

# Concept Mapping to Enhance Critical Thinking in Nursing Students

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## Abstract

**Background:** Teaching strategies are embraced to engage and support students in learning and realizing the potential through the guiding tools. Concept mapping is an innovative and effective strategy to facilitate meaningful learning and promote critical thinking among nursing students.

**Material:** Concept map is a learning tool as it links concepts and sub-concepts in a diagrammatic manner. This teaching strategy encourages in-depth learning of concepts, better comprehension, and correlation in clinical practice. This leads to enhanced critical thinking and improved decision making.

**Conclusion:** Concept mapping is a new pedagogical approach that can be used to developed students' critical thinking skills. However, it means development of higher-order reasoning and cognitive skills.

**Keywords:** *Concept maps, linkage, relationships, critical thinking.*

## Introduction

Over the last 25 years, the science of nursing education has advanced significantly, due in large part to nurse educators' dedication to identifying and implementing evidence-based techniques in undergraduate and graduate nursing education. Indeed, inspite of the fact that the utilization of visual and diagrammatic representation of information is not a novel concept, but their benefits in instruction has been realized lately. Stream charts were first used in the early seventies whereas visual representation was widely used in research representations. Concept mapping can be a linkage-based instrument that helps

in understanding the affiliation between different thoughts and components.

## Concept Map:

Concept map is used in numerous healthcare professional programs including medical, nursing, and pharmaceutical education to foster critical thinking and clinical reasoning<sup>1</sup>. Concept maps are an educational tool in both teaching new principles and assessing student knowledge. Concept mapping involves the identification and linkage of critical elements in a specific situation or problem. Relationships are identified in a concept map, as are points of intervention to alter outcomes<sup>2</sup>.

Concept mapping is a creative educational strategy that may promote critical thinking by rearranging and reordering conceptual understanding and meaning using the deductive or inductive thinking skills<sup>3</sup>.

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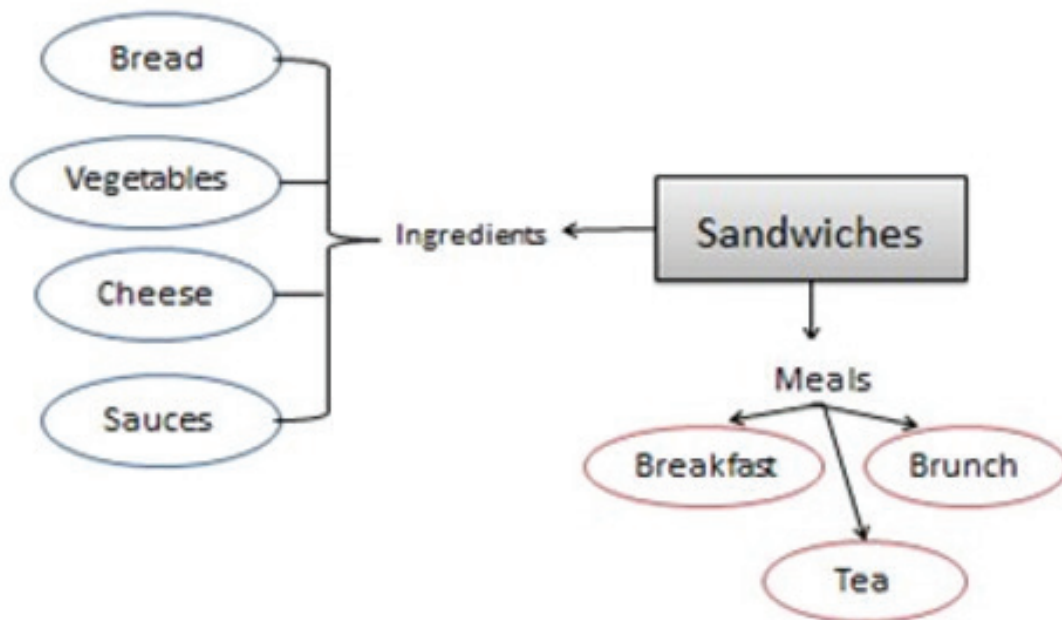
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The term concept mapping refers to a graphic or graphical depiction of essential concepts or thinking. The learner can use concept mapping to uncover links between apparently separate concepts while creating a unified knowledge structure. Through visualization of the mapping process, learners can examine their own existing knowledge and learn how to think in more critical and complex ways instead of linearly<sup>3</sup>. This approach encourages in-depth learning rather than rote memory and helps the student to comprehend the overall concept rather than the specifics. Furthermore, creating a concept map necessitates students gathering important information and organizing it in a hierarchical manner. Students must grasp the relative relevance of each thought within the larger context in order to properly create a concept map. Finally, idea mapping should enhance long-term memory of course information. This method is beneficial in

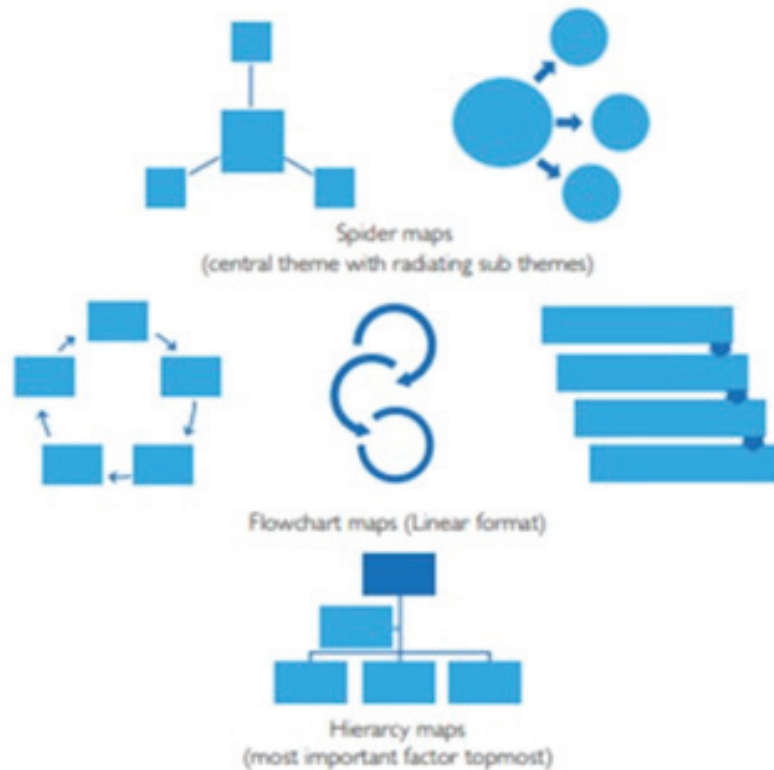
nursing education for discovering linkages between knowledge structures gained in previous courses and new topics presently being examined<sup>4</sup>. Concepts such as medical and surgical management, dietary therapy, pharmacological therapy and nursing care can be integrated into a concept map representing relationships. A student has to assemble and compile information even from previously learnt courses to complete a therapeutic framework. The linkages prepared by the students represent the thinking pattern. Every concept map whether simple or complex is made up of two key elements:

- a. Concepts: They can be typically represented by circles, ovals or boxes and are called nodes.
- b. Relationships: It can be represented by arrows that connect the concepts. The arrows can include a word or verb for linkage. These arrows are called “cross-links”<sup>5</sup>.



**Example of a concept map**

## Making of a Concept Map:



The key step is to focus on the ways ideas are linked to each other.

- Identify the concept.
- Create a visual organizer related to the concept.
- Connect sub concepts with nodes.
- Link nodes with relativity and continuity.

### Purpose of a Concept Map:

- Break up the topic into subtopics
- Organize the topics and subtopics
- Boost both comprehension and retention
- Understand relationships

### Types of Concept Map:

- a. Spider map
- b. Flowchart
- c. Hierarchy map
- d. System map

### Uses in learning and instruction:

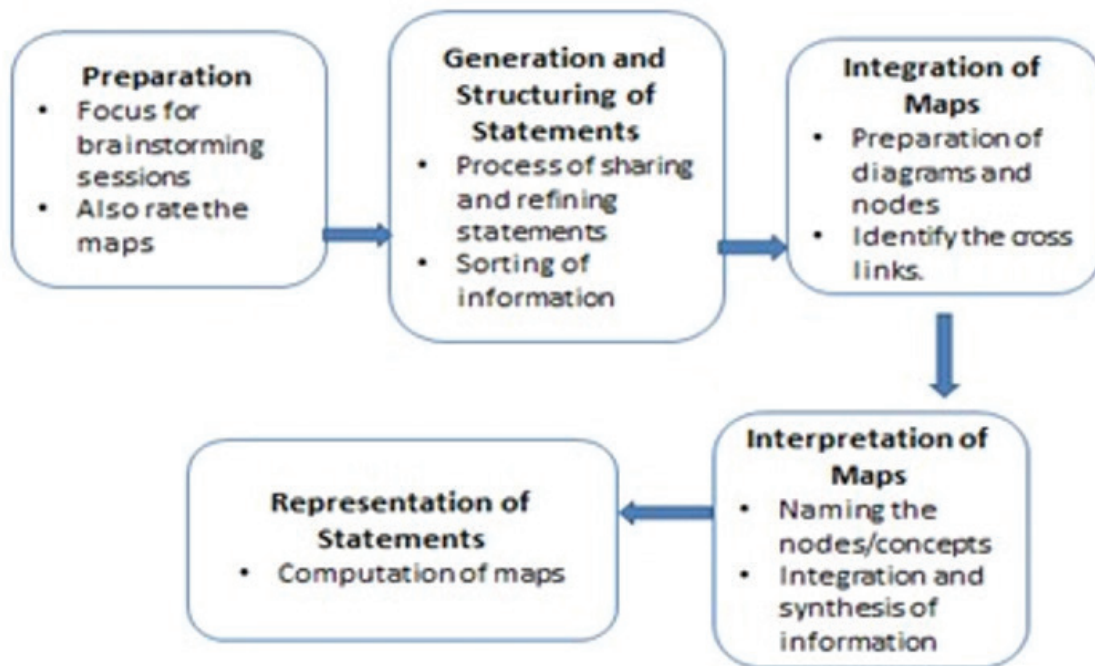
- Prepare notes
- Associate new concepts to existing one
- In depth knowledge of the concept
- Synthesize and conceptualize information
- Organizing and focusing on clinically relevant material which will be useful for patient-care

decisions.

- Team building and learning
- Promote creativity
- Employs problem-solving technique

- Evaluate and assess learning
- Summative assessment

Steps for preparation of Concept Maps:



**Nursing Education:**

Concept mapping is an educational method that encourages learners to organize and analyze material in order to discover, visually represent, and link significant concepts. Concept maps may be successfully utilized to teach concept thinking, enhancing students’ critical thinking ability in the current paradigm<sup>6</sup>. It may be used to organize and analyze curricula into a logical sequence of concepts. As a didactic tool, concept maps can aid in the refining and development of concepts in the cognitive structure. Critical thinking is highlighted and integrated into nursing education from the commencement of any nursing program. The most significant increase in

it usually occurs at higher educational levels when a student has built up a substantial knowledge base inventory and is ready to apply it to new information in the classroom and in the clinical situation. The critical thinking leads to improved decision making<sup>7</sup>. Although the process of critical thinking begins from the classroom with the help of problem-based learning or case-based learning and simulations in the nursing lab and in turn immediately transits to the clinical area in implementation. This lays the foundation for theory-to-practice application.

It also helps the learner to completely integrate the concepts by creating his or her own conceptual

map, which finally leads to meaningful learning. This teaching strategy can be utilized in the baccalaureate program for courses like Adult Health Nursing, Child Health Nursing, Community Health Nursing and Nursing Research, etc.

Concept mapping is also a metacognitive approach to learning that can help students to learn meaningfully and enhance critical thinking skills by encouraging them to process information deeply for true understanding rather than by rote memorization<sup>8</sup>. The use of concept map teaching technique in nursing will enhance the critical thinking abilities, sense of achievement, self-confidence, and ability to create a concept map individually. Furthermore, it was known that students can more readily recognize and comprehend things they do not know and understand, may better understand the subject, and it has a beneficial influence on learners.

#### **Clinical Practice:**

Concept mapping is an effective educational strategy that may promote critical thinking skills through meaningful learning<sup>9</sup>. Clinical concept mapping can be developed by the nurse administrators and practitioners to revise and reinforce learned concepts of critical care, hemodynamic monitoring, protocol implementation, etc. It aids in organization of patient data; therapy processes and promotes a holistic visualization of the patients. Preparation of maps also helps in integration of complex concepts, pathophysiology concepts, etc. into the care of patients with complicated conditions.

In the clinical setting, the tool can be used to correlate a patient's diagnosis, symptoms, treatments, interventions, and outcome criteria. This is an effective teaching method for promoting critical thinking and

is an effective way to evaluate students' clinical judgment because it is a raw visual representation of a student's thinking<sup>10</sup>. Reflection-on-action contributes to the growth of clinical knowledge development and increases clinical judgment in future situations<sup>12</sup>. However, it has been referred in studies that it increases critical thinking and essential decision-making skills. Also, by preparing maps, it decreases the level of anxiety to block the interference in learning process.

#### **Challenge:**

Concept map can be an essential instrument in the clinical setting, nursing teachers must overcome the difficulties in implementation. Instructors must learn how to utilize this clinical teaching style effectively. The success of using concept maps in the clinical setting depends on their development and alignment to the activity. The instructor needs to organize information in such a way that it aids the learner in achieving the best possible learning results. From simple to complicated, primary linkages and essential themes are presented in a logical order.

Learning to use the tool in the clinical setting may be a lengthy process for the students to acquire, and they should be familiar with the process of concept mapping prior to the reconstruction process in the clinical setting. This is a crucial step if concept maps are to stay coherent<sup>11</sup>.

One significant challenge for teaching members, besides the resources required to create the instructions and the grading rubrics, was that students were generally resistant to this process. Students are familiar, and thus more comfortable with multiple-choice exams, journal clubs, patient case assignments, and group activities. They are not familiar with

concept mapping<sup>12</sup>.

### Conclusion

Concept mapping is a novel educational approach that may be used to develop students' critical thinking skills. When we talk about critical thinking, we imply developing higher order thinking and cognitive skills. According to Bloom's Taxonomy of Educational Objectives, cognitive domain is one of the learning domains that focus on the development of intellectual abilities such as critical thinking, problem solving and creating a knowledge base. This incorporates review or acknowledgement of particular realities, procedural designs and ideas that serve within the improvement of mental capacities and aptitudes.

**Ethical Clearance:** This article is a conceptual paper. The topic is discussed in an elaborative way.

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**Conflict to Interest:** Nil

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