Implementing a Concept-Based Curriculum using Simulation to teach Pathophysiology

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Setting the Standard in Nursing Education
Background

• **Why do we need to change?**
  • Information explosion
  • Volume of content to be delivered
  • Student and faculty perceptions
  • Time constraints of a quarter-based system

• **What are our options?**
  • Migration into a Concept-Based Curriculum (CBC) approach
    • Method: Simulation to illustrate the concepts
    • Framework: QSEN Principles for evaluation
Strategies

- Implementation of pilot project to integrate concept-based curriculum through simulation
  - 40 hours classroom and 20 hours laboratory within 10 week instructional quarter
  - Didactic integration of major pathological disease concepts
  - Rubrics for evaluating demonstrations and KSAs
Implementation

Simulation Experience and Debrief

Awareness
Reviewing
Reacting
Reasoning

Cannon Model of Conceptual Based Simulation Integration © (2011)
Methods

- **Integration Plan:**
  - Didactic integration of 10 instructor created scenarios covering major pathophysiologic concepts
  - Didactic integration of 9-12 student-authored created scenarios covering major pathophysiologic concepts
    - Group consensus used to select one concept
  - Weekly concept map with evidence based references
  - Weekly simulation participation and application of concepts
  - Weekly evaluation using the QSEN Principle driven rubrics
    - 25 Criteria to measure concept-based learning
    - 5 Criteria to assess difficult-to-evaluate Professional Values and Attitudes
  - Weekly debriefing and encouragement to relate manifestation of pathophysiologic concepts to patient care experiences
Methods, cont’d.

• Evaluation Plan:

  • Pilot Project
    • Phased implementation and ongoing qualitative evaluation approach
    • Faculty authored and student authored simulation scenarios were used in the following teaching-learning activity combinations:
      o Summer 2011 qtr- scenarios and written papers
      o Fall 2011 qtr- scenarios and concept maps
      o Winter 2012 qtr- scenarios and concept maps
      o Summer 2012 qtr- scenarios that incorporate pre-recorded video and concept maps
    • Collection and data analysis of aggregate data per institution’s annual effectiveness evaluation plan

• Results

  • Demographic data reveals: 47 (100%) total students, 39 (83%) female, 8 (17%) male
  • Aggregate grades for the laboratory component of the class and the overall final course grade consistently reflect successful achievement of desired student learning outcomes
  • The qualitative student perceptions obtained after focused debriefing sessions held each week were coded and thematic analysis applied in order to identify changes in students perception of acquired Knowledge, Skills, Attitudes (KSAs). The qualitative perceptions have reflected the following:
    • Self-confidence with patient care skills obtained through concept-based simulation results in student self-satisfaction that knowledge is obtained
    • Active, managed teamwork reduces anxiety in uncertain clinical situations
    • The ability to reduce distractions facilitates patient safety during the patient care process
    • Anecdotal reports from students during debriefing process reflect changes in Attitudes, as evidenced by evolving changes in self-awareness statements
Lessons Learned

**Pearls**
- Use of simulation in didactic courses provides another method
- Use of patient and disease specific videos is helpful in setting the big picture
- Assigning responsible positions for each scenario
- Concept - disease specific maps for Pathophysiologic scenarios
- Student feedback on QSEN Principle driven Rubric
- Rubrics and collaborative feedback allow for measurement of Attitudes

**Pitfalls**
- Pushback from faculty to learn to use simulation in the didactic environment
- Lack of time to learn creation of simulation scenario
- Lack of student experience in that assigned leadership role
- Time constraints of quarter based system make the evolution of the concept map challenging
- Increased paperwork demands on students and faculty
Wrap up

- Continuous evaluation for methods to improve the process
- Thank you!
- Questions
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Simulation Experience and Debrief

- Awareness
- Reasoning
- Reacting
- Reviewing

Cannon Model of Conceptual Based Simulation Integration © (2011)
The **Cannon Model of Conceptual Based Simulation Integration** centers on the simulation experience and debrief, as it relates to the integration of a concept based curriculum.

1. Model: Student begins with learning didactic content and then formulates a concept map, as it applies to patient care, allowing the student to document their initial **Awareness** of the situation on the QSEN Principle rubric, by learning what the expectations are and providing self-feedback.

   Concept-based component: *Students design a concept map of a disease as it relates to the individual being cared for, using the nursing diagnosis as a basis to build on the concepts, to include not only the individual, but the nursing care being delivered through collaboration, the healthcare system and social situations.*

2. Model: After a few simulation experiences, the student can move into the **Reasoning** phase, in which they begin to interpret patterns and can analyze and apply nursing logic, critical thinking, or intuitive information. The student continues to provide self-feedback and considers nursing instructor comments and recommendations. The student also obtains collaborative team feedback.

   Concept-based component: *Students become active participants in their own self-directed learning through feedback from the QSEN Principled rubric and their collaborative experiences. This allows the student to construct new meanings to nursing and healthcare, through self evaluation.*

3. Model: The next simulation scenario’s lead to the student’s **Reacting** to their interpretation of that reasoning. This requires taking action through patient care delivery and weighing the outcomes of that action. Again, students are able to self-assess on the rubrics and view nursing instructor feedback, along with gaining feedback from the collaborative team.

   Concept-based component: *Students begin to connect information in a different way by linking what they already know to new information. This allows to student to formulate critical thinking skills. Students are encouraged to pull information from core nursing courses (such as nursing process, nursing assessments,) and apply to the patient care situation.*

4. Model: Last, the student will begin **Reviewing** the outcomes and determining if their action taken was clinically sound and appropriate, and will apply to future clinical practice. Students are also asked to do self-reflection as to gain self-awareness.

   Concept-based component: *Students feedback during the debriefing process when relating the manifestations of pathophysiological concepts to patient care experience’s, will help measure the knowledge, skill and attitudes. Eventually these will be measured by the student’s clinical performance as to whether the concepts were learned through their simulation experience.*

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