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**EFFECTIVENESS AND PERCEPTION OF CONCEPT MAPS IN LEARNING
ANATOMY AMONG FIRST MBBS STUDENTS**

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ABSTRACT

Introduction: Medical education is vast and medical student need to learn how to deal with this information, usable and applicable when providing care to patients. Concept maps is a schematic device for representing a set of concept meanings in a framework of propositions which can be used as a learning tool in a variety of educational setting and provide an opportunity to explore learners' knowledge structures and promote critical thinking and understanding. The student thinks and learns with concepts by linking and chunking new concepts to what they already know. The present study has been planned to know the effect of introducing concept maps as an easy tool in studying anatomy. **Methodology:** The study is conducted in The Apollo Medical College, Hyderabad for first phase MBBS students of 2018-19 batch in the Department of Anatomy. The teacher conducts a one hour lecture session. The students are divided into 2 groups of 50 each, to one group lecture followed by hand out notes and to other concept maps are given. Post-test is conducted using MCQ'S and the results are compared between the two groups. **Results:** The MCQ'S result between the two groups is taken and statistical analysis is done using SPSS which is statistically significant. **Conclusion:** Improvement in learning anatomy is seen and this method makes student thought process more visible and specific. This method of study helps students in self-directed learning to integrate and connect various pieces of information that pertain to the subject.

KEYWORDS

Concepts maps, Self-directed learning and Integration.

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INTRODUCTION¹⁻⁵

Medical education includes a vast amount of information. As a medical student they need to learn how to deal with this information so that it is actually usable and applicable when providing care to patients. It is also important for the educators to know about the process of teaching and making learning easy for the students. Centring their attention from 'not on how to teach a given topic' to

‘what is required for the learner to learn the topic’ which is a worthy goal.

Tell me and I forget. Teach me and I remember. Involve me and I learn. Benjamin Franklin

Interactive Teaching is an approach to education developed in the 1980's at Waikato University as part of the Learning in Science Project. It is a means of instructing whereby the teachers actively involve the students in their learning process by way of regular teacher-student interaction, student-student interaction, use of audio-visuals, and hands-on demonstrations. The students are constantly encouraged to be active participants. Understanding and meaning are emphasized, as opposed to mere rote memorization. This facilitates an environment fostering long-term memory retention.

IT techniques for small group

1. Micro teaching/Interactive Teaching
2. Think, pair, and share and Pair-Share-Repeat
3. Journal clubs/Seminars/Pedagogy/Andragogy
4. Brainstorming
5. Buzz session
6. Work placed based assessment
7. Question and Answer sessions
8. Workshops
9. Hands on experiment
10. Forced Debate, Optimist/Pessimist
11. Peer Review Writing Task
12. Psychoanalysis

IT techniques for large group

- Panel discussion
- Symposium
- Integrated Teaching/Case based/Problem based
- CME's/Conferences-Oral/poster presentations
- Didactic lectures-One-Minute Papers, Muddiest Point
- Jigsaw
- Fish bowl
- Round Robin/Board Rotation
- Pick the Winner

- Layered Cake Discussion
- Movie Application and TV Commercial
- Question and Answer sessions
- Blender
- Class Modelling
- Simulation
- Group Instructional Feedback Technique
- Audio and Videotaped Protocols
- Google/Facebook/YouTube/Twitter/Blogs

There are various techniques used in interactive teaching. In the present study Concept maps is used as a teaching learning tool and the importance is studied.

Concept maps is a schematic device for representing a set of concept meanings in a framework of propositions (Novak and Gowin; 1984). Concept maps have been used as a learning tool in a variety of educational setting and provide an opportunity to explore learners' knowledge structures and promote critical thinking and understanding. Concept mapping is an instructional strategy for individual and group learning that involves integration of knowledge and creation of meaning by relating concepts. The student thinks and learns with concepts by linking and chunking new concepts to what they already know. This learning with concept maps means that one is making an intentional effort to link differentiate and relate concepts to each other in a hierarchical fashion.

Current trends of instructional strategies followed in Anatomy are the didactic lectures, seminars, tutorial and small group discussions in dissection labs. Medical students are overburdened with vast knowledge and are unable retain the key points.

Therefore the present study has been planned to know the effect of introducing concept maps as an easy tool in studying anatomy

Aim of the Study

The present study is planned to know the effectiveness of concept maps in learning Anatomy.

Objectives

- To know the effectiveness of using concept maps in anatomy for First MBBS students.

- To assess the perception of students regarding concept maps in First MBBS students.

4. The subject matter or course content was relevant
5. The content was arranged in a logical and clear way.
6. More of such sessions should be planned in regular curriculum of 1st year teaching.

METHODOLOGY

- The study is conducted in The Apollo Medical College, Hyderabad for first phase MBBS students of 2018-19 batch in the Department of Anatomy.
- The teacher would conduct a one hour lecture session every week. After the lecture in a topic from Anatomy a Pre-test is conducted to the complete class in the same topic.
- The class would be divided into 2 groups 50 students in each as Control and Study groups.
- After the lecture the teacher would distribute the concept map pertaining to the lecture to only study group.
- After a period of one week Post-test in the form of MCQ'S would be conducted on the same topic for the complete class (100 students).
- The assessment scores of the study group would be statistically compared with the scores of control group.
- If the assessment scores of study group are statistically better than the control group, the control will be introduced to concept mapping.
- We can consider concept maps as a supplementary tool to complement lecture.
- Perceptions of students on concept mapping would be collected through a validated questionnaire.

Questionnaire

1. The learning objectives of the sessions were achieved.
2. The session is a satisfactory method of learning as compared to traditional one
3. This session has helped in improvement of knowledge

RESULTS AND DISCUSSION

Feedback results

Strongly agree - 60 %

Agree - 20 %

Neutral - 10%

Disagree - 8%

Strongly Disagree - 2%

Medical colleges in India usually following a traditional curriculum, characterized by "discipline wise model" with a high degree of compartmentalization into subjects of basic sciences, preclinical, paraclinical and clinical branches. This leads to unnecessary repetition and confusion in student's mind due to difference of opinion leading to improper grasping of the subject. This discourages students from learning, and they get disinterested in applying knowledge achieved into practice. The method of interactive teaching helps them to involve themselves and imbibe the subjects in detail.

- Increases teacher and learner enthusiasm
- Improving participation and developing techniques are most appropriate to learning goals.
- Encourages critical thinking; fostering self-directed learning and curiosity; monitoring group progress.

Example

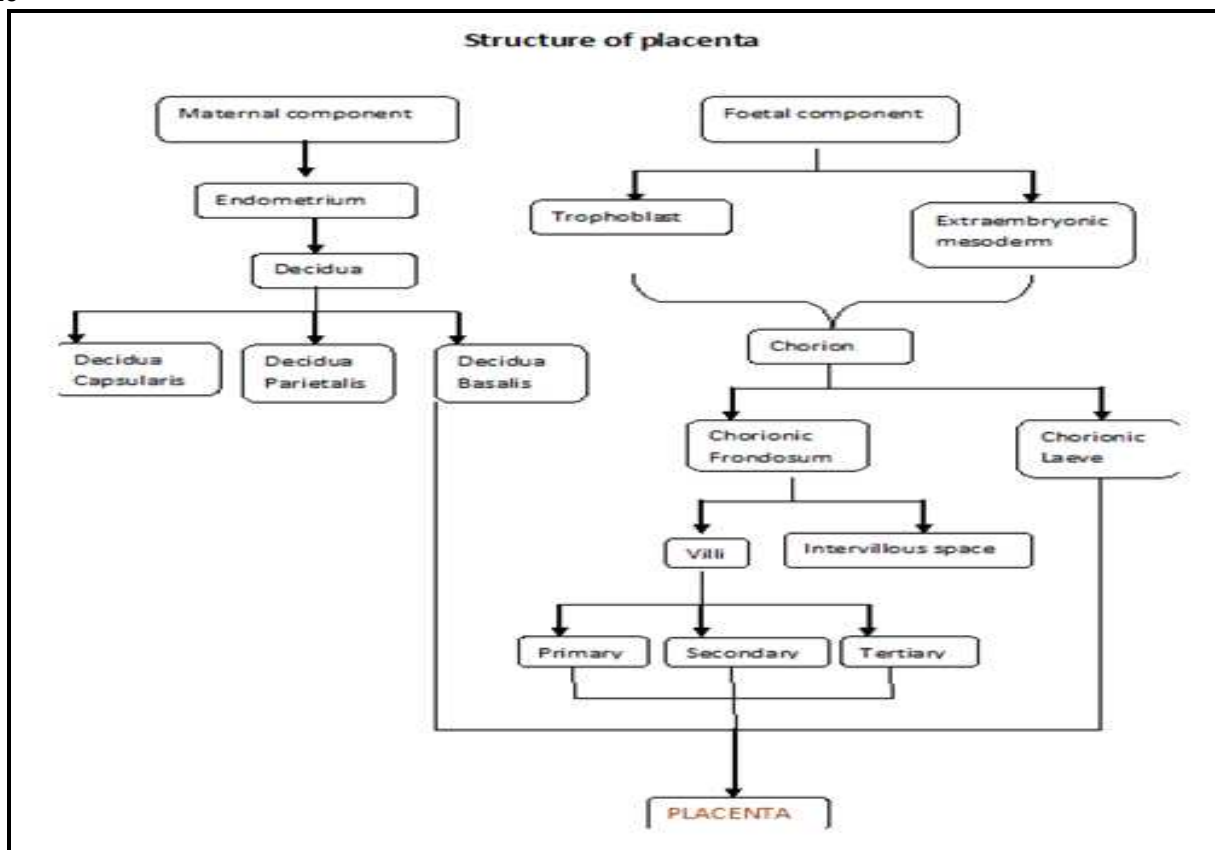


Table No.1: Outcome

Short term	Improvement in learning anatomy Perception of concept mapping on students It makes student thought process more visible and specific
Intermediate	Helps in self-directed learning of the students Helps students to integrate and connect various pieces of information that pertain to the subject.
Long term	It can be used to link basic and clinical sciences.

Table No.2: Outcome Modified Logic Model

S.No	Outcome	Indicators	Data source	Data collection method
1	Short term Students satisfaction in learning anatomy	Percentage of students in favour of concept maps	Students	Questionnaire
2	Intermediate Enhanced performance in the assessment	Good scores in the summative assessment	Students	Summative assessment
3	Long term Good medical doctor with scientific approach towards medical practice	Improved performance in clinics	Students	360 ⁰ evaluation

Table No.3: Kirkpatrick Model of Evaluation

S.No	Levels of evaluation	Evaluation question	Indicators	Data source	Data collection method
1	Reaction	- Do students rate the concept maps as more engaging and real learning experience -Perception of students on the effect of concept maps	Number of positive/negative marks	Students	questionnaire
2	Learning	Do students score significantly better following concept maps	Difference between the post test scores	Students	Post-test MCQ'S

Table No.4: Paired Samples Statistics

S.No		Mean	N	Std. Deviation	Std. Error Mean
1	Study Group (With concept maps)	13.68	84	3.151	.344
2	Control Group (Without concept)	9.67	84	2.538	.277

Table No.5: Paired Samples Test (According to SPSS VERSION 24)

S.No		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
1	---								
2	With – Without Concept Maps	4.012	4.224	.461	3.095	4.929	8.705	83	.000

TAKE HOME MESSAGE

- Concept maps are a robust teaching and learning tool
- Concept maps can be used in medical education to link basic and clinical sciences facilitate the development of clinical reasoning and promote interprofessional education.

CONCLUSION

Use of concept maps in studying Anatomy helps in:

- Improvement in learning anatomy
- It makes student thought process more visible and specific
- Helps in self-directed learning of the students

- Helps students to integrate and connect various pieces of information that pertain to the subject.
- It can be used to link basic and clinical sciences

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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