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# Longitudinal assessment of nursing students' critical thinking dispositions

*...“A great professor does not teach you information, but how to think – about the information at hand; about everything”... Crosbie, L (2017, Sept., 27) Globe & Mail.*

# Outline

- Introduction
  - Context of Study
- Purpose
- Research Question
- Theoretical Framework
- Methodology
- Findings
- Conclusion
- Pedagogical Implications
- Questions



# Context - Navigating the Waters of Nursing Practice and Technology

**Requires new skills  
and new ways  
of thinking.**



# Context of Current Nursing Practice

- Increasing complexity of care
- Increasing acuity of illness in patients
- Rapidly expanding body of knowledge
- Rapidly expanded use of digital technologies
- Need for 'life-long' learning

# Context of Current Nursing Practice

- **Employer Expectations of New Graduates**
  - Critical thinkers and problem solvers
  - Capable of finding, evaluating and using resources
  - Team players
  - Flexible
  - Communicate effectively
  - Life-long learners

# Problem



**Extensive evaluation of the curriculum showed that students struggled with integration of theory to clinical practice.**

# Context/Problem-Based Learning

- Pedagogical approach
- Active student-focused learning
- Cases are context specific with open-ended problems without a “right” answer
- Students work in cooperative groups
- Teacher is “facilitator” guiding the learning process
- Students apply new knowledge to cases

# Clarifying Terms

- **Critical Thinking**
- **Critical Thinking Disposition**
- **California Critical Thinking Disposition Inventory**

# Critical Thinking

**“Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.”**



# California Critical Thinking Disposition Inventory (CCTDI)

(Facione & Facione, 1992)

Measures the mindset of seven attributes associated with reasoning and decision making. Commonly used in nursing and other health sciences disciplines with well established reliability and validity

Truth-seeking*	Honest pursuit of the best knowledge.
Open-mindedness*	Tolerance for a diversity of ideas.
Analyticity	Tendency to be alert to what happens, anticipating both the good and bad potential consequences.
Systematicity*	The habit of taking an organized approach.
Confidence in reasoning	Tendency to trust reflective thinking to solve problems and to make well-reasoned decisions.
Inquisitiveness	Reflects curiosity and eagerness to obtain knowledge.
Maturity of judgment*	Seeing the complexity of issues and yet striving to make timely decisions.

# Purpose of Study

- **To** evaluate BSN students' critical thinking dispositions (CTD) in relation to a curricular shift from traditional lecture-based learning to problem-based learning (PBL).

# Research Questions

1. What are the critical thinking dispositions of BScN students?
2. Do students' dispositions change as they progress through the BScN program?
3. What is the relationship between students' disposition to think critically and year in program, age, amount of education and gender?
4. What are students' perceptions of factors that have helped and hindered development of a critical thinking mindset?

# Theoretical Framework

- **Combination of cognitive (Piaget) and social constructivist (Vygotsky) theories**
- **Principles are:**
  - **Knowledge is constructed**
  - **Knowledge is contextual**
  - **Learning is self-directed**
  - **Learning is collaborative**

# Literature Review

## Search terms

- Critical thinking
  - Critical thinking disposition
- Undergraduate education
  - Nursing education
- Problem-based learning
  - Context-based learning
- California Critical Thinking Disposition Inventory

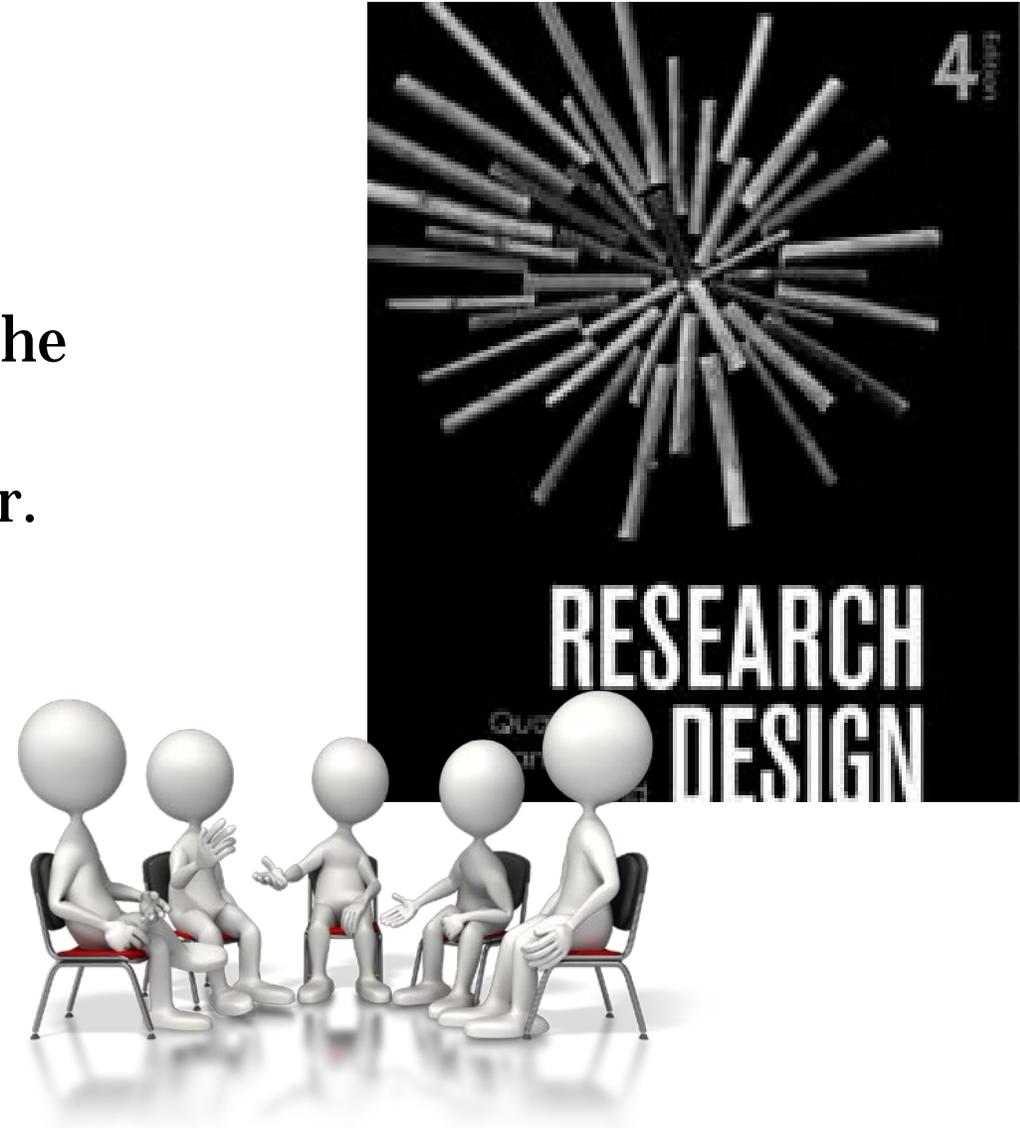


# Literature Review Highlights

<b>Critical thinking dispositions among nursing students</b>	<b>Strategies for teaching CT skills and dispositions</b>	<b>Context-based learning in nursing education</b>
<ul style="list-style-type: none"><li>• Truth-seeking consistently low</li><li>• Inquisitiveness consistently high</li><li>• Lower disposition scores in studies where average age of students was 19, e.g., first year nursing students</li></ul>	<ul style="list-style-type: none"><li>• Opportunity for dialogue</li><li>• Exposure to authentic problems</li><li>• Mentoring</li></ul>	<ul style="list-style-type: none"><li>• Effective model for increasing critical thinking dispositions</li><li>• Enhances students' ability to integrate theory with practice</li></ul>

# Methodology

- Pre- and Post-test design
- Participants completed the CCTDI at the beginning and end of an academic year.
- Quantitative data from CCTDI Survey
- Qualitative data from focus group



# Participants

- **Students in Year 1, 2, 3 & 4 who were enrolled in the program from June 2015 – December 2016**

# Data Collection

**CCTDI**

- Survey assesses how students feel about seven thinking dispositions.

**Interview**

- Explore students' views on factors that influence development of a critical thinking mindset.

# Findings

# Participant Characteristics

<b>Combined <i>N</i> = 158</b>	<b>Generic (Year 1) Students</b>	<b>Advanced Entry Students (Term 5 – 8)</b>
Participants	<i>N</i> = 88	<i>N</i> = 70
Average age, years	29	36
	Year 1, <i>n</i> = 24%	Year 3, <i>n</i> = 86%
	Year 2, <i>n</i> = 30%	Year 4, <i>n</i> = 14%
	Year 3, <i>n</i> = 23%	
	Year 4, <i>n</i> = 23%	

# Changes in Critical Thinking Dispositions (Pre-test vs. Post-test Scores)

Group	Scale	Mean Pre-test	Mean Post-test	Pre to Post Direction	Significance
<b>Combined (N = 240)</b>	<b>Overall CCTDI</b> Score of 300 threshold for high CTD	<b>299.98</b>	<b>313.04</b>	<b>Increase</b>	<b><i>p = .002</i></b>
<p>•Scores 40 to 50 indicate a positive inclination</p> <p>•Scores 31 to 39 indicate an ambivalent inclination</p>	<b>Truth-Seeking</b>	<b>37.30</b>	<b>39.85</b>	<b>Increase</b>	<b><i>p = .008</i></b>
	<b>Open-Mindedness</b>	<b>42.46</b>	<b>44.27</b>	<b>Increase</b>	<b><i>p = .017</i></b>
	Inquisitiveness	48.03	49.55	-	<i>p = .069</i>
	Analyticity	44.00	45.27	-	<i>p = .062</i>
	<b>Systematicity</b>	<b>41.51</b>	<b>43.74</b>	<b>Increase</b>	<b><i>p = .003</i></b>
	Confidence in Reasoning	45.68	47.22	-	<i>p = .054</i>
	<b>Maturity of Judgement</b>	<b>41.21</b>	<b>43.43</b>	<b>Increase</b>	<b><i>p = .015</i></b>

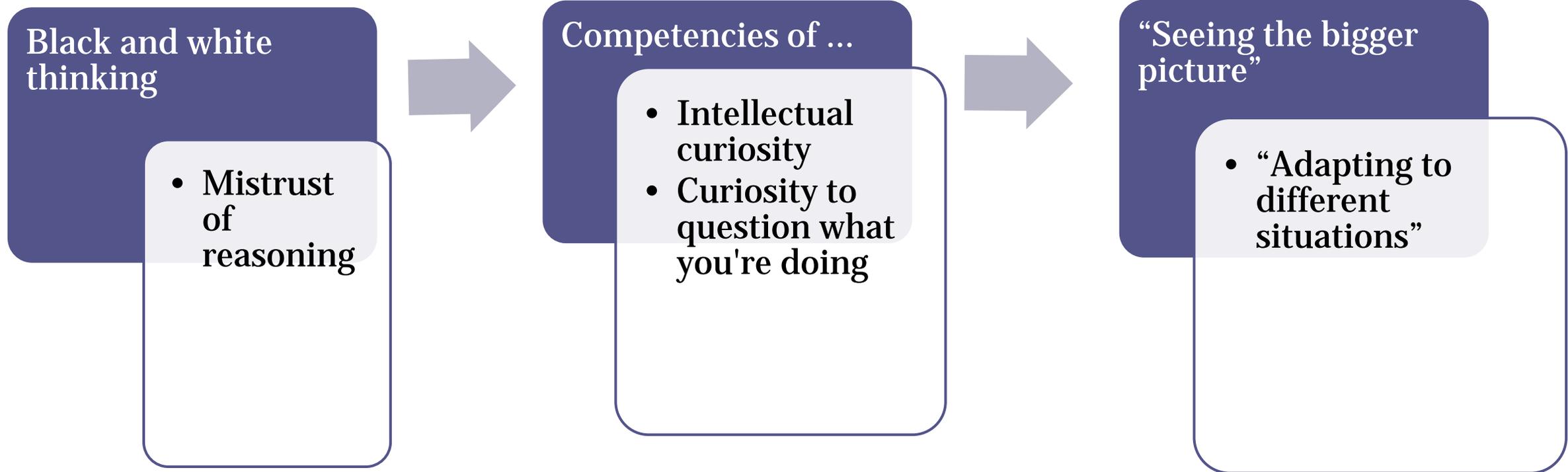
# Interpretation of Pre-test vs. Post-test Results

- Significant increases between pre-post test scores for overall CTD and 4 subscales suggests that:
- CBL has a positive impact on students' critical thinking dispositions
  - Students seek deeper understanding of information rather than “google” answer
  - CBL process has opened students' minds so that students accept “grey” answers versus “back & white” answers
  - CBL process has taught them to be systematic in their inquiry
  - Students become more cognitively mature as they progress through the program

## Correlation Coefficients (Pre and Post Combined)

<i>Variable</i>	<i>CCTDI subscale</i>	<i>r</i>	<i>p</i>
Year in Program	Inquisitiveness	.217**	.010
Significant correlation between year in program and 4 subscales	Confidence in reasoning	.222**	.008
	Systematicity	.269**	.008
	Analyticity	.255*	.012

# Thematic Analysis of Focus Group Transcript



# Focus Group

“Having ‘more of a picture from the get go of how [instructors] are going to teach you and here's where you are now and yes you're going to painfully go through the basics over and over and over ... and in the end, you're going to feel like you can critically think”.

“ Felt that instructors were pushing us to make us use those thought processes”

# Pedagogical Implications

- **Orientation to CTD and CBL is necessary**
  - **Faculty skill building in the concept and instruction of CT**
  - **Content to include CT philosophical underpinnings**
  - **Educational process such as CBL builds on existing CT skills and dispositions and is supported by research**
  - **Explicit student orientation to CBL**

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# Questions

