

Full Length Research Paper

The promotion of critical thinking in baccalaureate nursing English programs

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This study investigates whether or not the incorporation of critical thinking skills into English communication classes could generate positive effects in the learning outcomes of baccalaureate nursing students. An experimental design for experimental group and control group was used in this study. 59 nursing students were randomly selected and distributed into an experimental group (29 students) and a control group (30 students), who were freshmen at Chung Shan Medical University in Taichung, Taiwan. To collect data and verify the feasibility of applying the critical thinking model to nursing English programs, a critical thinking skill pre-test and post-test, a student satisfaction questionnaire, and individual / focus group interviews were conducted in the study. Research results indicated that students participating in an English communication class incorporating critical thinking skills attained significantly better critical thinking skills than other students. In addition, these students were more satisfied with their class. The findings demonstrate that when used effectively, the critical thinking model can facilitate a systematic critical thinking process, empower student reflections, lead to a self-directed learning process, and create an analytic dialogue between teachers and students in clinical nursing situations.

Key words: Banking education, nursing education, critical thinking.

INTRODUCTION

Critical thinking is an important component of nursing education and practice (Adams et al., 1996; Paul, 1993). Every day, nurses encounter crucial situations in which they must make important decisions. Hence, they need to practice critical thinking, a higher-order thinking skill, to transcend simple problem solving and involve reasoned judgment and evaluation (Alfaro-LeFevre, 1999; Beyer, 1995; Paul, 1992). The American Association of Colleges of Nursing (1998) and the National League for Nursing Accrediting Commission (2002) have identified critical thinking as an essential component of baccalaureate nursing programs. Miller and Malcolm (1990) think it is imperative to develop critical thinking knowledge as the base of the nursing discipline.

Traditional didactic instruction tends to create an unequal relationship between teacher and student, undermining any attempt to generate an atmosphere of inquiry and genuine dialogue. In light of this, many recent studies have begun to question the problems caused by didactic instruction. These studies show that didactic instruction can be harmful to students' learning process, as it encourages students to stop thinking critically and being engaged in class activities. Didactic instruction purposefully socializes students into a certain set of values or ideology. In this set of values, students are trained to seek for correct answers and interpretations (Apol, 1998; Shannon, 1995). While being trained to become receptacles for whatever knowledge the teachers pour out, students are unlikely to become critical and reflective thinkers (Scheffler, 1973).

Research has shown that nursing students should not be subjected to didactic instruction, which belongs to the lowest level of learning. Instead of sinking into the

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“banking” model of education, in which students can only listen, comply, and be disciplined (Freire, 1970), nursing students should be encouraged to document, summarize, analyze, synthesize, and evaluate critical situations in their clinical settings (Bandman and Bandman, 1995; Bell et al., 2002; Brookfield, 1987; Brown and Sorrell, 1993; Higuchi and Donald, 2002; Meyer, 1986; Paul, 1993).

Based on the aforementioned studies, this paper promotes critical thinking skills in an English communication class environment; this study proposes a dialogical English communication class that promotes students' critical thinking skills instead of traditional didactic instruction. In a critical thinking communication class, students can freely express their own ideas, demonstrate the interrelationships among their ideas, and generate a higher level of critical thinking using their own methods (Criswell and Criswell, 2004; Ennis, 1984, 1985; Walstad and Becker, 1994). In other words, by applying critical thinking skills, students can develop their potential to organize, synthesize, and express their originality and their reflections upon a given topic.

This study investigates whether or not the incorporation of critical thinking skills into English communication classes can generate positive learning effects in the learning process of baccalaureate nursing students. Because many baccalaureate nursing students in Taiwan are shy and passive in an English class environment, this paper presents empirical results on a critical thinking English class and proposes an alternative way for teachers to facilitate class instruction and give voices to their students.

To achieve these goals, this study tests the following hypotheses:

- H₁: Baccalaureate nursing students participating in a critical thinking English program will have better critical thinking ability than those not participating in the program.
 H₂: Baccalaureate nursing students participating in a critical thinking English program will attain a greater level of satisfaction than those not participating in the program.

LITERATURE REVIEW

Although nurse educators have diverse views on the definition of critical thinking, they all believe that critical thinking is an important requisite in nursing education (Adams et al., 1996; Bandman and Bandman, 1995; Brookfield, 1987; Paul, 1993; Videbeck, 1997). Critical thinking is a mode of thinking about any subject, content, or problem. It is an ability which students can use to improve their thinking quality by skillfully managing their thought structures and the surrounding intellectual stimuli (Paul and Elder, 2001). Scriven and Paul (2003) defined critical thinking as an intellectually disciplined process in which students continuously, actively, and skillfully conceptualize, apply, synthesize, and evaluate information

generated by observation, experience, reflection, reasoning, and communication. Critical thinking does not require that students answer all the questions raised in the class. Instead, critical thinking involves developing sound judgment for problem-solving, decision-making, and higher-order thinking (Case, 2002; Taylor and Patterson, 2000). Facione and Facone (1996) stated that, the critical thinking process is a nonlinear, recursive process. In this process, students must learn not only what to think, but also how to think.

Critical thinking is the cognitive process of developing reasonable, logical, and reflective judgment about what to believe or what to do (Faclone, 2000). Halpern (1996) defined critical thinking as the application of cognitive skills or strategies to increase positive outcomes. Through purposeful, reasoning, and goal-directed thinking, students can solve problems, formulate inferences, calculate likelihood, and make decisions. According to the American Philosophical Association's (APA's) Delphi Report (1990), critical thinking has six core elements: interpretation, analysis, evaluation, inference, explanation, and self-regulation. In this application of these elements, students should know how to comprehend and express meaning or significance. They should know how to identify the implicit and explicit relationship and to give logical assessment. Moreover, after interpretation, analysis, and evaluation, they should know how to monitor their cognitive process, draw reasonable and logical conclusions, and illustrate the results. Based on the APA's definition, critical thinking is a purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation and inference as well as explanation of the evidential conceptual, methodological, criteriological or contextual considerations upon which that judgment was based (APA, 1990).

An ideal critical thinker should also be inquisitive, well-informed, reasoning, open-minded. Critical thinkers should also be honest in facing their biases, and careful in making judgments. Under the direction of Scheffer and Rubinfeld (2000), a panel of nursing experts reached a consensus of the meaning of critical thinking after five rounds of questions and data analysis. They defined critical thinking as a prerequisite component of professional nursing care, and stated that critical thinkers in nursing should exhibit the following mental habits: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Critical thinkers in nursing practice the cognitive skills of analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting and transforming knowledge (p. 7).

Anderson et al. (2001) developed a critical thinking model that includes knowledge, comprehension, inference, application, analysis, synthesis, and evaluation. In the knowledge phase, students must learn how to experience, observe, intuit, and research. In the comprehension phase, students must learn how to internalize,

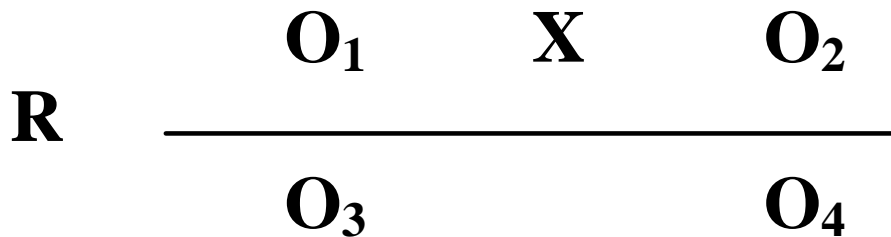


Figure 1. The experimental design.

recall, and connect with other information. In the inference phase, students must learn how to make conjectures about something about which they do not have adequate data. In the application phase, students must learn how to put what they know to use. In the analysis phase, they must recognize parts and subparts, and put these parts together. Students must also know how to detect needed procedures and possible consequences, and finally, render judgment based on their knowledge and experience.

The most frequently used definition of critical thinking in nursing education is that proposed by Watson and Glaser (1964, 1980). They defined critical thinking as a combination of attitudes, knowledge, and skills. In the critical thinking process, an attitude of inquiry refers to an environment in which nursing students must develop their ability to identify existing problems and to inquire about the acceptance of evidence in support of what is asserted to be true. Through this inquiry, nursing students engage in a reflexive critical thinking process, analytically thinking about what has been thoughtfully created. Knowledge of this nature refers to valid inferences, abstractions, and generalizations in which nursing students logically determine the weight and accuracy of a variety of evidences. Nursing students, using their nursing knowledge and an attitude of inquiry, can use critical thinking to develop creative solutions for real clinical problems (Cox, 1998). Hence, critical thinking is becoming a skill frequently employed in nursing practice and applied to the above attitudes and knowledge to provide safe and professional care.

In summary, critical thinking in nursing education is deliberate logical reasoning, and a combination of linear and nonlinear thinking. Nursing students who have the disposition to think critically must be inquisitive, truth-seeking, open-minded, analytical, cognitively mature, systematic, and self-confident (APA, 1990; Ferrett, 1997). They must know how to analyze, synthesize, and evaluate relationships between component parts of the nursing process to reach self-regulated judgments. They must also know how to ask appropriate questions, address arguments, and seek for evidence to support their thoughts and beliefs. In addition, they must know how to reject information that is incorrect, illogical, or irrelevant to make professional clinical decisions.

MATERIALS AND METHODS

Sample and experimental design

To explore the effects of promoting critical thinking skills on baccalaureate nursing students in an English communication class, 59 nursing students were randomly selected and distributed into an experimental group (29 students) and a control group (30 students). These fifty-nine students were freshmen at Chung Shan Medical University in Taichung, Taiwan. This study took place during the Fall 2006 semester, and the experimental period was two hours a week for sixteen weeks. All participants had to take a critical thinking skill pre-test and post-test before and after the experiment, respectively. Figure 1 shows the experimental design of the study.

In Figure 1, R represents the random assignment and random distribution of the groups and X represents the incorporation of critical thinking skills into the English communication class. O₁ represents the initial level of critical thinking skills for the experimental group, and O₃ represents the initial level of critical thinking skills for the control group. O₂ represents the results of the critical thinking skills test and student satisfaction questionnaire for the experimental group, and O₄ represents the results of the critical thinking skills test and student satisfaction questionnaire for the control group.

Both the control group and the experimental group received the same teaching materials, which were taken mainly from Hot Topics (Pavlik, 2006), published by Thomson Heinle. The only difference between the experimental group and control group was the introduction of a critical thinking model. For the first two weeks, the teacher spent time focusing on helping the experimental group students become familiar with the critical thinking skills. Figure 2 illustrates the experimental framework of the critical thinking model.

The critical thinking model for the experimental group was adapted from Bloom's Taxonomy (Bloom, 1956), which categorizes learning objectives and outcomes into six stages.

Stage 1: Knowledge

In the Knowledge stage, students must learn how to remember previously learned information, including the recall of a wide range of material, from specific facts to complete theories. This stage represents the lowest level of learning in the critical thinking communication domain. Case Example: Abortion: Pro-life or Pro-choice: for example, List the stages of pregnancy. Describe (identify) the reasons for pro-life and the reasons for pro-choice abortion. Define pro-life and pro-choice. What is RU486?

Stage 2: Comprehension

The learning outcomes in this stage go one step beyond simply remembering. In the comprehension stage, students must develop

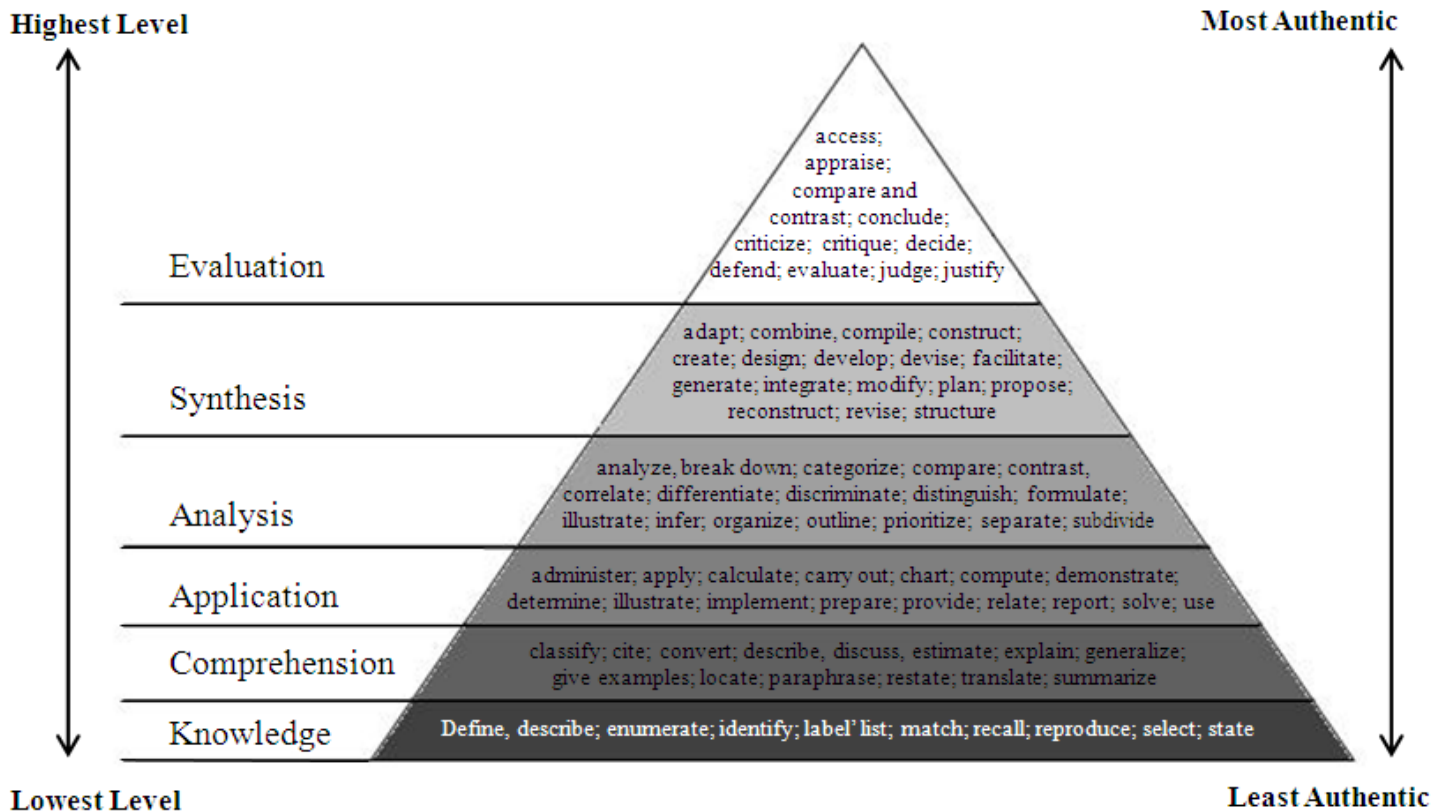


Figure 2. The experimental framework of critical thinking model.

the ability to grasp the meaning of the material, including translating material from one form to another, using explaining or summarizing techniques to interpret the material, giving examples, and using predictable consequences or effects to estimate future trends. This stage represents the lowest level of understanding. Example, In what situations women may consider having an abortion? Use your own words to summarize the article. What is the purpose of the article? What is the author's personal feeling about abortion?

Stage 3: Application

After the comprehension stage, students step into the application stage, in which they must develop the ability to use learned material in new and concrete situations to solve clinical problems, including using rules, charts, methods, concepts, laws, and even theories. Compared to the comprehension stage, this stage represents a higher level of understanding. For example, what actions should a woman take if she is raped and pregnant? When there is evidence that the unborn baby may be physically or mentally impaired, what actions should the mother take? If you are pregnant and you don't want to have the baby, what are you going to do? If you are a pharmacist who personally opposes birth control for religious reasons, should you refuse to sell birth control pills to women who have a prescription for them, or should you not refuse to sell birth control pills? Why or why not?

Stage 4: Analysis

The analysis stage goes beyond the comprehension and

application stages, as it requires an understanding of both the content and structure. In the analysis stage, students must develop the ability to understand the content and structure of the material. They must know how to break down material into its component parts to better understand its organizational structure, including identifying the component parts, analyzing the relationship between parts, and recognizing organizational principles in the material. In this stage, students must also learn how to examine information and make inferences about the material. The analysis stage represents a higher level of thinking. For example, discuss the cause and effect of pro-life and pro-choice. Compare and contrast pro-life and pro-choice. Do you think abortion should generally be legal or generally be illegal during each of the following stages of pregnancy, (1) the first three months of pregnancy, (2) the second three months of pregnancy, and (3) the last three months of pregnancy?

Stage 5: Synthesis

Learning outcomes in this stage place great emphasis on creative behaviors, such as creatively applying or integrating existing knowledge. In the synthesis stage, students must develop the ability to put parts together to form a new whole. They must know how to formulate new patterns or structures from existing knowledge and skills, including the production of a unique communication method, research proposal, or scheme. For example, can you propose a way to solve the problem of a woman being mentally sick who does not want to have an abortion? Try to create a mind map to illustrate pro-life and pro-choice issues. Try to construct the relationships among pro-life, anti-abortion, pro-choice, and pro-abortion.

Stage 6: Evaluation

In this stage, students must develop the ability to make judgments about the value of information and ideas for a given purpose based on specific criteria. Learning outcomes in the stage belong to the highest learning outcomes in the hierarchy, as this stage covers not only the elements of all the other categories, but also involves conscious judgments about the value of information. For example, are you for or against pro-life/pro-choice? Why? Do you think abortion should be legal in all cases, legal in most cases, illegal in most cases, or illegal in all cases? Regardless of whether or not you think abortion should be legal, do you personally believe that having an abortion is morally wrong in nearly all circumstances, morally wrong in some circumstances, or is it not a moral issue?

Instrument, validity, and reliability

Based on the six stages above, this study used the following methods to collect data and verify the feasibility of applying the critical thinking model to nursing English programs: critical thinking skills test, student satisfaction questionnaire, and individual / focus group interviews. Prior to the experiment, the critical thinking skills test was administered to both the experimental group and the control group to determine students' initial critical thinking skills and knowledge background. After sixteen weeks of instructions, the critical thinking skills post-test and post-experimental student satisfaction questionnaire were administered to both the experimental group and the control group. The student satisfaction questionnaire was used to elicit students' responses to the course. In addition, a series of interviews was conducted during the study, allowing students to voice their opinions on the critical thinking communication class.

Critical thinking skills test

Critical thinking skills pre- and post-tests were used to measure the students' critical skills in an essay format. An essay test is a kind of reasoning and reflective critical thinking exercise focused on deciding what to believe or what to do. It allows students to freely express their own ideas, demonstrate the interrelationships among their ideas, and generate a higher level of critical thinking using their own methods (Criswell and Criswell, 2004; Ennis, 1984)). The major advantage of an essay-format test lies in the freedom that it gives students to express themselves and show their capacity to organize, synthesize, and express knowledge (Tuckman, 1991). This type of test not only focuses on the evaluative aspects of critical thinking, but also develops students' potential to make appropriate judgments, formulate responses, and defend logically. Before taking the critical thinking skills pre- and post-test, students were informed that there were no right or wrong answers since students could have their unique opinions. That is, the pre- and post-test invited students to explore relevant issues and voice their own opinions as much as they desired.

The critical thinking skills test and the evaluation criterion for the test were initially reviewed by three experienced English teachers. After the test, two graders were involved in the grading of the essay papers. Both graders scored the essay papers independently on the basis of the evaluation criterion for the test. The Pearson product-moment correlation between the first and second grader indicated that based on interrater comparisons, the reliability estimates were 0.83, 0.77, 0.86, 0.79, 0.74, and 0.84 for the knowledge, comprehension, application, analysis, synthesis, and evaluation sections. All the p-values were less than 0.01, indicating that the resulting correlation coefficient reflects overall agreement between the two graders.

Student satisfactory questionnaire

The student satisfaction questionnaire was administered to both the experimental group and the control group after the coursework was completed to assess student satisfaction with class instruction. The results of the student satisfaction questionnaire were used as feedback for improving the quality of class instruction. When students' needs for and attitudes toward class instruction are addressed, they experience a more positive attitude and greater satisfaction in learning of the subjects (Schmidt et al., 1987; Terpening et al., 1982). The student satisfaction questionnaire consisted of 34 multiple-choice questions rated on 5-point Likert scale varying from strongly disagree to strongly agree. The questionnaire was first reviewed by three experienced teachers. Based on this expert feedback, slight modifications were made to make the questions clearer. Cronbach's Alpha was also used to test the internal consistency and reliability of each category in the questionnaire. Generally speaking, a minimally acceptable level of reliability is 0.7, though 0.8 or greater is preferable (Hair et al., 2003). In other words, a result closer to 0.8 indicates a more internally reliable scale. After the pilot study was tested on 85 students, the reliability coefficients for the categories in the student satisfaction questionnaire were 0.73, 0.80, 0.89, 0.84, 0.86, and 0.94, respectively, for the instructional objective, instructional material/method, teacher's qualities, class climate/environment, assessment, and overall sections.

Individual and focus group interviews

Individual and focus group interviews were conducted during and after the class to gather rich and pertinent information about the critical thinking communication class. Student interviews were also conducted to triangulate the quantitative results of the critical thinking skills test and student satisfaction questionnaire. Pseudonyms were used in these open-ended and semi-structured interviews to protect the students' privacy and encourage honest feedback.

All the interviews were tape-recorded and conducted in Mandarin Chinese. The qualitative results of the interviews were transcribed, analyzed, and synthesized to understand the students' opinions about and reflections upon the critical thinking communication class. Moreover, to generate convincing interpretations, the researcher consulted a bilingual teacher to examine the translated interview data.

Data analysis

The collected data were analyzed quantitatively and qualitatively. The statistical package used to analyze the quantitative data was SPSS (Statistical Packages for the Social Science). The independent sample t-test was used to determine if there were any statistically significant differences in the means between students in the traditional didactic English communication class and students in the critical thinking English communication classroom. This study also involved qualitative data analysis to build a holistic and complex understanding of student reactions and class interactions.

RESULTS

This study explores the effect of incorporating critical thinking skills into an English communication class for baccalaureate nursing students. Results indicate that incorporation critical thinking skills into this class had a

positive effect on nursing students' critical thinking skills and student satisfaction. The following section describes the results of hypothesis testing.

Hypothesis testing

H₁: Baccalaureate nursing students participating in a critical thinking English program will have better critical thinking ability than those not participating in the program.

To test Hypothesis 1, the results of both the control group and experimental group pre-tests were examined by t-tests and compared. As previously stated, for the knowledge, comprehension, application, analysis, synthesis, and evaluation sections of the pre-test, there were no statistically significant differences between the mean scores of the experimental group (Means = 5.28, 5.42, 4.71, 3.56, 3.26 and 1.62, respectively; SD = 0.46, 0.59, 0.56, 0.40, 0.47 and 0.51, respectively) and the mean scores of the control group (Means = 5.27, 5.38, 4.78, 3.53, 3.32, and 1.48, respectively; SD = 0.45, 0.46, 0.58, 0.69, 0.61, and 0.52; $P > 0.05$). In other words, before the class, these two groups possessed the same critical thinking skills. However, after the instruction period, there were significant differences between the two groups in the critical thinking skills post-test. In the knowledge, comprehension, application, analysis, synthesis, and evaluation sections of the post-test, the mean scores of the experimental group (Means = 9.79, 8.21, 6.53, 5.16, 5.07, and 4.86, respectively; SD = 0.56, 0.60, 0.40, 0.38, 0.46, and 0.42, respectively) were much significantly higher than the mean scores of the control group (Means = 6.90, 6.12, 5.02, 4.02, 3.98, and 3.20, respectively; SD = 0.41, 0.53, 0.58, 0.61, 0.55, and 0.45, respectively; $P < 0.01$). Hence, it can be concluded that after incorporating critical thinking skills into the English communication class, the experimental group outperformed the control group in the critical thinking skills test. Figure 3 compares the rate of improvement between the pre-test and post-test for the experimental group and the control group.

H₂: Baccalaureate nursing students participating in a critical thinking English program will attain a greater level of satisfaction than those not participating in the program.

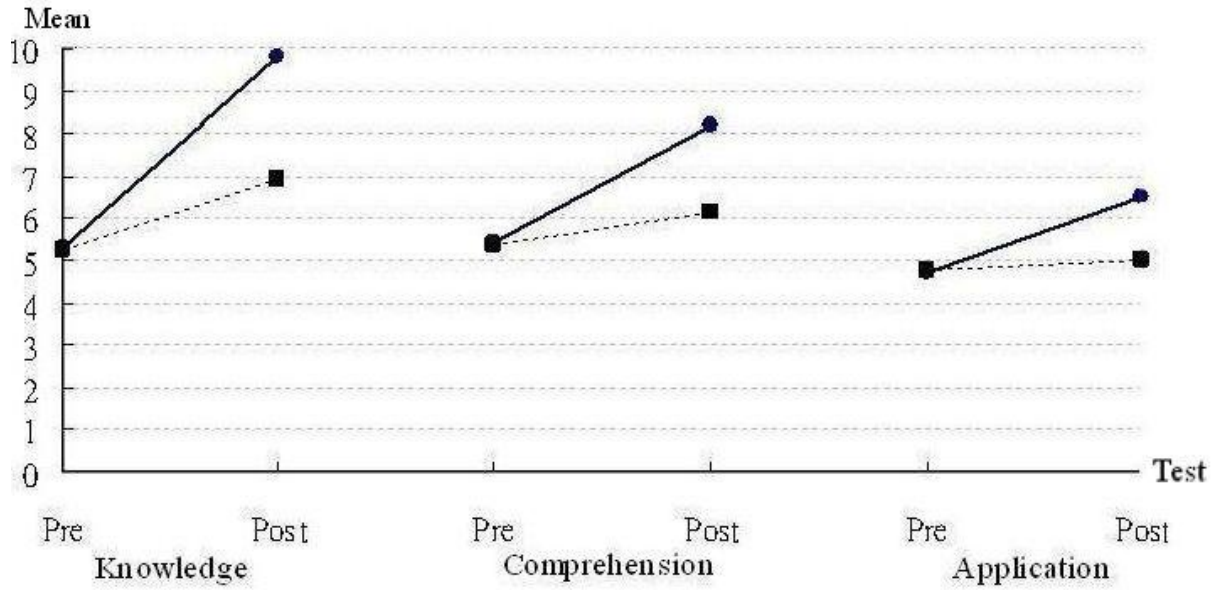
To test Hypothesis 2, a post-experimental questionnaire employing 5-point Likert scale was given to both the experimental group and the control group. For the categories of instructional objective, teacher' qualities, and class climate/environment, the mean scores of the experimental group (Means = 11.55, 21.45, and 32.00 respectively; SD = 1.68, 2.37, and 4.67, respectively) were much significantly higher than the mean scores of the control group (Means = 10.34, 18.60, and 28.17 respectively; SD = 1.62, 3.10, and 4.52, respectively; $P < 0.01$). In the instructional material/method, the mean

score of the experimental group (Mean = 56.41; SD = 6.04) was significantly higher than the mean score of the control group (Mean = 52.81; SD = 5.75; $P < 0.05$). However, in the assessment section, there was no significant difference between the mean score of the experimental group (Mean = 15.48; SD = 2.77) and that of the control group (Mean: 14.07; SD = 2.77; $P > 0.05$). In overall student satisfaction, the mean score of the experimental group (Mean = 136.89; SD = 14.08) was much significantly higher than that of the control group (Mean = 120.75; SD = 14.48; $P < 0.01$).

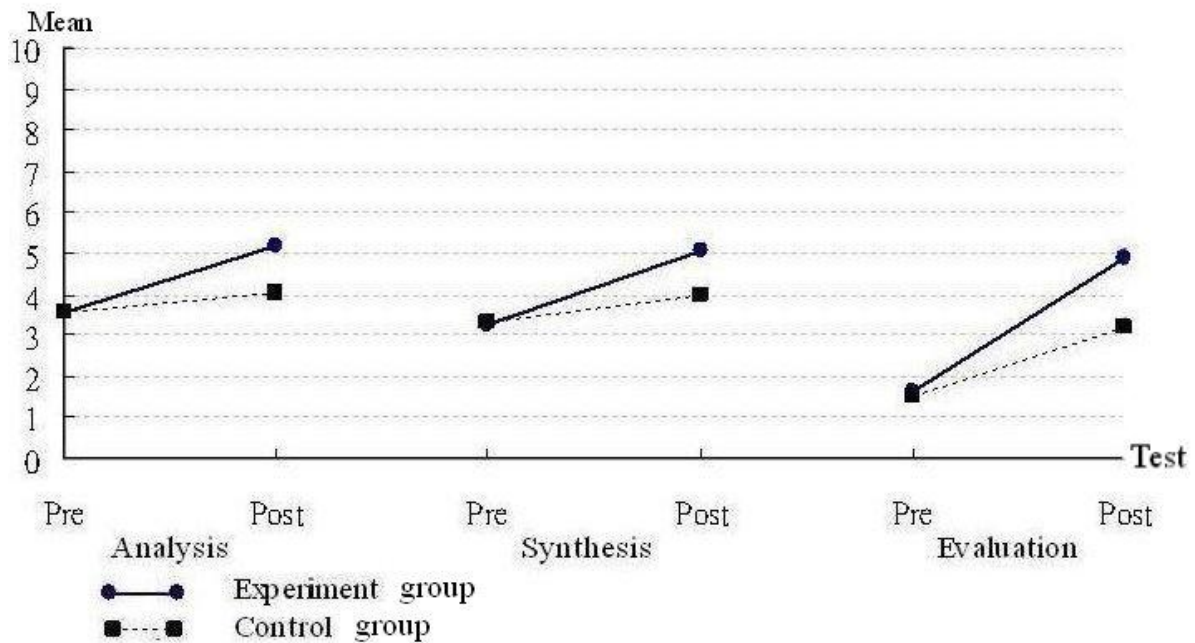
Results of the Interviews

The results of the student interviews also demonstrate that the students in the experimental group enjoyed staying in the critical thinking English communication classroom. In addition, the students found that the critical thinking class enabled them to interact with others in new ways. It also had some positive effects on their career development. Some interview excerpts are presented as follows:

1. Before, we were used to sitting straight, listening to teachers' lectures. Now, we have a chance to not only express our opinions, but also to listen to different voices. The class becomes more interesting, though sometimes it's very challenging.
2. It's fun to hear different voices against each other. Through these dissonant voices, we can see things in the real world.
3. It's nice to have a chance to listen to different voices and see things from different perspectives. I believe that after attending this class, I can see things more objectively.
4. The critical thinking model stimulates us to think about the topic from different standpoints.
5. This class helps us apply prior knowledge to new and concrete situations to solve real problems, which helps us make reasonable judgment afterwards.
6. It's nice to have a chance to hear other ideas and interact with different people. This class helps us acquire skills to decompose the material and put all the individuals parts together. As a result, we can understand the problem more thoroughly.
7. It offers us a chance to appreciate differences in opinions and use different approaches to problems, stimulating a higher order of thinking.
8. We are more responsible about studying. To persuade others, we often go to the Internet to survey the relative articles.
9. This critical thinking communication class gives me some confidence to solve crucial problems. It will help my nursing career afterwards, when I have to make clinical decisions.
10. My thinking flow has become deeper. I imagine



a



b

Figure 3. The rate of improvement slope for the experimental group and the control group.

myself being exposed in different situations and try to solve problems in different situations after thorough consideration.

Based on the interview responses above, the t-test results of the critical thinking skills post-test, and the student satisfaction questionnaire, the critical thinking

model created positive learning outcomes for students.

DISCUSSION

This study investigates whether or not incorporating critical thinking skills into an English communication class

can generate positive effects on the learning outcomes of baccalaureate nursing students. Results indicate that students participating in an English communication class incorporating critical thinking skills attained significantly better critical thinking skills than other students in terms of knowledge, comprehension, application, analysis, synthesis, and evaluation. In addition, these students were more satisfied with their class in terms of the instructional objective, instructional material/method, teacher's qualities, class climate/environment, and overall satisfaction.

The complex health care environment, which involves advances in health promotion and disease prevention, requires that nurses develop critical thinking skills to adapt to rapidly changing clinical situations, make competent decisions, and acquire new professional knowledge (Jacobs et al., 1997). Hence, nurses must repeatedly synthesize relevant information, examine assumptions, identify patterns, and predict outcomes to generate logical reasons and actions in clinical practice with increasing independence (Jacob et al., 1997; Scheffer and Rubenfeld, 2000; Sedlak, 1997). At the beginning of the experiment, the instructor helped the students to become familiar with the critical thinking model, namely, the stages of knowledge, comprehension, application, analysis, synthesis, and evaluation. This allowed students to go beyond simply remembering to develop the skills to use rules, charts, concepts, or theories to solve clinical problems. In addition, when approaching clinical problems, they could identify the component parts, analyze interrelationships among these parts, and later put the parts together to form a new pattern or structure based on existing knowledge and skills. Moreover, by decomposing and recomposing these component parts, the students could make conscious judgments about clinical situations. It is no wonder that after learning the critical thinking model, nursing students were better able to apply the learned material to new and concrete situations and achieve a higher level of understanding in real problems. This, in turn, allowed the students to attain better critical thinking skills and satisfaction.

This study demonstrates that students participating in the critical thinking English program exhibited better critical thinking abilities and satisfaction than those not participating in the program. In traditional class instruction, teachers are accustomed to using didactic instruction in their teaching process because it is a useful and efficient way to transmit information to students. In this kind of instruction, the class is teacher-centered (Jensen, 2000). Students are required to sit in rows and submit to the teacher, the authority, who determines the use of class time. Without much interaction, students passively receive what the teacher lectures and copy down what they hear in class. In this kind of class instruction, ideas, inferences, assumptions, principles, arguments, actions, and conclusions are not purposefully and rationally examined. Nonetheless, a critical thinking

communication class emphasizes a purposeful and outcome-directed thinking process (Alfaro-LeFevre, 1999). In the thinking process, all focus, language, reference, attitudes, inferences, arguments, and conclusions are taken into consideration, for they matter in deciding what to believe or what to do (Miller and Babcock, 1996). Consequently, after learning the systematic critical thinking model, nursing students can reason, make decisions, and solve problems in controversial clinical situations. Without doubt, these students attained a greater level of satisfaction from their class than students in other classes.

CONCLUSION AND PEDAGOGICAL IMPLICATIONS

This study uses a critical thinking model to help nursing students develop critical thinking skills. The research results above demonstrate that baccalaureate nursing students can benefit from a critical thinking English communication class in terms of critical thinking skills and student satisfaction. When used effectively, the critical thinking model can facilitate a systematic critical thinking process, empower student reflections, lead to a self-directed learning process, and create an analytic dialogue between teachers and students in clinical nursing situations (Sedlack, 1997). To avoid reproducing their professional authority, teachers in a critical thinking communication class should always bear in mind that they should not dominate or control the class, but instead relinquish their power to students and allow them to voice their opinions.

In addition, at the beginning of each course, teachers should remind themselves to spend more time helping students become familiar with critical thinking skills and help them apply these skills to the learning process. However, both teachers and students must be open and willing to listen reflectively to and accept alternative views. Teacher should give up the belief that there is only "one right answer;" instead, they should encourage students to propose hypotheses and possible solutions through critical thinking. After all, a critical thinking communication class should create a comfortable English learning environment in which students are inclined to participate in class.

Future study may adopt three groups or more than three groups in the experimental study and use either Chi Square distribution or analysis of variance (ANOVA) to test the feasibility of the model.

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