



Original Research Article

Practical demonstration first for kinaesthetic learning: A newer approach for anatomy learning

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ABSTRACT

Introduction: Gone are the days of adhering only to traditional style of learning-teaching methods. Now innovations are needed keeping in mind the developing generation of students.

Objective: To study the effectiveness of Practical Demonstration first for kinaesthetic learning: A newer approach for Anatomy Learning

Study Methods: It was a cross sectional, observational study conducted in Anatomy Department of Mahatma Gandhi Institute of Medical Sciences, Sevagram. Total 5 sessions were conducted with 15 students of MBBS I year. Each time a newer topic was introduced and students selected for that very session were shown Clinical Cases and Prosected organs first and then subjected to traditional teaching.

Results: The post tests score of two groups were compared. The average score of experimental group was high compare to control group (but not statistically significant). The feed back provided by students has suggested it to be good innovation for better and quick learning of the subject.

Conclusion: Based on the findings of this study it can be concluded that it is possible to improve the knowledge of Anatomy by newer approach of teaching topics pertaining to the subject.

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1. Introduction

The era of only rote learning is on the verge of extinction and day by day newer modalities are being added in the Medical Education System. The first year MBBS Teaching is not an exception to the same. The escalating inquisitiveness amongst medical entrants has compelled me to delve into the matter of finding some innovation in teaching an extensive and volatile subject like Anatomy.

Griss S demonstrated to the teachers how they can channelized children's kinesthetic language into constructive learning experiences, demonstrating what a natural route physicality can be to content-area

instruction.^{1,2}

Many medical educationalist throughout the globe have tried to do innovations from time to time.^{3,4}

Teaching is, rather, dominated by intuition and tradition. However, particularly in education, intuitions and traditions are not always correct when they are submitted to empirical verification.⁵ Many a times students have a predetermined mind set (or have already assumed) for what they are going to see.

2. Aim

To study the effectiveness of Case Based Scenarios followed by Practical Demonstration first for kinaesthetic learning: A newer approach for Anatomy Learning.

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3. Objectives

1. To sensitize the students about kinaesthetic learning as a new approach for Anatomy teaching-learning.
2. To conduct kinaesthetic learning sessions in the subject of Anatomy.
3. To determine the effectiveness of kinaesthetic learning on students to grasp Anatomy.
4. To assess the perception of the students and faculty for the use of kinaesthetic learning as new T-L method.

4. Methodology

The prior permission of institutional Ethics committee was taken. With the consent of senior teachers in department the topics pertaining to Anatomy which can be used for kinaesthetic learning were identified. We randomly selected the students from the current batch (keeping in mind that students from all calibre are included in the study). Initially 15 students for one topic were included.

4.1. Study design

It was a cross sectional, observational study.

4.2. Study setting

Department of Anatomy of Mahatma Gandhi Institute of Medical Sciences which is a rural medical college located in Central India.

4.3. Study duration

October 2017 to March 2018.

4.4. Study participants

Students from 2017 batch were employed for study. Total of 5 cycles of newer approach were used and each time 15 students were exposed to newer approach so a total of 75 students were recruited for this study.

4.5. Inclusion criteria

First year students who were willing to participate.

4.6. Sampling method

The anatomy topics taken for the study are thyroid gland, Kidney, cerebrum, sacrum and liver. Instead of didactic lecture first, students were taken to dissection hall first and they were shown the prosected organ/structures along with relevant pictures of clinical cases. The students were asked to write whatever they were able to infer from their experience. This was followed by theory lecture and lastly practical again. To know how much we had succeeded, a feedback from all students was taken after the completion of all sessions. We had also taken post-test of students of both

the group i.e. students who were shown clinical cases and organs first and those students who were not. The data thus obtained was analysed using statistical tools to compare the understanding of concept amongst the students subjected to this newer approach and students who were not.

After completion of all sessions, a feedback form in terms of questionnaire was given to all the students to know where we stand. They were asked to give their suggestions as strongly agree, Agree, can't say, disagree, strongly disagree. The questions asked are attached as annexure I.

5. Results

After every session of this innovative teaching post test was given to students of both the group. The questions were MCQ type or one line types. The average marks obtained in post test for both the group for five sessions are as follows in Table 1.

The average marks have shown slight increase in case of Exposed group but they are non significant statistically.

The responses of students for various questions asked to know feedback from students are as shown in Figure 2. The various questions asked were depicted in feedback form attached.

6. Discussion

The student population in universities is very diverse, ranging, ages, experiences, culture, level of preparedness and learning styles. This diversity presents academics with increasing challenges to motivate and promote student understanding.

How do the students learn?

This has been quite an elusive question for decades. Many seem to believe that learning has a lot to do with every student's level of reasoning and intelligence. Ironically Vis a Vis convention a kinaesthetic learner should not stand a chance.

However, if you divert your attention from hard-core convention, you would come face to face with multidisciplinary learning. It takes into account the ways in which every student learns best. Learning is different for every student. Some learn by watching, some by doing, some by creating, and some by listening and so on.

Therefore, it is necessary to pay attention to every disparate mode of learning to nurture complete education among the students. And kinaesthetic learning is a wide spectrum of the learning procedure that falls under these modes.

Kinaesthetic learning primarily involves employing physical activities to learn something. It replaces passive modes of learning by hands-on activities. Some students therefore are naturally born into it, some acquire it, while some have to be introduced to it as one of the progressive methods of learning.

Table 1: Comparison of average marks and p value in two groups

Session No	Average Marks (Exposed Group)	Average Marks (Non-Exposed Group)	P value(S- Significant NS- Non Significant)
I	7.26	6.63	0.078, NS
II	7.2	6.23	0.024, NS
III	7.46	6.9	0.129, NS
IV	7.40	6.46	0.018, NS
V	7.00	6.66	0.237, NS

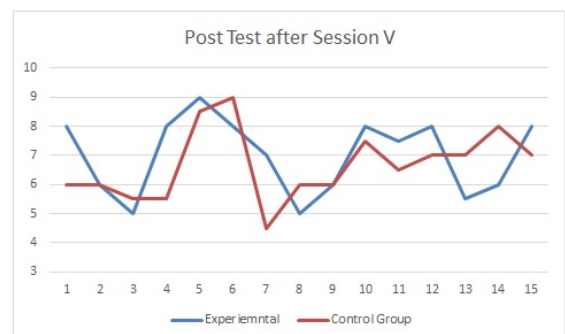
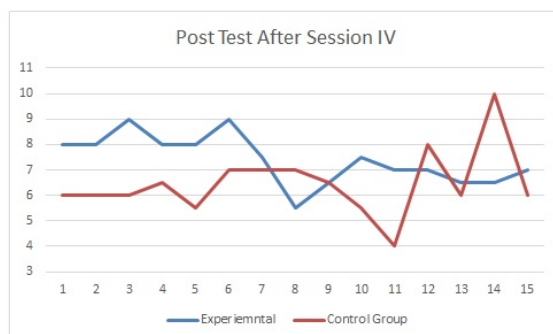
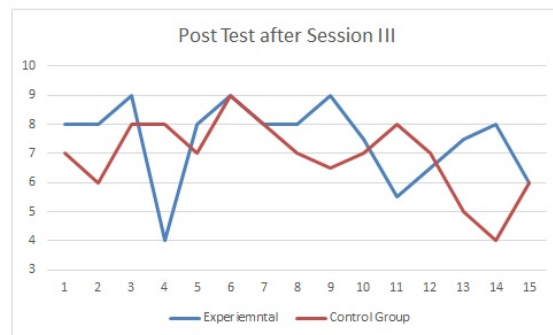
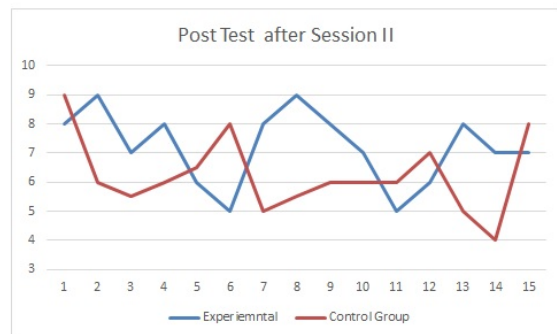
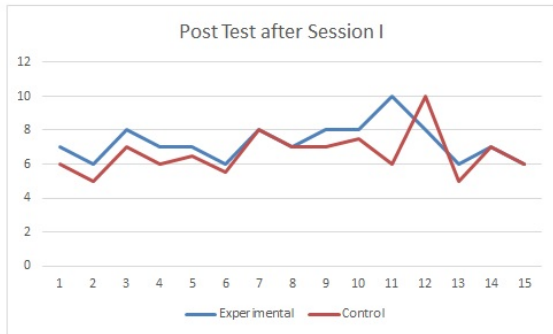


Fig. 1: Showing comparative marks for each student after every session

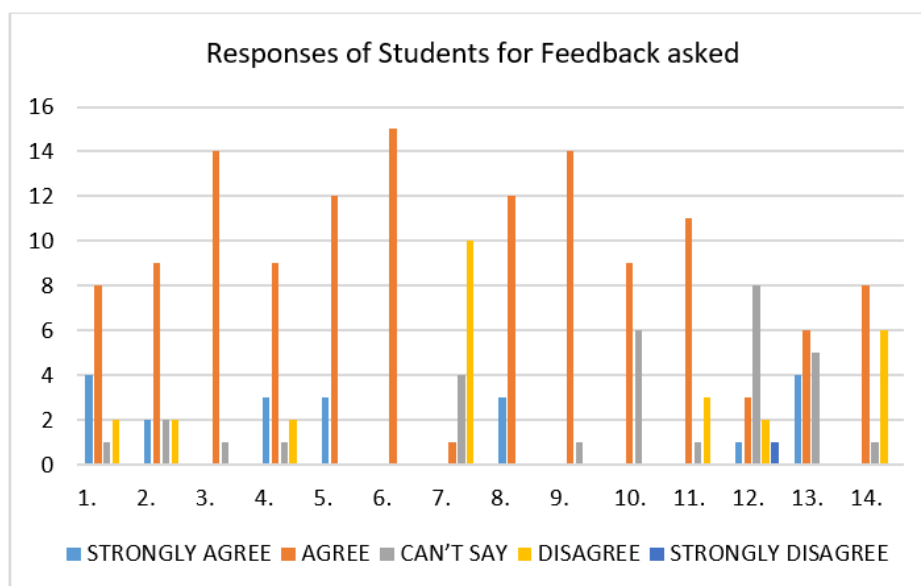


Fig. 2: Showing responses of students

Having said so it is imperative that we ask a subsequent question - How effective and beneficial will hands on learning be without any prior exposure to chalk and board learning?

Ideally it is expected that students come to more or less the same conclusion as textbooks statements in black and white. For instance would a kidney still look bean shaped to everyone or would the thyroid even remotely resemble a butterfly.

Novak S et al developed a newer methodology for teaching Anatomy, they have created interactive case-based radiology teaching files and later they integrated photographic images into the existing illustrative anatomy files. Students in subsequent years learned from these files on computers both at home and in the school's anatomy lab. This demonstrated that student-driven educational materials are both possible and beneficial.³

Scott JL et al developed the 'Shadow Module'. In 'Shadow Module' activities, students collaborate towards curating existing online open resources as well as developing learning resources of their own to support their study.⁴

One more innovation was employed by Jones et al in which medical students participated in an experimental multimedia gross anatomy program at Emory University for five years. The program included audiovisuals, computer-assisted instruction, and tutorial sessions using prosected specimens. No lectures were given nor is dissection permitted.⁵

Peppler et al introduced a gross anatomy program that was designed to expose medical students to all areas of the body but shortened the dissection time on the extremities

by having half the class dissect either the upper or lower extremity and then study the opposite extremity already dissected by other classmates. The program had been used for six years and was evaluated via an analysis of covariance by comparing the intramural examination performance on both the dissected and undissected extremities. There was no statistical difference in the students' performances regardless of the extremity dissected.⁶

McWhorter DL and Forester JP examined whether cadaver dissection by first year medical students affected their performance in two test measures: the Gross Anatomy and Embryology Subject Exam (dissection-relevant questions only), and practical exams given at the end of each major section within the course.⁷

Johnson JH in his study on Personal dissection vs. peer teaching of the upper and lower extremities revealed subtle effects of dissection on examination performance. Although peer teaching was generally successful, students preferred to dissect for themselves, lacking confidence in being taught by other students.⁸

7. Conclusion

Our study aimed to assess whether kinaesthetic learning is a better alternative to the conventional methods of teaching-learning. The newer approach utilised by us has shown good results as far as learning Anatomy is concern and the responses from the students are suggestive of it to be better approach compare to traditional one. It warrants further elaborative study and routine introduction of this concept in regular teaching so as to know future implications of it.

8. Limitations

1. Due to paucity of time we could only arrange such special sessions for limited students only and that too only one cycle per student.
2. The study was conducted in a single College only so our findings cannot be generalised.

9. Source of Funding

None.

10. Conflict of Interest

None.

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