

Concept Mapping: an Effective Pedagogical Tool for Enhance Learning

Paper Submission: 15/11/2020, Date of Acceptance: 27/11/2020, Date of Publication: 28/11/2020



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Abstract

In this research article main objective to know the theoretical and conceptual phenomenon of concept mapping. Concept mapping technique acts as a effective tool for enhancing the performance of the students in any subject. Concept maps helps to motivate the learners to continue their learning. In this paper we understand that concept mapping can be effectively used in understanding the concept and improving teaching learning process. This paper describes theoretical aspects of concept mapping like that features, components, construction and stages of concept map and also discuss the advantages and limitations of concept mapping.

Keywords: Concept Mapping, Pedagogical Tool, Verbal Learning, Evaluation Tool, Diagrammatic Representations, Meaning Ful Learning, Improve Learning.

Introduction

Before going into understand the use of concept mapping in educational area for enhancement of learning. It is important for us to know the meaning of the term concept. According to Collins English Dictionary – A Concept is an idea or thought esp. a generalized idea of a thing or class of things; “concept maps are representing knowledge. They include concepts, usually enclosed in circles or boxes of some type, and relationships between concepts indicated by a connecting line linking two concepts. Words on the line, referred to as linking phrases, specify the relationship between the two concepts.” In simple words A concept map is a two-dimensional, graphic or schematic diagram illustrating the interconnections, and often the hierarchy, of a particular concept or topic.

Objectives of the study

The objective of this paper is to study the theoretical phenomenon of concept mapping and its role to improve learning. This paper cover all conceptual aspects of concept mapping like : features, component, construction, advantage and disadvantage and educational benefits of concept maps for enhance learning.

Concept Mapping

Concept map is a visual illustration displaying the organization of concepts and outlining the relationship among or between these concepts. (Hoffman and Novak 2003). It is two-dimensional, hierarchical, node-linked diagrams that depicts verbal, conceptual, or declarative knowledge in succinct, visual or graphic forms (Hortan et al., 1993) Concept mapping is a pedagogic technique to help students see explicitly how new concepts can be related to previously learned concepts. (Novak et al., 1981). This technique is based on Ausubel’s theory of meaningful verbal learning. Concept maps are tools for organizing and representing knowledge. They include concepts, usually enclosed in circles or boxes of some type, and relationships between concepts or propositions, indicated by a connecting line between the two concepts.

The idea of concept mapping is based on meaningful learning theory of Ausubel (1960)-prior knowledge is important for learning new concepts. It is developed by Joseph D. Novak and his research team at Cornell University in the 1970s. A concept mapping is a techniques used to organize information or thoughts. It is a visual representation of an individual’s knowledge structure on a particular topic. It delineates individual differences in learning. It can be used to stimulate the generation of idea, to aid creativity, for brain storming. A concept map or conceptual diagram is a that depicts suggested relationships between concepts. It typically represents ideas and information as boxes or circles which it

connects with labeled arrows in a structure.
downward – branching hierarchical

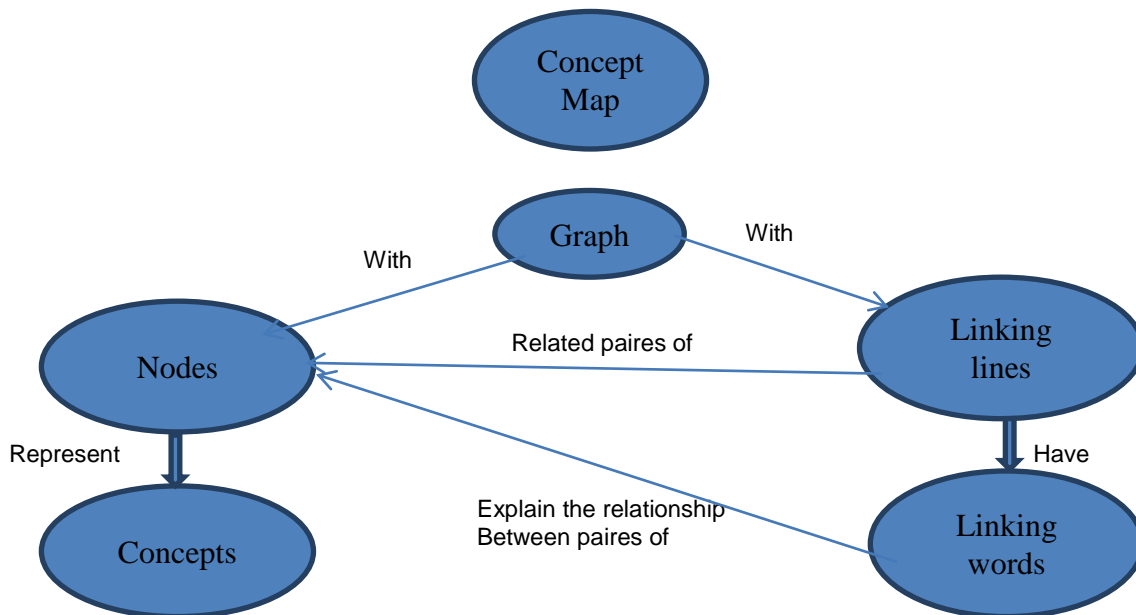
Features of a Concept Map

1. Concept map is a graphical tool use to organize and structure knowledge.
2. Concept maps illustrate patterns and relationships among concepts.
3. Concepts map are diagrammatic representations that show meaningful relationship between concepts in the form of prepositions.
4. The prepositions describe the connections between concepts.
5. Concepts maps are highly individualised
6. Usually concepts are written inside a circle or a box, connected by lines with connecting words.

7. Concepts are arranged in a hierarchical order from top to bottom, placing the most general concept at the top and moving downward.
8. There can also possible to show integration of concepts across the subjects.

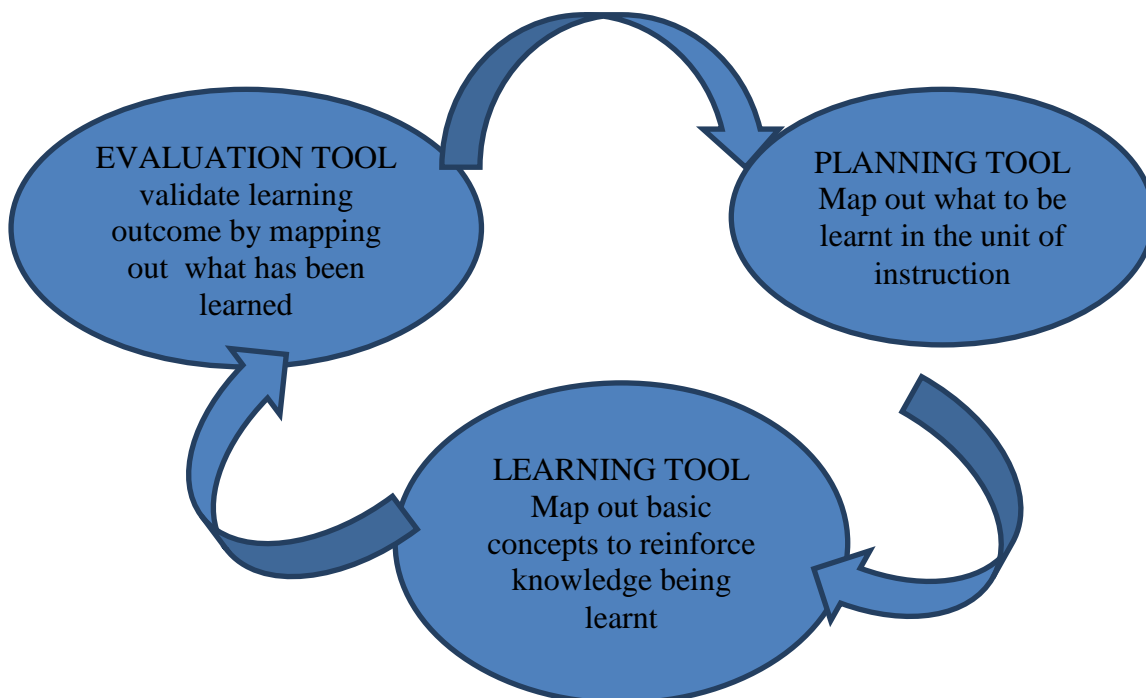
Components of Concept Map

1. Concepts are enclosed in a box or oval, linked by a series of labeled linking lines.
2. Nodes represent concepts.
3. Lines represent relations between concepts.
4. Labels on the lines describe the nature of the relationship.
5. Arrow heads indicate direction of the relationship.



a concept map showing the key concepts involved in concept mapping

Concept Mapping Classroom Triangle



Concept map is usually nonlinear and web-like, the main topic is connected to secondary subtopics, which in turn are connected to tertiary subtopics within the diagram. The main topic and subtopics are then connected by linking verbs that describe the relationship between the two.

Construction of Concept Map

1. Identify the major concepts- referred as seed in concept map
2. Arrange the concepts on paper- in a hierarchy, from general to more specific
3. Link the concepts, including the linking phrases- connect the concepts to form propositions, to show the relationship between two concepts, linking concepts is the most important aspect of concept mapping.
4. Make cross links- between two concepts in different vertical segments of the map, to understand relationship, cross-links represent relationship between concepts in different domains of the concept map.
5. Results-for evaluation

Stages In The Construction Of Concept Mapping

Brainstorming stage

1. list all terms and concepts associated with the topic of interest
2. write them in one word or phrase per note
3. don't worry about redundancy
4. generate the largest possible list

Organizing stage

1. Spread concepts on a blackboard so that all can be read easily
2. Create groups and subgroups of related items
3. Group items to emphasize hierarchies
4. Identify terms that represent higher categories
5. Rearrange items and introduce new items omitted initially

Layout stage

1. Arrange terms based on inter relationships and connections among groupings
2. Within sub-grouping, place closely related items nearer to each other
3. Connect the items in the form of a simple sentences that shows the relationship between them

Linking stage

1. Use lines with arrows to connect the items
2. Write a word or short phrases for each arrow to specify the relationship
3. Many arrows can originate or terminate on important concepts

Revising stage

1. Carefully examine the draft concept map
2. Rearrange concepts to emphasize organization and appearance
3. Remove or combine items to simplify
4. Consider adding color or different fonts

Finalizing stage

1. Finalize the arrangement of items that conveys better understanding.
2. Be creative by using colors, fonts and shapes.

Generally In the construction of a concept map, the following steps are followed:

Step 1

Identify the concepts from a selected unit/chapter. List them on the black board.

Step 2

Arrange the concepts in a hierarchical order from general to specific from top to bottom.

Step 3

Select the concepts that are to be placed laterally.

Step 4

Place all the concepts meaningfully on the blackboard.

Step 5

Draw circles/boxes around the concepts and draw lines linking the concepts.

Step 6

Write the linking words. Concept map is ready.

Step 7

Read the whole concept map and see whether all the links are with connecting words.

How to Evaluate Concept Mapping

1. Accuracy and thoroughness- Are the concepts and relations correct? Are the important concepts missing? Are any misconceptions apparent?
2. Organization- Does the map show hierarchy? Does it have a title?
3. Appearance- Is it neat and orderly? Cross links- Does the map show meaningful connections?
4. Creativity- Does it effectively communicate concepts/ stimulate interest?

Educational Benefits

1. An instructional tool
2. An assessment tool
3. A mind tool for critical thinking
4. A curriculum organizing guide in teaching
5. A tool to promote meaningful learning
6. Generates ideas- Brainstorming etc.
7. Enhancing metacognition

Advantage of Concept Mapping

1. Enhance clarity of relations
2. Improve clarity of thought
3. Assimilate more information
4. Achieve deeper understanding
5. Improve memorization
6. Improve coherence
7. Influence knowledge construction
8. Improve understanding
9. Improve learning
10. Easy to use and implement

Limitations of Concept Mapping

1. In the absence of a structured approach, become messy and hard to read
2. Not good for inclusion of detailed information
3. Hard to identify all the relationships between the concepts
4. Required an experienced facilitator

Conclusion

Concept mapping is most effective as a learning tool when combined with complementary activities to enhance the learning environment. It is a effective learning tool for teachers and learners for improvement of teaching and learning.

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