

# Introduction of Active Learning in Parasitology for II Yr MBBS students - An Experimental Study

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## Abstract

**Background:** Students of 21st century are no longer submissive students of yester years. They are the seekers of knowledge that they like to earn and not be just given. Many studies across the globe have proven that when students actively involve themselves in the class, they learn better and perform better in their exams too.

**Aim:** This study was taken up to introduce the concept of active learning and also to know the perception of students regarding the effectiveness of active learning.

**Methodology:** The study was carried out on a group of 100 students studying II yr MBBS in the department of Microbiology. While taking the class the students were actively involved by applying methods like think- pair-share, open discussions, pauses etc. Feedback was taken using a prevalidated questionnaire with scores on a five point Likert scale from the students immediately after the completion of the allotted portion by the faculty in charge.

**Results:** In a class of 100 students, 89% liked to have discussions, 87% appreciated team based approach. Whereas 90% of the students liked think pair and share and 96% of them really enjoyed solving MCQs. The most popular activity seemed to be Case based approach (94%) and the least liked was individual presentations (71%). But all most all of them (98%) liked to have breaks in the class.

**Conclusion:** Involving students in a large group makes learning effective. Our study results point out towards the fact that interactive lectures when carried out properly will have positive impact on the learners ability to learn, think and analyze the subject at hand.

**Key words:** Active learning, Interactive classrooms, Large group teaching, Think-pair-share, Effective learning.

## Introduction

In the era of innovations and advances in all sectors of Science and Health, where exactly the education stands is the question often asked by the health professionals. We often ask ourselves how effectively can we teach our students. How innovatively can we make our classrooms conducive for learning? Answer to this very important question lies in transforming the classrooms from teacher centered to student centered. The newer generation feels that it is high time for the paradigm to shift. Successful teaching and learning can occur in a classroom only when there is good teaching practice relevant to students learning. Traditionally students were mere passive listeners where as teachers were the givers of knowledge. In

contrast, a more modern view of learning constructivism, where students are expected to be active in the learning process by participating in discussion and/or collaborative activities<sup>(1)</sup>. Students can be actively involved in a classroom by asking them simple questions, asking them to recall some core facts, pulling them into discussions on the concept at hand, or simply by sharing their views. Active involvement does not necessarily mean that there has to be an activity. A simple pause of 1-2 min in between the slides can itself be freshening thing for students. An efficient teacher can utilize this pause time to put up an MCQ or a riddle or even a relevant joke to break the monotony of lecture. In an active classroom, the interaction need not be always between the teacher and

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the students. It can also occur between the students. Peer discussions and sharing of ideas amongst students are very important for those students who are hesitant to open up in front of a teacher. It also helps them to build a strong rapport with each other and form a team. Further, research on group-oriented discussion methods has shown that team learning and student-led discussions not only produce favorable student performance outcomes, but also foster greater participation, self confidence and leadership ability<sup>(2,3)</sup>.

**Methodology :** This study was carried out from July 2011 to Dec 2011 in the department of Microbiology, JJM Medical College, Davangere. Students in II yr MBBS are routinely divided into two sections A and B, comprising of 80-100 students each depending on the number of students entering II yr. Active learning principles were applied to section A and there were 100 students in that section. For that given term, allotted portion was Parasitology and it was taught with the active involvement of students. In each class, either **PPT** or **Blackboard** or sometimes a **combination** of both was used. Slides were planned in such a way that every 7<sup>th</sup> slide was blank. It was time for **pause!** The time was utilized as a break. During this time, an **MCQ** based on the portion covered so far in that particular session or sometimes even a riddle or a general microbiology question was posed. Students were asked to pick the options either by raising one hand or two hands or even to stand up according to the options given. Though there was some amount of noise, the students enjoyed to think and also to participate in the activity. The intention was to break the monotony. In some classes the topic was announced a week before and the **students were asked to present to the class** and the entire class was open for discussion. If the students could not find the answers for certain questions, the facilitator intervened. This discussion based approach, helped some of the students to open up otherwise. In other classes, **case scenarios** were put students were asked to think and then discuss with the person sitting on their right or left and finally they had to share with the entire class. Thus **think-pair-share** was applied to bring out participation or inputs from the shy students. Sometimes 3 benches were made into a **team** and given time to discuss and one of them had to answer the question at hand. These approaches were brainstorming and created **buzz groups**. They also helped the otherwise shy students to share their ideas with their peers. This was a kind of **reactive team building** process. At the end of the term, a pre validated feedback questionnaire was administered to

the students of section A only. The questionnaire was prevalidated before administration and the scoring was done using a five point Likert scale. This was to know the perception of students regarding the activities done.

**Results:** Data from the feedback given by the students was analyzed and tabulated. The same is shown in Table 1.

There were some students who gave a feed back that these kind of activities though seem good, do not have an exam oriented approach. They liked teachers to tell everything in their lectures. Most of the students liked to have breaks in between the class. They expressed that continuous class with out any breaks was very monotonous and not interesting at all. But here the breaks were utilized to engage the students mind.

**Discussion:** It is often seen that a well crafted and well planned lecture though is the most efficient way of transferring the information to a large class. But it emphasizes content rather the process and in doing so often fails to stimulate inquiry based learning and critical thinking of the students<sup>(4,5,6)</sup>. These one-way exchanges often promote passive and superficial learning<sup>(7)</sup> and fail to motivate students and builds neither confidence nor enthusiasm<sup>(8)</sup>. Many studies have shown that student centered pedagogy and interactive – learning activities increase students' performance<sup>(9,10,11,12,13)</sup>. Even though we get enough evidence pointing out the positive outcomes of interactive learning, there are vast majority of faculty still not accepting the fact that these principles and activities can be applied in the routine classes. Many are apprehensive regarding the size of the class, time and also the portion to be covered in that particular term. Well that can be managed by meticulous planning by the teacher. A large class (in our case-86 students) can be divided into smaller groups of 10-12 each and the activities can be carried out. Of course there will be some amount of buzzing in the class but then at the same time there is brainstorming going on! Regarding time, with proper lesson planning time can be definitely adjusted. In our study, only the must know topics were covered in the class. This way time does not become an hindrance to carry out any activities. Further we are handling adult learners and one need not have to teach everything. Few things have to be left for students to learn on their own. If find difficulty in understanding on their own, they can always seek the help of faculty. And coming to the content or portion to be covered using interactive learning is a difficult task is the general notion

prevalent among many. Yes it is justified, but again stress should be given to teach must know content only. And the faculty in-charge could complete all the core chapters well in time. Time has changed to customize our classes according to the learning outcomes of the students. Continuous class for 60 min or more is now a thing of past. Research findings suggest that student concentration during lectures begins to decline after 10-15 minutes<sup>(14)</sup>. So it becomes important to hold the attention of students spaced over a span of 45-60 min. This can be well achieved by giving breaks or pauses. The pause or break can be utilized to relax or the students can use it to jot down the points they have missed while taking notes or even they can discuss anything that they have not understood with their peers. The multiple concepts, methods & pedagogies associated with active learning, along with newly emerging technologies can lead today's learners to apply tools and knowledge in new domains and different situations, but only if we are willing to rethink the how, what, where and when of learning<sup>(15)</sup>.

**Hurdles faced:**

1. All the students did not participate actively but they needed constant encouragement. So the faculty had to spend more time with some of the students.
2. For each class a lot of planning had to be done to carry out the activities.
3. Objections from the other faculty for changing the trend.

**Limitations:**

1. The level of understanding of the subject by the students should have been assessed at the end of the term. This would have given more insight to the direction of students' learning curve.
2. Active learning methods were not applied to both the sections due to rotation of faculty.

**Conclusion:** Overall results of our study indicate that there is lecture based teaching leads to the ability to recall facts and superficial learning by the students as it stimulates only the cognitive domain. Whereas active learning or active participation of students results in higher level comprehension & fosters greater participations as well as self confidence. To conclude, active learning has more positive learning outcomes compared to traditional lecture based formats.

**Impact:**

Seeing the appreciation of students, active learning principles were continued and specifically to improve the critical thinking of students, case based approach

**Table 1 :** Perception of students on active learning methods adopted.

Sl. No.	Active Learning Method used	% of students who liked the activities
1	Discussions	89%
2	Team based approach	87%
3	Case based approach	94%
4	Think-pair-share	90%
5	Presentations	71%
6	MCQs	96%
7	Breaks	98%

to teach systemic bacteriology for the subsequent batch was taken up in (2012) and again in the next term while teaching immunology, posters were presented by the students (2013). Thus the study started in 2011, served as a stimulant to continue transforming the dynamics of lecture based classes.

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