Promoting Students' Critical Thinking: The Use of Videotaped Vignettes in a Baccalaureate Nursing Programme.

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Abstract

Nurses need to think critically and respond to a wide variety of clinical situations. Simulations can provide realistic examples of typical clinical situations to undertake learning of complex skills in a less threatening environment. The teacher is thus provided with more control over the learning environment, resulting in a situation which is beneficial in knowledge and skill acquisition. In the current study, simulated vignettes of clinical situations were videotaped, and used to promote nursing students' critical thinking abilities in managing situations arising in different clinical contexts. The findings from pre-study interviews of students and teachers guided the type of clinical situation to be simulated and the content of the critical thinking discussion guidelines. A pre-test/post-test design was used to collect data from 83 baccalaureate first and second year nursing students. The California Critical Thinking Skills Test and the Nursing Knowledge Test were used to determine how effective the videotaped vignettes and discussion guidelines were in promoting critical thinking and nursing knowledge. The findings showed that students made significant improvement in their level of nursing knowledge, while no significant differences were found for the posttest scores in critical thinking skills. Interview data indicated that students found the vignettes and discussion guidelines beneficial in developing their critical thinking skills. The absence of posttest improvement in critical thinking may be related to the limited exposure of students to the new approach of videotaped vignettes and the lack of sensitivity of the California Critical Thinking Skills Test in being unable to detect changes. However the use of simulated vignettes and discussion guidelines did improve the students' knowledge and provided a way of learning that was found beneficial by the students.

Introduction

The impetus for undertaking this study came from recognition of the need to develop the level of students' critical thinking within clinical nursing practice. While efforts to promote nursing students' critical thinking and decision-making were already occurring within the programme, continued assessment and evaluation of the students' learning of clinical skills suggested that this learning was not being transferred to the clinical skills laboratory. Interview data from both students and teaching staff about their past experience had also identified difficulties in students' learning of clinical skills. Critical thinking involves numerous cognitive processes including constant questioning and analysis of situations, the making of inferences and evaluation. A cross-disciplinary conceptual definition from the American Philosophical Association (1990, p. 345) proposes that critical thinking is "the process of purposeful, self-regulatory judgement, an interactive, reflective reasoning process".

Often critical thinking is seen to refer to the acquisition of theoretical knowledge, however the use of that theory in a variety of situations requires that students also be critical in gaining and

applying procedural knowledge. Accordingly more specific applications of the critical thinking process would be needed to facilitate the development of clinical skills. The use of simulation in the form of videotaped vignettes in nursing education offers the advantages of providing realistic experiences for students to learn complex clinical skills in a safe environment, and allows teachers to control the simulated learning situations more easily, by removing the numerous confounding factors such as pressures of time, and interruptions found in the clinical situation (Johannsson, & Wertenberger, 1996; Reilly, & Oermann, 1992).

Thus the purpose of this Action Learning Project was to improve nursing students' critical thinking abilities in managing different clinical situations. More specifically the objectives were to a) gain understanding of students' current approaches to critical thinking and b) determine the effectiveness of videotaped vignettes in promoting critical thinking skillsamong nursing students.

Method

A pre-test / post-test design was used to investigate the effectiveness of a new teaching approach for promoting the critical thinking abilities of nursing students. The new approach to promoting students' critical thinking in the clinical laboratory required the development of videotaped vignettes and guidelines, depicting situations where a skill had to be applied appropriately.

Sample

The students who were asked to participate in the study were from the first and second years of the 4-year baccalaureate nursing programme.

Data Collection Tools

Prior to the commencement of the new teaching approach students were interviewed to discuss the current approaches to critical thinking, and teaching staff were interviewed to examine current approaches to the promotion of critical thinking. For the study, determining the effectiveness of the new teaching approach, there were four main data collection tools: i) the California Critical Thinking Disposition Inventory (CCTDI) , ii) the California Critical Thinking Skills Test (CCTST), iii) Critical Thinking Nursing Knowledge Test, and iv) separate focus group interviews with teachers and students for determining satisfaction with the new teaching approach. The California Critical Thinking Disposition and Skills tests were used instead of the Watson-Glaser Critical Thinking Appraisal as was originally planned. These tests were used as they were seen to have more relevance because they had been developed for nursing situations.

The California Critical Thinking Disposition Inventory

The California Critical Thinking Disposition Inventory (CCTDI) (Facione, & Facione, 1992) comprises 75 items with the 7 subscales: open-mindedness, analyticity, cognitive maturity, truth seeking, systematicity, inquisitiveness and self-confidence. Students were requested to indicate their responses to each item on a Likert scale ranging from 1= strongly agree to 6 = strongly disagree. The total possible scores range from 70 to 420. The internal consistency for the total CCTDI was 0.85 and for the subscales ranged from 0.34 to 0.76.

The California Critical Thinking Skills Test

The California Critical Thinking Skills Test (CCTST) (Facione, & Facione, 1994) consists of a 34-item multiple-choice test targeting the core critical thinking skills. Form A of the CCTST was used in this study for the pre- and post-test. The three subscales include: analysis (9 items),

evaluation (14 items) and inference (11 items). The maximum possible score is 34. The Kuder-Richardson-20 reliabilities of the CCTST were 0.76 in the pretest and 0.75 in the posttest.

The Nursing Knowledge Test

A test which focused on the analysis, synthesis and evaluation levels of the cognitive domain was developed to determine students' critical thinking knowledge for each of the nursing topics in the vignettes. The questions were short answer with total possible scores ranging from 0 to 50.

Focus Group Interviews

Focus group interviews were conducted for the teachers and for the students participating in the study. Separate interviews were conducted for students and teachers. The purpose of the pre-study interview was to determine the views of students and teachers on the current approaches to learning clinical skills. The purpose of the focus group interviews at the end of the study was to identify the students' and teachers' satisfaction with the new teaching approach. Each interview lasted for approximately 45-60 minutes.

Intervention

The new approach to teaching for the promotion of students' critical thinking in the clinical laboratory, required the development of videotaped vignettes and guidelines, depicting situations where a skill had to be applied appropriately. Four videotaped vignettes and critical thinking guidelines for each of the first two years of the programme were developed. The vignettes presented each of the major topics on videotape, such as a nurse transferring a patient from bed to wheelchair, or performing naso-gastric tube insertion in a simulated clinical environment. Students and teachers in this course were invited to role-play the clients, the nurses, and the health care professionals. The role-play was videotaped in the clinical laboratory, with each video taking an average of one week to complete. This included the planning, shooting and editing. Critical thinking guidelines were developed and used to stimulate students to discuss and clarify what had been learned from the simulated situation. Some of the questions included in the critical thinking guidelines for stress management included:

- Identify the strengths and weaknesses of the nursing interventions;
- Determine what might contribute to the patient's disturbed sleep pattern, impulsiveness and behaviour change;
- That evening the patient told you that she was very distressed, "I wish I was dead in that car accident, I just can't take it any more". How would you manage the situation?
- Please provide the rationale for your actions.

The vignettes and critical thinking guidelines were developed from the research team who had clinical experience with patient groups in both acute and rehabilitation settings. Face and content validity of two videotaped vignettes and critical thinking guidelines were established prior to commencing the study by two experts who had experience in teaching clinical skills. Following the advice of the experts, minor modifications of the critical thinking guidelines were made to include more discussion of alternative approaches to a variety of clinical situations and client conditions.

Data Collection Procedure

Students were asked to first complete the California Critical Thinking Disposition Inventory (CCTDI) to assess their attitudes toward critical thinking prior the first vignette being used. The students then completed the California Critical Thinking Skills Test (CCTST) which assessed

the central critical thinking skills of analysis, inference, and evaluation. Four vignettes were developed specifically for each year. These vignettes were used during the second semester. At the end of the first vignette students completed a pre-test of knowledge of critical thinking points specific to that vignette. The students then had another three vignettes relevant to their course and, following the third vignette, completed a post-test reflecting critical thinking ability about that vignette. At this stage the students also completed the post-test of the CCTST. After the course had been completed both students and teachers were asked to reflect and to indicate their level of satisfaction with the new approach.

Results

There were 50 students in the first year and 51 in the second year. The majority of the students were female with 11 males and 39 females in the first year with 7 males and 44 females in the second year. The mean age of all the students was 19.8 years (SD 0.82) with their ages ranging from 18 to 23 years.

Critical Thinking Disposition

The findings from the CCTDI indicate that for the combined years the students' disposition towards critical thinking ($\underline{M}$ = 269.27, $\underline{SD}$ = 19.23) was slightly lower than the USA norm mean ($\underline{M}$ = 280). Two subscales of inquisitiveness ($\underline{M}$ = 43.37, $\underline{SD}$ = 5.18) and analyticity ($\underline{M}$ = 41.47, $\underline{SD}$ = 3.88) were above the norm means of 40 for both subscales (see Figure 1).

Figure 1: CCTDI total and subscale scores for first and second year nursing students

	Year 1 (N = 50)		**Year 2 (N = 50)**		**Year 1 & Year 2(N = 101)**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Total scores of CCTDI	268.95	18.36	269.59	20.22	269.50	19.23
Truth-seeking	31.18	4.21	32.45	4.16	31.82	4.22
Open-mindedness	38.14	3.66	39.62	4.63	38.38	3.86
Analyticity	41.30	3.69	41.63	4.09	41.47	3.88
Systematicity	37.58	4.88	37.35	4.55	37.47	4.69
Confidence	39.80	5.60	39.24	4.58	39.51	5.09
Inquisitiveness	44.02	4.73	42.73	5.56	43.37	5.18
Maturity	36.93	4.52	37.18	5.32	37.05	4.92

Critical Thinking Skills

While the post-test CCTST was slightly higher than the pre-test for the 2nd year students, the difference was not significant ($\underline{t}$ (1, 49) = 0.59, $p > 0.05$) (see Figure 2).

Figure 2: Differences between pretest and posttest CCTST scores

Pre-test	**Post-test**

Year of study	Mean	SD	Mean	SD	t-test	p
1 (n = 38)	17.53	3.82	17.21	5.72	-0.42	0.67
2 (n = 45)	17.51	3.30	17.96	4.57	0.59	0.56
1 & 2 (n = 83)	17.52	3.52	17.61	5.10	0.18	0.86

The Nursing Knowledge Test

Comparisons between the pre- and post-knowledge tests indicate significant ($p < 0.05$) improvement in both year 1st and year 2nd year students (see Figure 3).

Figure 3: Comparisons of the total scores on the short answer questions between the pretest and the posttest

	Pretest		Posttest			
Year of study	Mean	SD	Mean	SD	t-test	p
1 (n = 38)	24.56	6.27	31.02	4.60	7.25	0.001***
2 (n = 45)	25.04	7.41	27.88	6.30	2.33	0.02*
1 & 2 (n = 83)	24.80	6.84	29.42	5.77	6.03	0.001***

*** $p < 0.001$; * $p < 0.05$.

Note: the range of the scores was from 0 to 50

Teacher Satisfaction

The focus group interview of teachers indicated their satisfaction with the new teaching approach in facilitating students' critical thinking. In particular they pointed out that by using this new approach, students were more able to: a) relate nursing principles to clinical situations, b) identify strengths and weaknesses of nursing skills and practices, c) adopt a questioning approach to current practice and d) generate alternate approaches to nursing practice. However the teachers were also concerned that the time for students to practise the new nursing skills had diminished and that discussion of the critical points was influenced by the dynamics within each group.

Student Satisfaction

The focus group interviews of students from both first and second years of the programme indicated that they enjoyed this new teaching approach although they would have preferred more than four videotaped vignettes. They commented that the deliberate errors incorporated into the videotape vignette had really aroused their awareness of poor nursing practice. The students also indicated that they were concerned about the reduced time for practising the new skills which they were learning because of the time taken with the videotape vignettes and discussion.

Discussion

The test results for students' ability to analyse, synthesise, and evaluate clinical situations following the implementation of the simulated critical thinking in clinical settings, demonstrated an overall improvement. This is similar to the findings of Plunkett and Olivieri (1989) who found videotaped simulations to be beneficial in the development of psychomotor and

critical thinking skills. Furthermore both students and teachers enjoyed this new approach and indicated that they would welcome more such learning opportunities. Indeed the students recommended that more of their classes should adopt this approach.

The students' disposition towards critical thinking was found to be at a lower level than in the USA normative mean. Another study which provides some support for this finding reported that Hong Kong students lacked confidence in their ability to solve problems independently by accessing, interpreting, and applying information learned (Marsh, & Rowlinson, 1997). On the other hand, while comparisons with similar studies conducted in the West indicate higher scores on the CCTDI than the current Hong Kong study, it would be premature to conclude that the Hong Kong sample has lower critical thinking disposition when there maybe differences in the characteristics of the subjects and smaller sample sizes (Bers, McGowan, & Rubin, 1996; Facione, Facione, & Sanchez, 1994). The influence of Confucian philosophy on Chinese culture might be another factor contributing to the low disposition score. Endurance, effort and compliance are emphasised in such a philosophy (Yang, 1993) and may not always be compatible with critical thinking. While Bers, McGowan and Rubin found significant correlation between the scores of CCTDI and gender, previous education of CT, and working experience, in this study no such correlation was found.

There was no significant difference between the pretest and posttest findings of the students' critical thinking skills. One reason for such findings may be the limited exposure students had to these new types of videotaped vignettes. This new approach was only used in four out of their 13 weeks of classes. Accordingly, future studies will need to consider increasing the amount of the new approach to learning to adequately test for effectiveness. Another explanation for the non-significant findings may be the tool that was used to detect differences between the pre- and post-test. Although the reliability found in this study was satisfactory there may have been some difficulties in full understanding of the questionnaire.

Conclusion

The baccalaureate students in this study demonstrated an improvement in their ability to analyse, synthesise and evaluate simulated clinical situations, as well as overall satisfaction with the use of this new learning strategy. However there was no improvement in the overall level of critical thinking. The exposure to the new approach in this study, that is the use of four vignettes in a term, may have been insufficient to test for the effectiveness of the vignettes. As suggested by Videbeck (1997), even one semester can be too short to detect changes in such a complex construct as critical thinking skills. Further studies that employed a longitudinal study design would be appropriate to determine the change over time in the critical thinking scores. Allowing sufficient time for the students to learn to use videotaped vignettes in tutorial hours while ensuring adequate time for them to practise in the laboratories, remains a challenge for nurse educators in planning the lectures. Furthermore, it will be of equal importance that methods should be employed to ensure the robustness of the vignettes and make them as close to reality as possible (Thew, & Worrall, 1998). The ultimate goals are to enhance students' critical thinking proficiency in a variety of practice skills and the ability to respond effectively to complex clinical situations.

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