learning approach as a variable because it strongly influences the quality of student's learning outcomes Robin et al. (2001). When a student abstracts meaning from what is already given, there is a deep approach to learning which can result in good learning outcomes. Surface approach leads to increase in knowledge through memorization of information and by following certain procedures. It generally leads to low retention and an inability to use information in new contexts Sabzevari et al., (2013). It has been emphasized in recent research that the use of a deep learning approach is associated with higher quality learning outcomes whereas a surface approach is associated with lower quality learning outcomes. Therefore instruction should encourage students to adopt a deep approach to learning (Emilia, et al., 2012).

The present study revealed that there was a statistically significant correlation among the three subscales of study process questionnaire (SPQ) and the seven subscales of California Critical Thinking Disposition Inventory (CCTDI). It showed that there was a positive correlation between Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students. The relationship between approaches to learning and critical thinking is not new. Deep and surface approaches are considered as the approaches adapted by the students to learn. The strategies used in deep and surface learning indicate ways in which students relate to the learning material while the outcome can critical thinking. Dunn & Musolino (2011) established the relationship between deep and surface approach to learning with reflective thinking. Reflective thinking in the study is the process of making critical judgment on events which is similar to critical thinking. However, a non-cognitive measure for critical thinking was used in her study.

The use of deep approach manifest high critical thinking skills that focuses on "what is signified", relates knowledge to new knowledge, relates and distinguishes evidence and arguments, organizes and structure content into coherent whole and emphasis is internal, from within the students while the use of surface approach shows low critical thinking that only focuses on "signs" (or on the learning as a signifier of something else), focuses on unrelated parts of the task, information for assessment is simple memorized, facts and concepts are associated unreflectively, principles are not distinguished from examples, task is treated as an external imposition and emphasis is external from the demands of assessment (Biggs, 1993).

Deep and surface approaches are considered as the approaches adapted by the students to learn. The strategies used in deep and surface learning indicate ways in which students relate to the learning material while the outcome can critical thinking. There is evidence that deep approach to learning facilitates better learning outcomes. The kind of challenge that students engage in learning allows them to demonstrate critical thinking. However, there is also large evidence of studies indicating surface which could not be adaptive in producing better learning outcomes Dunn & Musolino (2011). Also, Magno, (2013) reported that both deep and surface approach increases the variance explained for critical thinking as a latent construct. It was also found that both deep and

surface approach to learning increase the variability in explaining critical thinking. According to Walsh & Seldomridge, (2006) mentioned that students are not passive but active while they are realizing critical thinking. If students use critical thinking skills, they gain clear and bright views in depth, they are more interested in events, they approach in a more reasonable manner and they become fairer.

The present study revealed that, there was a positive correlation between Critical Thinking Disposition and demographic data of semester and nationality. In addition, there was a positive correlation between Approaches to Learning and demographic data of age, semester and nationality. Past studies suggest that Asian students rely on rote learning and a surface approach while Western studies such as those from Australia employ deep Learning strategies to learning (Magno, 2009). Zeegers, (2001) reported that student age was a major factor in approaches to learning but no gender effect was evident. In the study of John & Beverley (2007) found that, the Chinese students were found to be significantly higher on deep motive and significantly lower on surface motive than the Australian students (Hall et al., 2004) their results indicate that across the semester, accounting students exhibited a small but statistically significant increase in their deep learning approach, and a small but statistically significant reduction in their surface learning approach. Ismail et al., (2013) found that the Chinese students tend to use the surface learning approach compared to the Malay students who adopt more of the deep approach. There is a significant difference among students of the four categories year of study in their use of the deep learning approach

Shin et al., (2006) found that the critical thinking dispositions improved as the academic years progressed. Also Hala (2012) found that there is a statistically significant difference regard total critical thinking disposition among nursing student in different levels Ghada et al., (2007) found a statistical significant difference in the undergraduate nursing students of the four academic years in relation to critical thinking dispositions.

Conclusion

The present study explored the construct correlation of learning approaches and critical thinking. There was an evidence of positive correlation between learning approaches and critical thinking among Baccalaureate Nursing Students. Assessment for learning approaches and critical thinking are necessary in order for teachers to truly determine if these skills are present and how of them needs to be further developed. Having assessed the critical thinking of students allows teacher to determine the extent of instruction of deep approach needed when facilitating. The use of rote memorization, rehearsal, and reproduction does not result to decreased learning but in may also facilitate learning such as the case of promoting critical thinking. Previous studies explain that surface approach is produced because of excessive materials to be learned, high contact hours in learning, lack of choice, and anxiety provoking assessment which is very descriptive of the Baccalaureate Nursing Students. These characteristics in teaching and students' experience allow them to use surface approach in a functional way that results in critical thinking.

Recommendations

Based on the findings study, the following recommendations were detected:
1. Nurse educators must understand and integrate students' learning approaches into nursing curricula to promote critical thinking and satisfying learning experiences
2. Nurse educators must motivate their students to use critical thinking dispositions while solving problems and take decisions.
3. Additional researches are needed to identify students' learning approaches that promote the development of critical thinking skills.
4. It is essential for nursing education program to define the educational objectives that encourage faculty to cultivate students" critical thinking abilities and to develop curricula and teaching methods to fulfill such objectives and dealing with different students' learning approaches.
5. Adopt creative approaches to transform students into interactive participants and open their minds and broaden and stimulate higher-level thinking and problem-solving abilities.

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