11

Concept Mapping as a Successful Tool of Teaching-Learning and Evaluation in Primary Grades

Ratna Gupta*

Abstract

There are various methods of teaching as lecture method, seminar method, discussion method, learning by doing, play way method, etc. One of these methods is concept mapping method which is comparatively less heard. Concept mapping is a graphical tool for organising and representing knowledge. It includes concepts, usually enclosed in circles or boxes of some type and relationship between concepts is indicated by a connecting line. Words written on the connecting line referred to as linking words or linking phrases, specify the relationship between the two concepts. Is concept mapping a successful tool of teaching learning and evaluation in primary grades? This research paper inquires about it.

There are various methods of teaching as lecture method, seminar method, discussion method, learning by doing, play way method, etc. One of these methods is concept mapping method which is comparatively less heard. Concept mapping is a graphical tool for organising and representing knowledge. It includes concepts, usually enclosed in circles or boxes of some type and relationship between concepts is indicated by a connecting line. Words written on the connecting line referred to as linking words or linking phrases, specify the relationship between the two concepts.

Concept maps are represented in a hierarchical fashion with the most inclusive most general concepts at the top of the map and the more specific less general concept arranged hierarchical below. Specific examples of events or objects that help clarify the meaning of a given concept, may be added to concept maps, but normally, these are not included in ovals or boxes.

Concept mapping is based on Asubel's (1963) Assimilation Theory of Learning. The fundamental idea in his theory is that learning takes place

Assistant Professor, S.S.(P.G.) College, Shahjahanpur (U.P.)

by the assimilation of new concepts into propositional framework held by the learner.

According to Novak, J.D. (1990), concept mapping is so powerful for the facilitation of meaningful learning that it serves as a kind of template to help organise knowledge and structure it, even though the structure must be built up piece-by-piece with small units of interacting concepts and propositional frameworks. Many learners and teachers are surprised to see how this simple tool facilitate meaningful learning and not only permit utilisation of knowledge in new contexts, but also retention of the knowledge for long periods of time.

Shailza, H.M.(2009) reveals in her study that most of students (93.5 per cent) agree that concept mapping is useful in understanding the concept. Majority of the pupils are of the view that the concept maps help in seeing relationship between concepts. More than two-third students report that concepts mapping is useful in remembering the content. Around sixty per cent students reply that concept maps help them in finding relationship between subordinate and super-ordinate concepts. 62.5 per cent students feel that the group concept mapping is easier and 37.5 per cent of students feel that individual concept mapping to be easier.

Agarwal, P. (2012) in her research article tells about the history of concept mapping and the process of making good concept maps.

Process of Concept Mapping

The process of concept mapping has three steps –

Starts with a Main Idea Topic or Issue to Focus on

A helpful way to determine the context of your concept map is to choose a focus question something that needs to be solved or a conclusion that needs to be reached once a topic or question is decided on, that will help with the hierarchical structure of the concept map.

Then Determine the Key Concepts

Find the key concepts that connect and relate to your main idea and rank them most general inclusive concepts come first, then link to smaller more specific concepts.

Finish by Connecting Concepts Creating Linking Phrases and Words

Once the basic links between the concepts are created, add cross links which connect concepts in different areas of the map, to further illustrate the relationship and strengths in student's understanding and knowledge of the topic.

It is important to recognise that a concept map is never finished. After a preliminary map is constructed, it is always necessary to revise this map. Other concepts can be added. Good maps usually result from three to many revisions. This is one reason why using computer software is

helpful. The concept map can also be a class effort, using a projector, where all students can give their opinion and participate in the construction of the map. There is a growing body of research that shows that when students work in small groups and cooperate in striving to learn subject matter positive cognitive and affective outcomes result (Berk, 1995).

Vygotsy (1978) introduced the idea that language and social dialogue can support learning, especially when members of the social group are at about the same zone of proximal Development (ZPD). He describes the ZPD as that level of understanding for a given subject where the learner can progress on her/his own, with minimal aid from a tutor.

Preszler, (2004) states when students work co-operatively in group and use concept maps to guide their learning, significantly greater learning occurs.

How to Use Concept Mapping in Teaching, Learning and Evaluation

Lower Primary Level

Similarly, at lower primary level a teacher can teach students through concept maps based on pictures. She/he can have some picture cutouts and coloured pencils and paste them on the chart. She/he can draw lines and cross links with the coloured pencils and She/he can also write connecting words, with the markers. An example of picture concept map is shown in Fig. 1.
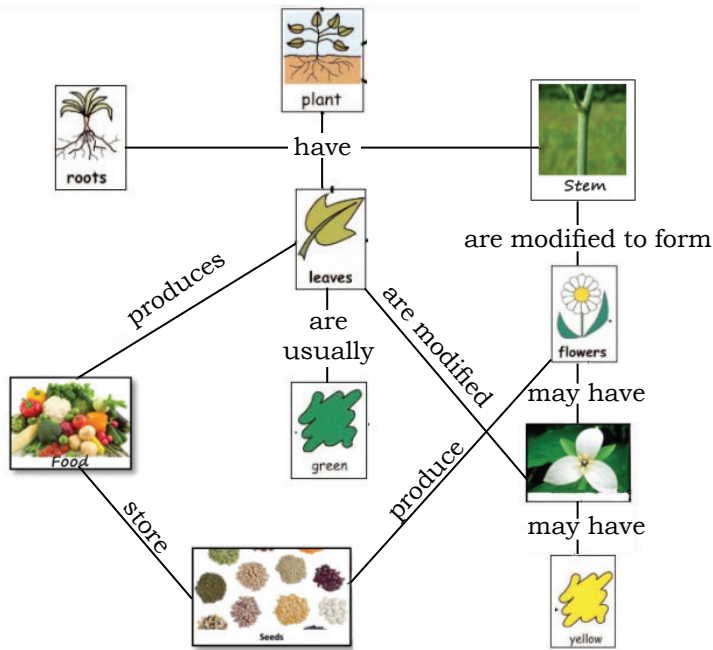

Fig. 1. An example of picture concept map for structure of plant

Concept Mapping as a Successful Tool of Teaching-Learning and Evaluation in Primary Grades   91

This technique can be used for evaluation also, for this purpose she/he can make use of following techniques-

Linkages and Linking Words Missing Techniques

She/He can paste pictures on the chart and ask students to draw linkages and write linking words with the coloured pencils.

Picture Missing Technique

Another technique may be picture missing technique. Some important pictures can be missing from the map and otherwise it may be complete. Students can be asked to stuck the missing picture at the blank space.

Picture Rearrange Technique

Another technique may be that all the pictures can be placed at the wrong place in the concept map and the students can be asked to rearrange the pictures putting right pictures at the right place otherwise the map may be complete.

Complete Picture Map Construction Technique

Beside, a teacher can evaluate through complete pictures map construction technique. The teacher can give to the students picture cutouts and a blank chart with focus question written on it and ask students to prepare a picture concept map for the focus question.

Upper Primary Level

At upper primary level a teacher can make a concept map on the blackboard step-by-step elaborating it thoroughly to the students. One example of concept map teaching is shown in Fig. 2.

Another way of teaching can be that the teacher can write the focus question on the blackboard and ask students to come and add something to the map. It is an example of group concept mapping in which each and every student participates. Thus, the knowledge gained is collaborative.
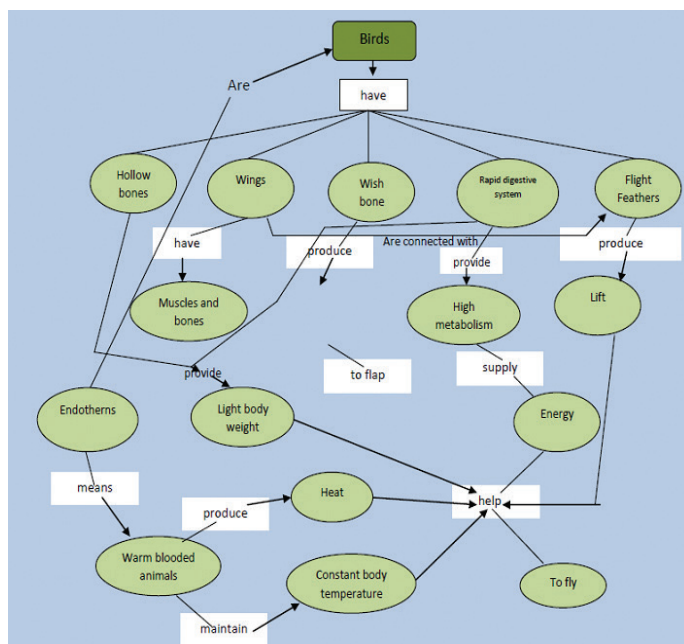

Fig. 2. An example of concept map for 'how birds fly'

Another way of teaching through concept mapping at this level may be that the teacher should divide students into small groups, and ask them to prepare concept maps. When all the group have prepared their concept maps, teachers can ask leaders of the group, to form again a group of leaders who have to prepare only one concept map again by taking help of all the group maps and finally only one leader out of all the leaders will present the concept map on the black board.

For evaluation at upper primary level, a teacher can apply following techniques-

Concept Map Construction for the Focus Questions

A teacher can ask students to draw a concept map in their notebooks for the given focus question, she/he can give this assignment in group as well as individually.

Concept Map Elaboration Technique

Another way is that she/he can draw the concept map on the blackboard and ask students to elaborate it in their notebook.

Ovals Present and Content Missing Technique

Besides, the teacher can distribute among students, concept maps in which ovals; and boxes are there, but content is missing, She/he can ask students to fill the ovals with the right concept.

Concept Map Construction for Given Concepts

Not only this, the teacher can either write certain concepts on the blackboard or can distribute paper with certain concepts written on it and ask students to prepare a concept map with the help of those concepts in their notebooks.

Conclusion and Suggestion

Nerves that lead from the eyes to the brain are many times larger than those leading from the ear, and science tells us that we give twenty-five times as much attention to eye suggestions as we do to ear suggestion. In concept mapping technique, our eyes are involved so our learning is better, while in lecture method our ears are involved so our learning is poor and achievement is little. Besides our brain works to organise knowledge in hierarchical frameworks and that learning approaches that facilitate this process significantly enhance the learning capability of all learners (Brasford, *et. al* 1999). Moreover, our brains have a remarkable capacity for acquiring and retaining visual images of people or photos; we forget the name of people but we do not forget their appearance. Perhaps this is the reason that proverbs that are passed on from generation to generation are almost all visual sayings as, 'a bird in the hand is worth two in the bush', 'it never rains but it pours', 'you can lead a house to water but you cannot make him drink'. Similarly, we find the same picture element in almost all the

'similes' that have lived for centuries and grown hoary with too much use as, 'shy as a fox', 'dead as a door nail', 'flat as a pancake', 'hard as a rock'. Perhaps, Lincoln and Shakespeare knew about this element, so the former in his speeches and the latter in his writings used visual phraseology. As in concept mapping, there is visual presentation learning is long lasting and so the achievement is high. Thus, it is a reality not a myth that concept mapping is a successful tool of teaching, learning and evaluation in primary grades.

Finally, Primary teachers can be suggested to make use of concept mapping technique for teaching because if they teach by this technique their students' learning and thereby their achievement can be better. It is because 'one cannot rely on speech alone to make himself understood or to gain and hold attention A dramatic supplement is needed. It is better to supplement whenever possible with pictures which show the right and the wrong way, diagrams are more convincing than mere words and pictures are more convincing than diagrams. The ideal presentation of a subject is one in which every subdivision is pictured and in which the words are used only to connect them. It has merely been found that in dealing with men a picture was worth more than anything.' (Carnegia, D. 2012).

Similarly, education planners may be suggested;

- to get published books based on concept mapping technique.
- to promote concept mapping technique through workshops, seminars and conferences short terms courses, orientation courses and refresher courses of U.G.C.
- to include in the curriculum of B.Ed., B.T.C., M.Ed. a chapter of concept mapping.
- to provide various grants for promoting concept mapping based researches
- to promote publication based on concept mapping.

REFERENCES

AGARWAL, P. 2012. *Concept mapping and constructism as Modern Technique of teaching Biology.* Kabitanjali, Deptt. of Teacher Education. Vardhman P.G. College, Vijnor.

ANDERSON-INMAN, L., L.A. DITSON AND M.T.C. DITSON. 1998. *Computer based concept mapping: Promoting meaningful learning in science for student with disabilities.* Information technology and disabilities, 5(1-2) retrieved September 6, 2005, from http.//www.edu/ease.itd/iddv5vn12/article.htm

ASUBEL, D.P. 1963. The Psychology of meaningful verbal learning; an introduction to school learning, *journal of Educational Psychology.* Grune and Stratton, New York.

BERK, L.E. AND A. WINSTER. 1995. *Scaffolding children's learning: Vygotsky and Early Childhood Education.* National Association for Education of young children. Washington.

Brasford, J., et.al. 1999. *How people learn brain, mind, experience and school.* National Academy Press. Washington.

Carnegie, D. 2012. *How to develop self confidence and influence people by public speaking.* A and A publisher New Delhi.

Edmondson, K. 2000. Assessing science understanding through concept maps, in J Mintzes, J. Wandersee and Novak (Eds.) *Assessing Science Understanding.* Academic Press, San Diego.

Mintzes, J.J. 2002. *Assessing Science understanding: A Human Constrictive View.* Academic Press, San Diego.

Novak, J.D. 2006. *The theory of underlying concept maps and how to construct and use them.* Technical Report. IHMC camp tools. www.ihmc.us

Preszler, R. 2004. *Co-operative Concept Mapping: Improving Performance In Undergraduate Biology.* Retrieved from, E-reality Home Blogsopt.com/2009/05

Shailza, H.M. 2009. Effect of Concept Mapping Strategy in Physics on Achievement and attitude of students. *Indian Educational Review,* Vol. 45, July 2009, 105-111

Vygotsky, L. 1978. *Mind in Society, the Development of High Psychological Process.* Howard University Press, Cambridge.