

TITLE- Nursing students' perception of the effectiveness of problem based learning as a teaching/learning strategy to improve clinical decision making skills: A Mixed Method Study

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Background

∞ Changes in the healthcare arena has driven trends in nursing education which necessitates the development of nursing professionals who can function effectively in this rapidly changing environment

(Tompkins, 2001)

Background

The literature suggest that Problem Based Learning is an effective teaching /learning strategy which helps to generate and develop critical thinking and ‘clinical decision making’ skills which would enable nurses to function effectively in this changing environment,

(Simpson and Courtney, 2009)

Background

☞ Aiming to achieve similar student outcomes, an educational intervention, utilizing Problem based learning to teach the oncology module of a pathophysiology course for third year nursing students was introduced at a School of Nursing in Trinidad and Tobago.

Purpose of the study

- ∞ The study sought to describe those nursing students' perceptions of the effectiveness of Problem Based Learning as a teaching /learning strategy and determine the impact PBL made on their clinical decision making skills.

Literature Review

Defining PBL

- ✎ PBL is a student-centred approach to teaching/learning which uses problems relevant to desired learning outcomes as a means of encouraging self-directed learning, critical thinking, lifelong learning and self-evolution among students.

(Rideout & Carpio, 2001)

PROBLEM BASED LEARNING IN NURSING EDUCATION

- ✎ Tompkins (2001) credits Em Bevis and Jean Watson as the nurse educators who recognized the need for a “paradigm shift in nursing education that challenged institutionalized behaviourism” (p.13).

Literature review

Problem Based Learning compared to traditional teaching strategies

- ✎ Rideout and Carpio (2001) examined the research done on the efficacy of PBL as a model for education and concluded that PBL was more acceptable to students than traditional approaches.
- ✎ “Learners described the advantages of PBL as better retention and reinforcement of learning; more enjoyable, stimulating and interesting enhancement of interpersonal skills; learners learn how to learn rather than memorize”.

(Rideout & Carpio, 2001, p. 34)

Literature review

Problem Based Learning and Clinical Decision Making

- ✎ A study done to evaluate the outcomes of problem-based learning (PBL) programmes in nursing schools in South Africa in terms of the competence of graduates to solve problem in actual clinical settings, and comparing that competence with that of graduates from non-PBL programmes found that the PBL group fared better than the non-problem-based group in the level of their problem-solving ability.

(Uys, Van Rhyn, Gwele, McInerney & Tanga, 2004)

Literature review

PROBLEM BASED LEARNING AND CRITICAL THINKING

- ✎ Tiwari, Lai, So & Yuen, (2006) investigated the impact of PBL on nursing students' critical thinking by comparing the critical thinking of the students participating in problem-based learning with that of the students undertaking the traditional lecture method.
- ✎ They concluded that there were significant differences in the development of students' critical thinking dispositions between those who undertook the PBL and lecture courses, respectively.

Literature review Summary

- ∞ The literature on PBL suggest that nursing education can utilize PBL as a teaching/learning strategy to develop critical thinking skills and foster self directed learning and reflection in graduates as they are prepared to meet the challenges in the health care environment of the future.
- ∞ The literature also imply that PBL models are more student centered and facilitates interactive group process skills that are important in clinical decision making.

Research Questions

1. What are third year nursing students' perception of the impact Problem Based Learning made on their learning strategies and clinical practice?
2. What influence does Problem Based Learning have on third year nursing students' clinical decision making skills?
3. What influence does Problem Based Learning have on third year nursing students' information gathering skills?
4. What impact does Problem Based learning have on the development of critical thinking skills in nursing students?

Methodology

- ✎ A Mixed Method concurrent triangulated design was used to conduct this study.
- ✎ Specifically the **Triangulated Design-Validating Quantitative Data Model**.
- ✎ A triangulated design is used to compare and contrast quantitative statistical results with qualitative finding or to validate or expand quantitative results with qualitative data.
- ✎ The triangulated design is a one phase design in which quantitative and qualitative methods are used during the same timeframe and with equal weight.

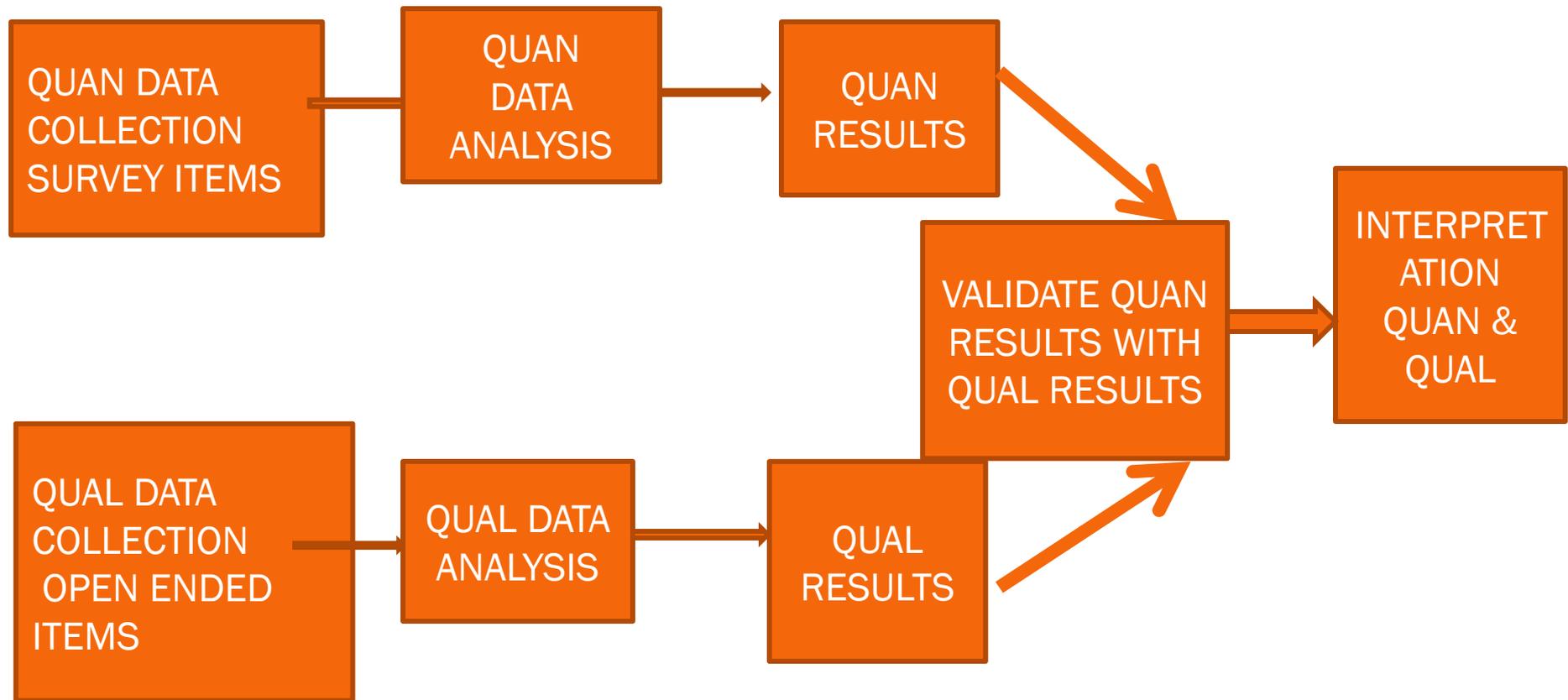
(Creswell & Plano-Clark,2007)

Methodology

- ☞ **The Triangulated Design-Validating Quantitative Data Model** is used to validate and expand on the quantitative findings obtained from a survey by including a few open-ended qualitative questions.
- ☞ Data is collected using one survey instrument. The qualitative data is used to validate the quantitative findings

Methodology- Triangulated Design:

Validating Quantitative Data Model



(Creswell & Plano-Clark, 2007, p.63)

METHODOLOGY

- ☞ **The population** included 62 nursing students of a selected nursing school in POS
- ☞ **Inclusion Criteria** - exposure to PBL sessions during Oncology module of the pathophysiology lectures at the nursing school, during November 2009 to February 2010.
- ☞ **Exclusion Criteria**- 10 post basic registered mental nurses who joined the class were excluded since they may have had previous exposure to PBL.
- ☞ **Sample size**- 30
- ☞ **Sampling Method**- proportionate random sampling was used to select the sample from the 62 students.

METHODOLOGY

Sampling Procedure

- ✎ The class had 10 study groups of 7-8 students.
- ✎ These study groups were assigned various clinical scenarios consisting of oncology problems to work through using PBL
- ✎ Using the study groups as subgroups, 3 students from each group were randomly selected using a sampling frame.

Data collection methods

- ✎ The instruments were self administered questionnaires containing 10 quantitative items and 3 open ended qualitative items.
- ✎ The quantitative aspect of the questionnaire contained perception related items.
- ✎ The qualitative aspect gave depth by obtaining more details on the students' perception.
- ✎ The instrument was designed and pilot tested on 10 students who did not take part in the study.

Data collection methods

- ✎ After review for validity and reliability the questionnaire was administered to the sample group.
- ✎ A researcher- designed clinical decision making test which included oncology items was also administered
- ✎ The students' scores from the clinical decision making test was used as comparative quantitative data on the students' clinical decision making skills.

Data Analysis

- ✎ SPSS and EXCEL were used to analyse the clinical decision making test scores and the quantitative data from the survey instrument.
- ✎ The descriptive statistics included frequency distributions, measures of central tendency such as: the mean, and measures of variability such as the standard deviation.
- ✎ The qualitative aspect of the instrument were analysed based on thematic analysis and content analysis; the themes identified were supported by quotations from the 3 qualitative questions.
- ✎ Both quantitative and qualitative results were converged and compared and interpreted

Limitations

- ⌘ Time to conduct the study in the depth required
- ⌘ Discrepancies in results may arise due to different data collection methods,(Creswell, 2003).
- ⌘ Researcher bias
- ⌘ The nursing education curriculum is very time-bound and it is difficult to introduce innovations that are perceived as time consuming.

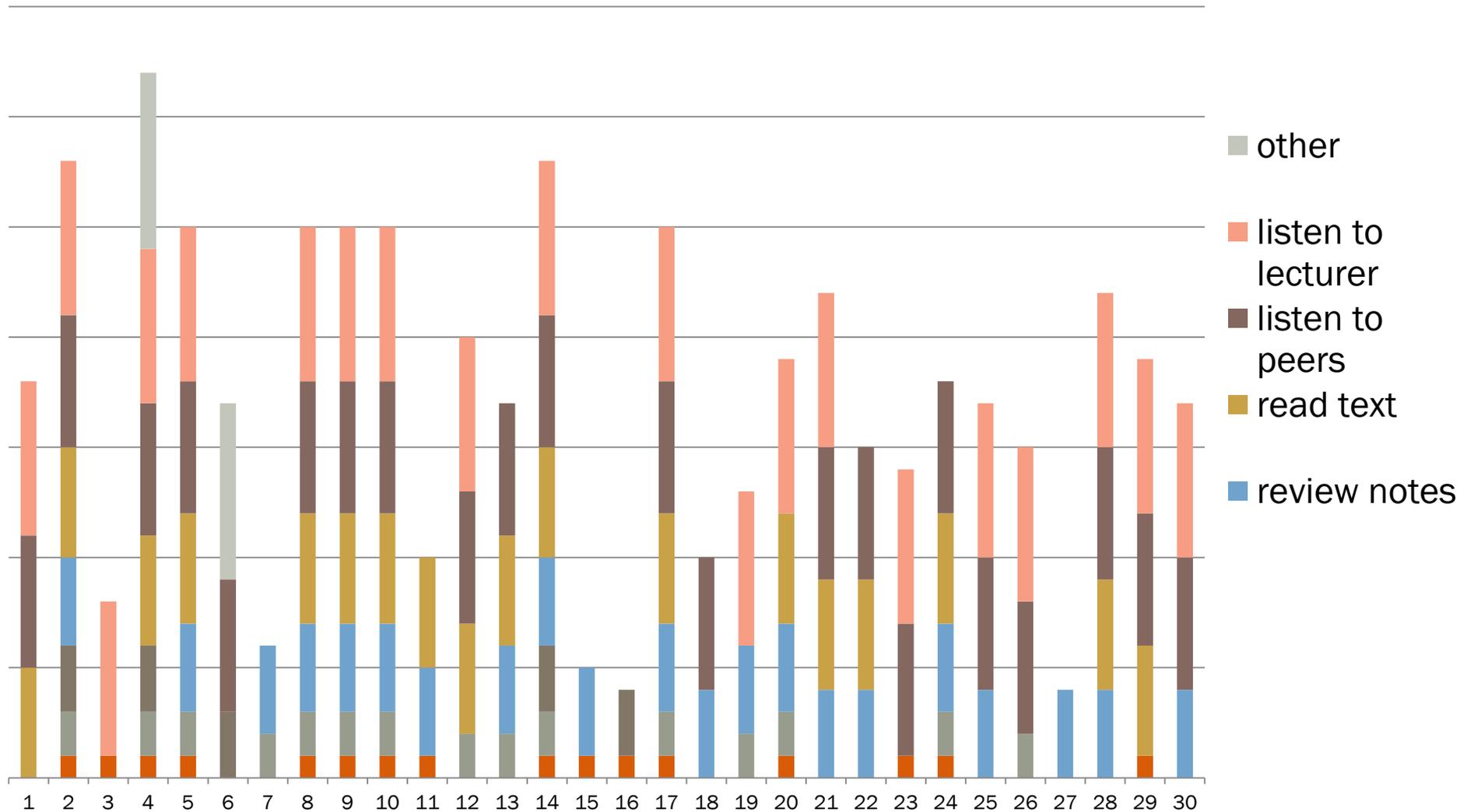
Delimitations

- ∞ Use of a triangulated design enabled the qualitative data to add to validity to the results obtained in the quantitative part of the study.
- ∞ Use of the Triangulated Design Validating: quantitative data model which collects both types of data concurrently in one questionnaire was used as a means of shortening the data collection time.
- ∞ Clarification of researcher bias by declaring bias at the beginning of the study.

Ethical considerations

- ☞ Permission was sought from relevant authorities
- ☞ Students was informed about the purpose of the study and details were provided during each step of the research process.
- ☞ Anonymity was assured by assigning code numbers to questionnaires.
- ☞ No student was debarred from receiving the new knowledge about the PBL technique.
- ☞ No penalties were applied to students who didn't want to participate in the data collection process.

STUDENTS' LEARNING STYLES PRIOR TO PBL EXPOSURE



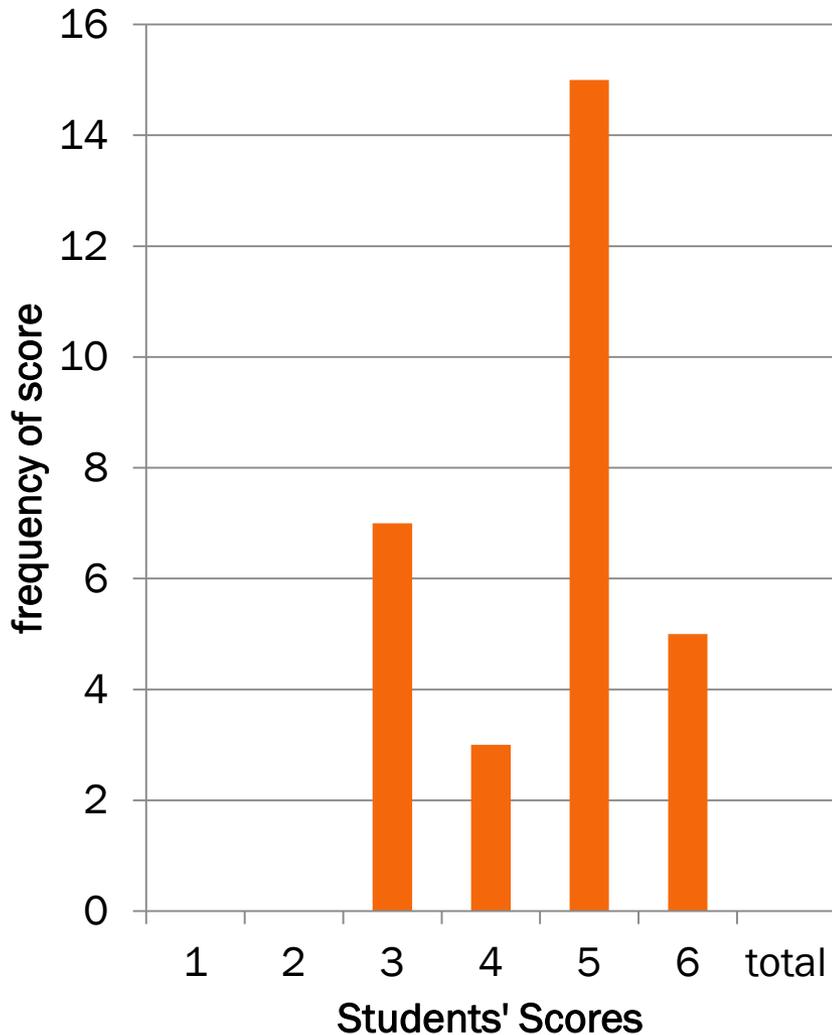
STUDENTS' PERCEPTION OF WHETHER PBL CHANGED THEIR LEARNING STYLE

Responses	Frequency	Percent
Strongly disagree	2	6.7
Tend to disagree	6	20.0
Neutral	10	33.3
Tend to agree	10	33.3
Strongly agree	2	6.7
Total	30	100.0
MEAN	3.13	
STAND. DEV.	1.042	

STUDENTS' PERCEPTION OF WHETHER PBL HELPED THEM TO ANALYSE AND MAKE CLINICAL DECISIONS RELATED TO THE SCENARIOS

RESPONSES	Frequency	Percent
tend to disagree	2	6.7
neutral	6	20.0
tend to agree	15	50.0
strongly agree	7	23.3
Total	30	100.0

Frequency of scores in clinical decision making test



Student's Score	Frequency
0	0
1	0
2	0
3	7
4	3
5	15
6	5
Total no of Students	30
mean	4.548387
mode	5
median	5
Std Deviation	1.04

QUALITATIVE QUESTIONS

Students' perception of exposure to problem based learning causing a change in thinking process when assessing a clinical patient problem

THEMES	EXAMPLES OF QUOTATIONS
<i>Improved Assessment Skill</i>	<ul style="list-style-type: none">• Better able to make assessment of the problem• I pay more attention when assessing patient• Helped me to assess patient more confidentially
<i>Created Desire to Learn More</i>	<ul style="list-style-type: none">• Desire to learn more• Made me want to find out more about the patients' problem
<i>Created Critical Thinking Skills</i>	<ul style="list-style-type: none">• helped to analysed thoroughly• Better able to figure out a plan
<i>Competence/Confidence</i>	<ul style="list-style-type: none">• Feel more competent• More confident and assertive
<i>Focus Better on Essential Features</i>	<ul style="list-style-type: none">• Yes was better able to plan patient care• Yes am better able to answer patient questions
<i>Ability to Remember</i>	<ul style="list-style-type: none">• Helped me better remember similar cases
<i>No change</i>	<ul style="list-style-type: none">• No, thinking process was guided by other things like

Students' perception of whether problem based learning changed their information gathering process

Themes	Examples of Quotations
<i>Open-Mindedness</i>	<ul style="list-style-type: none">• open-minded a little more• open-mindedness when gathering info
<i>Explore Other Information Sources</i>	<ul style="list-style-type: none">• I don't stick to one source anymore• eager to source information from text and internet
<i>In Depth Searches</i>	<ul style="list-style-type: none">• go to further lengths to get information• no longer hate reading to get information
<i>Use Critical Thinking</i>	<ul style="list-style-type: none">• taught me to assess the situation first before coming up with solution• now evaluates using critical thinking
<i>More Observant and Reflective</i>	<ul style="list-style-type: none">• more focused• reflected on the condition
<i>Negative Responses</i>	<ul style="list-style-type: none">• no effect,• already exposed to gathering information

Students' perception about whether problem based learning affected their decision making skills in the clinical ward setting?

Themes	Examples of quotations
<i>Informed Decisions due to Critical Thinking</i>	<ul style="list-style-type: none">• Clearer understanding of critical thinking• Think more critically when assessing patients
<i>Confident about Knowledge</i>	<ul style="list-style-type: none">• More confident about accuracy of knowledge obtained• Confident that decisions are safe, proven and relevant
<i>Decisions are Family and Client- Centred</i>	<ul style="list-style-type: none">• Aware that patient has other problems and needs to be nursed holistically• Want to make decisions that benefit the client
<i>More Responsible for Actions</i>	<ul style="list-style-type: none">• showed more interest• understood how to apply research enabling her to make appropriate decisions
<i>Negative responses</i>	Did not guide decision making but exposed me to information Not affected in any way

Discussion of Findings

- The quantitative findings indicated a positive trend with a mean of 3.90 and standard deviation of .845 signifying that the positive responses were chosen more frequently
- all the respondents scored more than 50% in the clinical decision making test with the mean score being 4.55 with a standard deviation of 1.04 corroborating PBL's influence

Discussion of Findings

Perception of PBL on clinical decision making skills

- ∞ Qualitative themes:-‘Informed decisions using critical thinking’; ‘Confident about knowledge’; ‘Decisions are family and client centered’ and ‘Responsible for actions’.
- ∞ Uys et al(2004) noted that these types of behaviours/abilities related to problem solving skills might be “attributable to the fact that PBL makes the development of a questioning attitude an explicit goal, draws attention to it and practises it”.

Discussion of Findings

Perception of impact of PBL on information gathering skills

- ✎ The findings revealed that more than 50% of the students used more than three methods to gather information when working through PBL scenarios
- ✎ The methods predominantly used were internet searches and the recommended text.

Discussion of Findings

Perception of impact of PBL on information gathering skills

- ☞ Qualitative themes : 'Open mindedness', 'Explore Other Information Sources' , 'Use of Critical thinking skills', 'more in depth searches', 'more observant and reflective'.
- ☞ the literature supports that PBL's emphasis on problem analysis prior to information gathering and on self-directed learning activities were influenced by Bruner's notion of intrinsic motivation as a force that drives people to learn more about their world (Rideout & Carpio, 2001).

Discussion of Findings

Perception of Impact of PBL on the development of critical thinking skills

- ∞ The mean was 4.00 with a standard deviation from the mean of 0.743 demonstrating that the positive responses were chosen by more of the respondents indicating they perceived that PBL contributed to their development of a logical thinking process
- ∞ Qualitative themes: ‘Improved assessment skills’; ‘increased desire to learn more’; ‘increase in critical thinking skills’
- ∞ Rideout and Carpio (2001) in writing about PBL explains that it encourages self-directed learning, critical thinking, lifelong learning and self-evolution among students.

Recommendations

The findings of this mixed method study can be used as a stimulus:-

1. to implement PBL as a teaching /learning strategy in all nursing schools in Trinidad
2. to conduct further studies in this area.
3. The ultimate recommendation being that PBL would help develop critical thinking and problem solving skills in nurses enabling them to make appropriate clinical decisions in this changing health care arena.

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THANK YOU