The Effectiveness of Creative Teaching Strategies in the Teaching Protocol of Nursing Concepts to RN-BSN Students’ Creative Thinking
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Background

Because of the growing complexity of health care system, creative thinking is essential for delivering and maintaining high quality of nursing care (Biester, Duggan, Perkins, Powers, & Classick, 1999; Gilmartin, 1999). The professional nurses must have the ability of creativity to overcome the uncertain health problems of the patients. Professional nurses also should design problem-solving strategies deliberately by utilizing creativity in clinical situations (Forrest, 1999; Wood, 1996). However, many nurses routine work in clinical practice has been changeless so that have wrapped up the original creativity.

Nursing education plays on crucial role to cultivate the creativity of nurses. It is imperative to build knowledge and creativity in the process of educating nursing students as the scholars (Elberson, & Williams, 1996). Curriculum design in the level of bachelor nursing education should develop the scholarly abilities, such as creativity, reflection, critical thinking, critical analysis, and openness to new thinking for students (Ribbons, & Vance, 2001). Although Taiwan has developed the Republic of Creativity (R.O.C.) 2002 as the foundation for the future education of creativity (Department of Education, 2002), it has not been encouraged by nursing faculty. The purpose of this study is to evaluate the implementation of a teaching protocol of
nursing concepts by utilizing creative teaching strategies to promote creativity in RN-BSN students.

Literature Review

The literature in creative thinking is originally started from the field of education. Guilford (1950s) proposed the first theory of the Structure of Intellect (SI model) for the creativity. Following Guilford, Parnes (1960s), Williams (1970s) and Torrance(1980s), are all devoted into the study of creativity. In Taiwan, Chen during 1990s developed the ATDE (asking, thinking, doing, evaluation) model for the creative teaching. Other researchers such as Wu (1980s), Chang (1999), Mao, Kuo, Chen, and Lin (2000) are also involved into the area of creative studies. However, only some teaching strategies of creativity in nursing literature were introduced. A review of literature on creative thinking is divided into two sections as follows:

一、 General Education

Guilford, a psychologist, first developed the theory of the Structure of Intellect (SI model) during 1950s. Guilford explained that the SI Model is the process of integrating with 4 contents (figure, symbol, verbalism, behavior), five operations (cognition, memory, divergent thinking, convergent thinking, evaluation), and six products (unit, category, relation, system, transformation, application). Only divergent thinking and transformation are related to the creativity. Divergent thinking is to think
broadly from different perspectives that can derive various problem-solving methods. Transformation is to reform the original data into the new definition.

Parnes, a behaviorist, during 1960s proposed the factors influencing the creativity of students. Teachers must help students to remove some internal factors inhibiting their developing creativity such as habit behaviors, dependent behaviors, insecurity, and impulse. Also teachers should reinforce students’ actions of creativity such as improving students’ knowledge background, imagination, critiquing slowly, and inspire students’ attitudes of exploration. Yang and Chen (1993) also addressed the factors disturbing the developing of creativity from students. For instance, students are used to have the standard answers and afraid of having different responses from teachers. Teachers should prepare a safe, acceptable, and some rules of environments to enforce the creativity of students.

Williams during 1970s designed a creative plan and proposed the creativity consisting of cognitive and affective behaviors. Williams developed 18 teaching strategies to cultivate the cognitive behaviors of students’ creativity such as fluency, flexibility, and originality and affective behaviors such as curiosity, imagination, and take adventures. During 1980s, Torrance also provided 16 principles of creative teaching to train students to aware the problem and design the solving strategies. Torrance emphasized the needs of improvement for the content and method of
teaching to promote the motivation of students to be creative.

Based on the Guilford’s SI model, Chen during 1990s developed an ATDE (asking, thinking, doing, evaluation) model to cultivate the divergent thinking of students. For asking, ten methods of asking questions using “If”, “List”, “Besides”, “Compare”, “Similar”, “Replace”, “Imagine”, “Possible”, “Constitute”, “6W” can inspire students to think divergently. For thinking, teachers must allow students to think at least three seconds for answers. For doing, teachers can choose a guider to direct group discussion consisting of 5-10 students through brainstorming. For evaluation, teachers should encourage students to do self-evaluation by following two principles, “critique slowly” and “accept more”.

Regarding the definitions of creativity, Guilford has defined creative thinking as fluency, flexibility, originality, sensitivity, and elaboration (Guilford, 1956). In 1970, Williams addressed that creativity should include fluency, flexibility, originality, and elaboration. Demetrulias and Shaw (1985) later work supported inclusion fluency, flexibility, associative thinking, and originality in creativity. Then Dowd (1995) proposed that creativity should consist of fluency, flexibility, and originality. Finally, Chen (1998) and Chang’s (1999) definition of creativity was fluency, flexibility, originality, and elaboration.

Overall, fluency, flexibility, and originality are the most frequently recognized as
the components of creativity. Because Torrance’s (1974) Tests of Creative Thinking (TTCT) are the most popular instrument used to test the creativity in the field of education, Wu (1985) has applied the Torrance’s definition of creativity into the research of general education. According to Torrance (1974), fluency is the total number of responses students report, flexibility is the number of different categories of responses students report. Originality is defined as the numbers of responses that occurred with a frequency of 5% or more among the total responses in the data set were scored 0 for originality; those with a frequency of 2% to 4.99% were scored 1, and those with a frequency less than 2% were scored 2.

二、Nursing Education

Recent nursing literature has continuously emphasized the innovation and creativity because nurses must have creativity, flexibility, independence, critical thinking, and collaboration to meet the demands in the healthcare (Lewis, Brand, Duckett, & Fairbanks, 1997; Potgieter, 1999). Also, it is imperative to build knowledge and creativity in the process of educating nursing students as the scholars (Elberson, & Williams, 1996). The University education is to develop the scholarly abilities of nursing students such as creativity, reflection, critical thinking, critical analysis, and openness to new thinking (Ribbons, & Vance, 2001). Creativity in the nursing literature can be divided into two categories: clinical and educational sections.
In the clinical practice, a study by Berg and Hallberg (1999), twenty-two nurses in a general psychiatric ward were tested before, during, and after one year of systematic clinical supervision. Results identified that systematic supervision of clinical nursing care can improve the creativity of nurses and the organizational climate (Berg, & Hallberg, 1999). Titchen and Binnie (1995) suggested three supervision strategies such as using a clinical story to demonstrate each demand from the supervisor and the offers from the nurses that can nurture the creativity of nursing staffs.

Except for the systematic supervision, Webster (1998) introduced an innovative process to teach adult nursing staff and spur their creativity, team working, and individual accountability. The use of creative teaching strategies in nursing staff development can inspire enthusiasm for learning (Geyer, & Korte, 1990). Anderson (1998) also suggested that matching the teaching style of nursing preceptors with the learning style of new nursing staffs with the orientation creatively can maximize their job satisfaction. The factors for job satisfaction has been ranked by the directors of nursing staff as the intrinsic variables such as creativity, moral values, social service, ability utilization and responsibility (Rehtz, 1995).

Besides, Robbins (1997) suggested nurses to use Nursing Interventions Classification (NIC) into a nursing care plan of tertiary acute care facility by utilizing
the creative teaching strategies. Through NIC with using creative teaching strategies, the clients with multiple sclerosis (MS) can use open communication and creativity to deal with the problems of fatigue, impotence, decreased vaginal lubrication, dysfunction of bladder and bowel (Weiss, 1992).

For clinical teaching, the central essential elements of nursing students’ expectations of faculty guidance activities in the clinical laboratory are critical thinking, professional judgement, application of knowledge, and fostering creativity (Heims, 1991). Gross, Aysse, and Tracey (1993) designed a creative education model for the first-semester students’ clinical practicum. Students are paired in a one to one relationship with a staff nurse who will be served as a role model. Responses to this model from students’, nursing staffs’ and faculty’s perspectives indicate that the paired model has worked in improving creativity of beginning nursing students in a clinical setting.

Anthony (1998) utilized an artistic expression model by teaching *Haiku* (an ancient Japanese poetry) to encourage the nursing beginning students to verbalize their perceptions in relation to the clients through writing an ancient Japanese unrhymed form of poetry. Through the poems, the nursing beginning students can create the different kind of writings to identify their major concerns about their clients. Mueller, Johnston and Bligh (2001) also introduced a mind mapping as the alternative nursing
care plans to stimulate creativity of the nursing students.

In the educational studies, nursing education literature emphasizes the importance of teaching students to think creatively to meet the challenges of 21st century health care delivery (Le Storti et al., 1999). Creativity is the character of teaching resulting in empowerment between students and teachers (Chally, 1992). For instances, Greiner and Valiga (1998) have proposed that nurse educators can use some creative teaching strategies such as stories, analogies, parables, and metaphors (Trunnell, Evans, Richards, Grosshans, 1997) to fulfill students’ health promotion responsibility.

Also, a nursing portfolio is a creative way for traditional nursing or RN students to document their achievements, past works, and life experiences without taking a standardized test (Alexander, Graft, Baldwin, Beers, & McDaniel, 2002). Besides, individualization as the creative teaching strategy for mater’s prepared nursing students to develop the home health care experiences of creativity (Alley, Donckers, King, 1992).

Additional writings support case method, seminar format, and workshop were good ways to improve nursing students’ creativity. Wade (1999) utilized the case method approach to help nursing students understand the complexity of patients’ real-life situation to encourage their flexibility, creativity, change, and risk taking in
providing care. Seminar format teaching increased the skills of traditional RN students in creativity, autonomy, and flexibility (Rains, Richardson, & Fowler, 1999).

A group of nursing students have developed creativity workshops for the parents with the preterm babies under risk at the University of Sao Paulo Hospital (Brunherotti, Pereira, de Souza, Nogueira, & Scochi, 2000).

Finally, the assignments nursing faculty designed can inspire nursing students’ creativity. Slaninka (1999) applied creative teaching strategies in a course of nursing theory and derived the outcomes of the students’ presentation and term paper assignments creatively. Also, Olivet and Jones (1997) used the telecommunication technology for innovation and creativity in nursing graduate education. Besides, nursing instructors designed the assignments with technology-assist can encourage students to collaborate with one another to promote their abilities of solving problems creatively (Mastrian, & McGonigle, 1999). Additionally, nursing educators have used television games as effective teaching strategies to help students to develop imagination and creativity (Youseffi, Caldwell, Hadnot, Blake, 2000).

**Definition of Terms**

1. **Fluency**: The total number of problem-solving strategies in clinical situations reported by the students.
2. **Flexibility**: The number of different categories of problem-solving strategies in clinical situations reported by the students.

3. **Originality**: The number of novel, elegant, or unusual problem-solving strategies in clinical situations reported by the students. Responses that occurred with a frequency of 5% or more among total responses in the data set were scored 0 for originality; those with a frequency of 2% to 4.99% were scored 1, and those with a frequency less than 2% were scored 2.

**Design**

This study design is a time series and two groups experiment utilized multiple institutions of treatment to measure the creativity of 52 two-year and 69 three-year RN-BSN students at four different points in time. The research protocol consists of three semester courses including 12 credits lectures and 9 credits practicum. A teaching model of creativity with various strategies included the process of asking, thinking, doing, and evaluation are applied into each of teaching protocol of nursing concepts to improve both groups of RN-BSN students’ fluency, flexibility, and originality.

**Sample**

The purposive sample includes 52 two-year and 69 three-year RN-BSN students who had registered nursing licenses and worked for at least one year in a clinical
setting. It was assumed that one year’s experience after completing a junior college program would enable them to think conceptually about patient’s problems. Both groups of RN-BSN students have completed the courses in the teaching protocol of Nursing Concepts within three semesters and the teaching strategies of creativity are applied into each of teaching units.

**Instrument**

**一、Creativity in the application of the Nursing Process Tool**

The instrument “Creativity in the application of the Nursing Process Tool (CNPT)” integrating the nursing process designed by Emerson (1988) was used in this study. The steps in nursing process as defined by Marriner (1983) include assessment, planning, implementation, and evaluation. The content validity of English-version CNPT was .83 including eight major questions. The question number one, for instance, is “List all the consequences to health care if people have only black and white vision.” In this study, the CNPT was translated into Chinese. Five experts who have involved in the research of creativity assessed the content validity of Chinese-version CNPT. As a result, question number 3 was irrelevant for measuring the fluency, flexibility, and originality and was deleted. Finally, the content validity index of Chinese-version CNPT approached at 0.79.

**二、Coding Guide**

Chinese-version CNPT includes seven major questions within 20 open-ended
questions. Narrative answers from the randomly selected 5 questionnaires were read and classified into the different categories by two nursing researchers. Ten nursing education experts were invited to assess the relevance of each category in the clinics as well as the accurate and appropriate items under each category. The coding guides were modified following the process of coding when two nursing researchers have found the new categories. Within 20 open-ended questions, 6 to 19 categories were developed as coding guides.

**Data Collection and Analysis**

Fifty-two two-year and 69 three-year RN-BSN students of a southern University were invited to participate in this study. Due to various scheduling problems, only 30 two-year and 44 three-year RN-BSN students have completed the four times tests, giving a 58% and 64% returned rate. Both groups of RN-BSN students were measured by their fluency, flexibility, and originality before the first semester and the end of each semester from March, 1999 to May, 2001.

The investigator explained the purpose of this study to 52 two-year and 69 three-year RN-BSN students while collecting data. Also, each student was given a small gift as an incentive for participating in this study. Two researchers coded the data by following the coding guides. Inter-coder reliability between the two investigators was .84. Data were then analyzed by utilizing SPSS Paired t statistics to
compare the fluency, flexibility, and originality from pretest to test III.

Result

一、Demographics

The average age of the sample is from 21 to 30 years old; however, the three-year RN-BSN students were older than the two-year students’ significantly. The majority of both groups (89% and 78%) were not married and graduated from 5-year nursing program (65% and 68%). Almost half of two-year RN-BSN students were either nurses or registered nurses (48% and 48%); however, the majority of three-year RN-BSN students were registered nurses (54%). In working experiences, three-year RN-BSN students (6-10 years) worked longer than the two-year students’ (1-5 years) significantly. The majority of both groups (67% and 81%) worked either in the medical unit or surgical unit. The demographics of two-year and three-year RN-BSN students were indicated in the Table 1.

二、Fluency、Flexibility、Originality

The results indicated that the creativity of both groups in the fluency and flexibility tend to be improved after the second semester and the improvement had become significantly in the third semester. The fluency and flexibility of two-year RN-BSN students tend to be better than the three-year students’. However, originality in both groups tends to be declined, but three-year RN-BSN students seem to perform
better in the originality than the two-year students’. The study findings were indicated in the Table 2.

**Discussion**

According to the literature, no research has done about the creativity including fluency, flexibility, and originality in nursing students. Only some teaching strategies have been introduced for nursing faculty to help students to develop the creativity. This study has applied the definition of fluency, flexibility, and originality from the Torrance’s (1974) and transformed them into the nursing. Also, Chen (1990)’s ATDE model was used in this study to cultivate RN-BSN students’ creativity.

The fluency and flexibility of both groups tended to decline after the first semester that indicate RN-BSN students may have the difficulties to take the teaching protocol of Nursing Concepts at the initial time. As Anthony’s (1998) *Haiku* and Johnston and Bligh’s (2001) mind mapping, nursing faculty have requested students to write the daily journals to express their opinions about the teaching protocol of Nursing Concepts. Through various ideas from the daily journals, nursing faculty can understand inhibits from the RN-BSN students to develop the creativity in the teaching protocol of Nursing Concepts. As Parnes’ (1960s) suggestions, teachers must help students to remove internal factors inhibiting them to develop the creativity.

Nursing faculty can prepare the open, free, and safe environment as Yang and Chen’s
(1993) advices to encourage students to have different opinions from the teachers.

Not until the third semester, have the fluency and flexibility of both groups improved significantly. The study of Berg and Hallberg (1999) has emphasized the function of systematic supervision to improve nurses’ creativity. Similarly, this study has spent three semesters to supervise RN-BSN students’ creativity systematically. The results indicate that the fluency and flexibility of both groups have declined after the first semester; however, the improvement of fluency and flexibility started from the second semester and continue to become significantly after the third semester. The cultivation of RN-BSN students’ creativity does take time.

Since the originality of both groups has declined, nursing faculty may design teaching strategies more special on the originality. Trunnell, Evans, Richards, and Grosshans (1997) have suggested to use stories, analogies, parables, and metaphors to improve nursing students’ creativity. Also, nursing portfolio was introduced as the creative way for RN-BSN students to record the past experiences (Alexander, Graft, Baldwin, Beers, & McDaniel, 2002). Nursing faculty can create the unusual clinical situations within the analogical concepts during case analysis and lead students brainstorming by using metaphors. In addition, nursing faculty can suggest students to inquiry experts from the other field for the ideas of different nursing interventions being transformed.
In compared with both groups, the fluency and flexibility of 2-year students was better than the 3-year students’. On the other hand, the originality of 3-year students performed better than the 2-year students’. Because three-year students were older and work longer than the 2-year students’, three-year students may think special and unique ideas often. However, the 2-year students were younger and had less working experiences so that they have more chance to inspire the imagination. Therefore, two-year students may report many ideas.

Limitation

Five limitations are explored in this study. First, this study was lack of two pretests as compared to the posttests within the second and third semesters so that maturation existed to affect the internal validity of this study. Also, this study did not have a control group to compare to in terms of research results. Besides, a teaching protocol of nursing concepts is used in this study by applying critical, creative, problem-solving, integrate teaching strategies to improve RN-BSN students’ four abilities of critical and creative thinking, problem-solving, and integration. This study did not have control group and used mixed teaching strategies so that research results could not be explained exclusively from the effect of creative teaching strategies. In addition, subjects in this study were purposively selected from two-year and three-year RN-BSN students so that the findings could not be generalized to other
nursing student populations. Finally, the returned rate in this study is only 58% and 64% that a small sample size (N=30 and N=44) might impact the results of statistical analysis.

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