Mind Mapping- an effective learning adjunct to acquire a tsunami of information

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"The more you know and learn, the easier it is to learn and know more". — Tony Buzan

Abstract- **Aim and Need**- Current breed of students live in the tsunami of information. Which means that the students problem is less of obtaining information & more of retaining and organizing all the information that they require to ingest both during studies and afterwards to keep themselves updated. To achieve this, many students use numerous learning strategies like mnemonics, flow charts, abbreviations, maps etc. One such technique that help students in this task is called "Mind Mapping". Unfortunately this technique has received little attention since its invention, an attempt was also made by us in utilizing this concept on Dental undergraduate students in teaching and evaluating them. The results were encouraging. We recommend this technique for all teachers/students. This review details the potential of mind mapping in learning, organizing and retrieving vast information that students acquire during their course.

Index Terms- concept mapping, learning strategy, memory, mind mapping,

I. INTRODUCTION

The regular studies and obtaining vast information in any field is an integral part of any students life. But one of the major problem a student will face during his course is organizing and retrieving the obtained information especially when it matters the most. Most students use many learning strategies like Mnemonics, charts, maps[1]. Some students might even use some self developed innovative tools to make themselves convenient. In recent years numerous papers have been published regarding use of web based learning, e learning, problem based learning, evidence based learning, and case based learning/teaching etc.[1] All these methods will definitely help any student to assimilate and integrate the obtained information . Different learning strategies may differ in efficacy and applicability, but they are all rooted in a conceptual framework called the constructivist theory of learning, which states that meaningful learning, or learning with understanding occurs when learners assimilate new information within their existing framework.[2,3]

Mind Maps
The mind mapping strategy was introduced to present generation by Tony Peter Buzan[4] from Middlesex an well-known educational consultant an avid promoter of mind mapping and by Dr Allan Collins a cognitive scientist from America and

researcher in semantic memory and cognition. Mind mapping is also inspired by Greek orators and also from the notebooks of Leonardo da Vinci.[5] Mind maps are multi-sensory tools that use visuospatial orientation to integrate information, and consequently, help students organize and retain information.[6] Basically a mind map is a graphic representation of any piece of information. It is a diagram which spreads like a network over a paper from a Central Idea (CI) or main topic which generally is put in the centre of a page to include numerous subtopics or sub ideas (SI) and other information somehow related to CI are radially arranged around it, with curved lines branching out from CI to sub ideas/topics to show that they are related to one another.

Mind maps function on the principle of " Radiant Thinking"[7] which means our thoughts spread out indefinitely from a key CI which is the natural and automatic way for humans to think. In fact it resembles the brains neurological structure, where brain functions by creating interconnecting links of thousands of little protrusions on the arms of brain cell (neuron) with protrusions of other brain cells. In such a way, one brain can have an incalculable number of inter-neural links and pathways.

Mind mapping promotes the use of right side brain which is more associated with visual and image oriented than the left side. Thus the use of both the hemispheres of brain results in a performance that is not just twice as effective, but rather 5-10 times more effective.[7] Through mind mapping a student will be able to capture on a plane surface of a paper the multidimensional information his brain perceives. This is in accordance to da Vinci's notes. Unlike most learners' notes,[5] da Vinci's notes were not linear but elliptical–he used pictures and text to illustrate ideas and often connected different concepts on the same page.

 In fact in Mind maps, different cortical skills come into play : line, form, color, visual rhythm, texture, dimension and particularly imagination. Using graphic ideas and more images produces more precise and powerful associations of the ideas.

Advantages of Mind Maps;
1. Traditional method of linear note taking while listening/ reading is very attached with auditory system of consciousness, while MM takes ideas coming from speaker/ reading and distributes them on paper in many ways thus translating them into more visual form.[7]

2. Since spatial organization and visual forms are more associated with right brain, MM allows the listener to take advantage of all the left and right cortical skills of brain.

3. Right brain is more associated with visual, non verbal thinking, creative thinking. Left brain is for analytical thinking such as when one is writing. Usually one finds it difficult to express the thoughts on paper, but when right brain is used in tandem as during MM one can overcome this difficulty.

4. MM helps to concentrate more because both sides of brain are active at the same time, also various sensory channels are being employed at the same time, multiple intelligences can be drawn together which helps in comprehension and memorization.

5. MM helps to organize and classify concepts/ pieces of information which are related to each other somehow, Making complex information simpler to think and put it on paper.

6. MM makes one become more creative because it emphasizes brainstorming, free association and radiant thinking, which are actually not a part of traditional method of formal education.

7. As one uses keywords/ symbols, graphics to draw ides during MM, it becomes significantly faster when compared to laboriously writing down lines of notes. Definitely MM increases ones 'speed'.

8. Elimination of unnecessary notes is possible when a 'keyword' can achieve the same.

9. MM consume less space, They are more compact (but not less effective). More ideas can be added later if additional information is obtained from different source.

10. MM takes much less time to read review and understand, makes it more interesting because of self created associations and in turn helps in retaining for long.

11. MM can provide a over view of the topic at a glance. This means one can easily view the entire series of relationships between ideas/ information with just one look, which eases the cognitive load on one's brain.

12. MM Improves ones learning ability and memorization.

Disadvantages of Mind mapping
1. MM is an adjunct to regular reading and not a substitute to it.
2. It is difficult to change from linear system of note taking which everybody is taught since their childhood to a very different way. It requires great effort.

3. It is difficult to develop a good mind map of a totally new subject/ topic. It requires some prior information, then in such cases linear note taking may be a better option.
4. If not planned, creating a mind map may be frustrating because of lack of space, lack of creative thinking etc.
5. MM may not always be more intuitive than linear note taking.

Features of a Good Mind Map and Tips to create a good map; (fig 1)

There are essentially seven features in a good mind map as advocate by Tony Buzan. They are Organization, Keywords, Association, Clustering, Visual memory, Outstandingness and conscious involvement.

Usage of images, symbols, graphics, codes etc is recommended throughout the mind map. Creativity helps to design a good MM.

A good mind map begins with a key central idea (use 3 colors for CI) on the centre of a blank page.
Supporting ideas or information are then linked radially around it. Lines branching out radially from central idea must be thicker but flowing naturally to supporting ideas where the lines become thinner. Colors are very important, one can create his own color coding to standardize all his maps. Use of upper case or lower case letters on the lines of supporting ideas has to be standardized. The important aspect is one has to create associations as mind map is being created. Which color represents this concept? Does using upper case letters create focus on a supporting idea? Does one 'tree branch' of radiating lines display a clear relationship or set of ideas?

Appropriate usage of 'Keywords' is next important aspect. Sub ideas or information should be indicated through a keywords which should bring back strong recall of the concept along with its meaning.
Different shapes for the sub themes/ ideas could be used. Also numbering sub ideas will help in organizing them as per their importance with reference to the central idea. A MM can really get extensive. A sub topic may become central idea in the next map one draws. During associating, there is no such thing called 'stupid ideas'. An imagination that seems dumb, stupid, childish, insane at first may seem like truly creative, great concept when you examine later. They actually help in retaining the information longer. All these features like color coding, organizing, use of graphics will boost ones visual memory.

Figure 1: A Mind Map of "tooth development" created using essential features of a good mind map
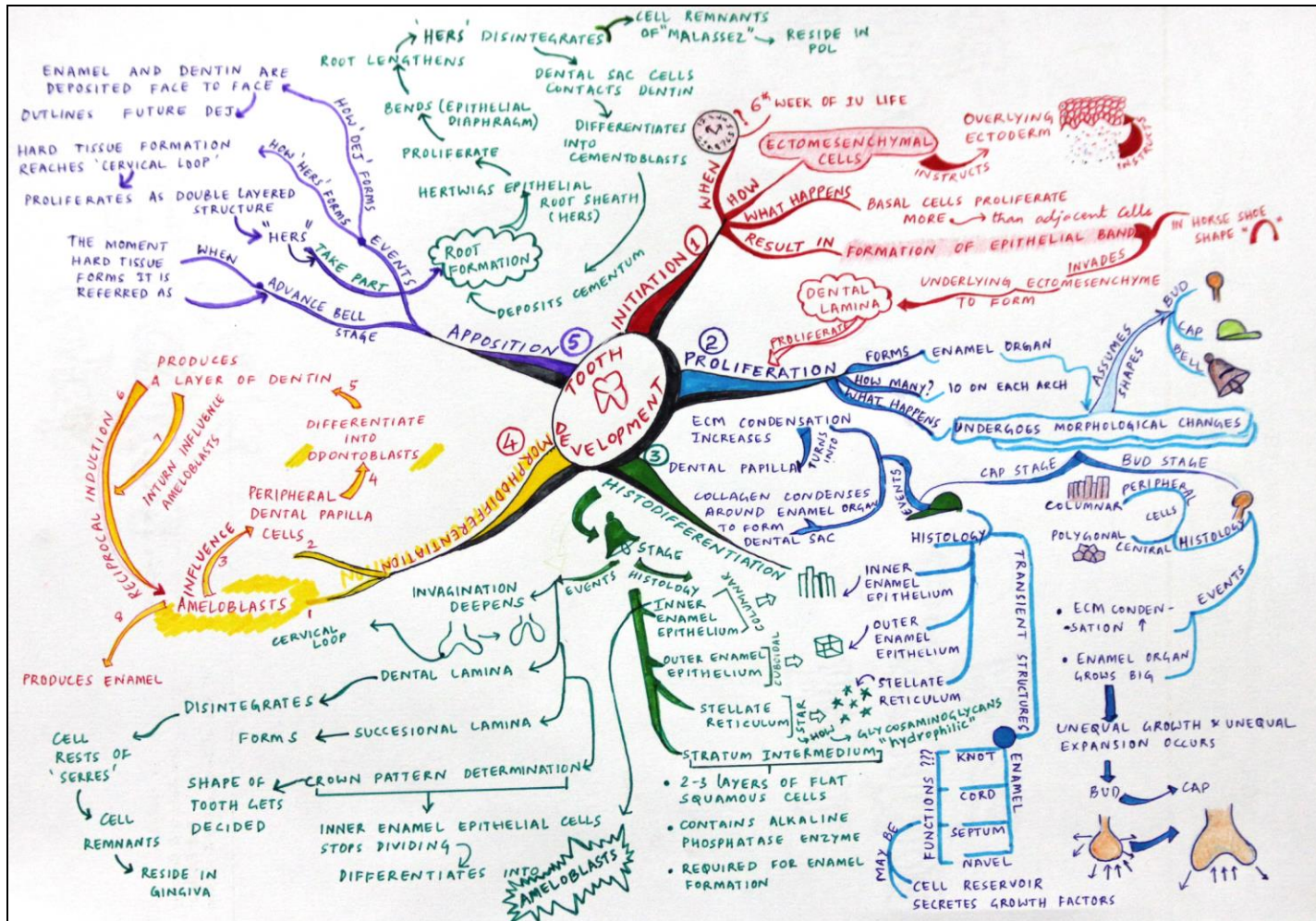
Can one depend on others Mind maps?

Vast amount of words on a MM can confuse any reader. Then how does one read a MM prepared by other person? This is where use of colors , symbols, and conventions proves useful. The middle CI will use 3 colors, look around CI one can find sets of keywords which are connected to CI. These are sub ideas. Thinner lines connected to these sub ideas are sub sub –ideas. These flow of lines should be clockwise as advocated by Buzan. By following these simple rules one can easily make use of MM created by anybody.

Practice makes man Perfect

Initially MM requires lot of time and practice. But those who master the art of MM find it more easy, comfortable and useful eventually. Initially to begin with one can start preparing hand drawn MM, later as some expertise is achieved computerized ones using many soft ware programs can be prepared.[7] Numerous small applications for creating MM are available on all platforms of operating systems both for desktops and hand held devices.

Concept mapping

Another technique similar to MM is concept mapping (CM). The basic difference though is, MM is create using a key central idea on one paper, a CM may feature several key central ideas all located on same paper. Thus , the appearance of a mind map takes for of a "Tree branches" all connected to key central idea. A concept map on the other hand usually looks like a network representation.

Conclusion

MM is an exciting tool that can be useful to everyone, no matter what their situation is. Initially one might take time to comfortable use it, it's worth the time and effort, because it can become a great time saver in long run. Advantages are not just limited to retrieving obtained information, each person using their creativity and imagination, can come up with new and interesting ways to apply it.

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