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Flipped Classroom As A Large Group Teaching in Anatomy.

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Abstract: Anatomy is a vast subject which requires memorization and retention of the subject in the pre-clinical stage. The same knowledge has to be applied in understanding in problem solving in the ensuing clinical stages. Millennium students are well versed with technology. Innovative teaching methods have also evolved making use of the technology and connectivity.
One innovative teaching methodology of the recent times has shown to have better results in improving the learning and higher levels of cognition in comparison to the traditional mode of teaching. Flipped classroom method and its positive results were seen when employed on a small group demonstration.
The enhanced learning shown by the Flipped classroom technology has prompted me to try the same on a large group lecture taking into view the problems involved in implementing the same to a small group.
Keywords: Flipped classroom, Traditional teaching,

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I. Introduction

Lecture as a teaching methodology has been a part of the system since time immemorial. A traditional method of delivering a lecture has been adopted from the senior teachers and is the method being followed in our Institution's.
Anatomy is a subject which requires a lot of understanding and retention to retrieve the subject. Most of the subject is delivered through lectures in a classroom catering to more than 100 students at a minimum. It is well perceived that demonstration limiting students to a group of 15- 20 promotes greater understanding in a student and helps him learn the subject well in comparison to a lecture involving more than 100 students. But the inadequacy of staff in the Institutions, forces the faculty to adopt Lecture as the teaching strategy to meet the existing needs. In the traditional model of classroom teaching, the teacher is the primary disseminator of information and is the focus of the instruction. Individual lessons are taught and questions are posed within the short period of the lecture without giving him time to assimilate and the student is guided by the teacher himself in his own lecture style. The student is limited to the traditional model of learning and also attends to the tasks designed by the teacher without his individual thoughts flowing into the system.

This system though being effectively practiced since ages and yielding good results, has not been adequate to the Millennium generation who are tech savvy and search for more detailed information from the internet. With the information is gained from other sources, the student tends to lose concentration on the lecture which itself becomes a boring proposition for him. Another disadvantage with the traditional lecture is that, an ensuing lecture does not allow the student to enter into a higher level of thinking which stimulates his thought process in a novel way to generate new ideas and concepts and tends to follow theideology of his preceptor. In addition, home work is imposed after the class to improve his retention and memory of the subject. The flipped classroom methodology in contrast, makes the student do his home-work first and then attend the class.It is an instructional strategy and a type of blended learning that reverses the traditional learning type by giving the delivery content in advance of the lecture to the student. . The instruction can be learnt and assimilated at a certain pace and time of his own and at a place which is convenient to the learner.Thereby the can have a better learning experience. In other words, the instruction is learner centered. Lectures and notes are delivered to the student online way ahead of the scheduled lecture and support and guidance is provided by the faculty.
In class room activity helps the students to work in groups allowing active learning and differentiated instruction is provided to promote higher order thinking skills such as problem solving. It also promotes personalized interaction with the teacher.

II.Theoretical Review

The basic idea was initiated in 1993 by a book, "From Sage on the Stage to Guide on the Side"published by Alison king which was an impetus for providing educational space for active learning.[1]

Mazur's book published in 1997 found that his approach moved information transfer out of the classroom and information assimilation into the classroom, allowed him to coach students in their learning instead of lecture.[2][3]Research by Lage, Platt, and Treglia asserted that this methodology meets the needs of students with a wide variety of learning styles.[4]

Kaw and Hess paper published in 1977 compared the effectiveness of 4 instructional modalities (traditional lecture,blended learning, web-based self- study, flipped class discussion) for a single topic showed Web-based modules for instruction resulted in higher levels of student performance and satisfaction.[5]

Perhaps the most recognizable contributor to the flipped classroom is Salman Khan in 2004.

All the above were targeted at a small group discussion and were best suited to Institutions with adequate number of faculty to meet the required student faculty ratio.

The low faculty student ratio does not permit small group teaching and this has prompted me to study the flipped class methodology on a large classroom.

II. Methodology

The present study was done at Rajeev Gandhi Institute of Medical Sciences, Srikakulam, Andhra Pradesh,India, with an intake of 100 students per year. 100 students of basic sciences were selected for the study. A topic from Anatomy was selected for the lecture to be held on a particular day and all the students were informed 15 days before, regarding the scheduled lecture. All the 100 students were divided into three groups, A,B &C, of 33 each. The division of students was done in an orderly manner, avoiding meritorious and non-meritorious students falling into the same slot based on the rank secured in the NEET examination.The groups were assigned according to their Roll numbers.

Group A (1,4,7etc) : 33 students : These students were kept uninformed regarding the scheduled topic .

Group B (2,5,8etc) : 33 students : These students were informed about the topic and were asked to come prepared for the lecture.

Group C(3,6,9 etc) : 33 students : The PowerPoint presentation and Lecture notes was mailed to these students15 days before the scheduled lecture.

Strict confidentiality was maintained during the ensuing period and the lecture was held as scheduled. Immediately at the end of the lecture, the students were provided with a set of questions testing, Knowledge/ Recall, Understanding & Application ability of the students.

Secondly, after a month later, the students were summoned to the class and a surprise test was conducted with questions on Memory, Understanding and recall.The results were analyzed and presented.

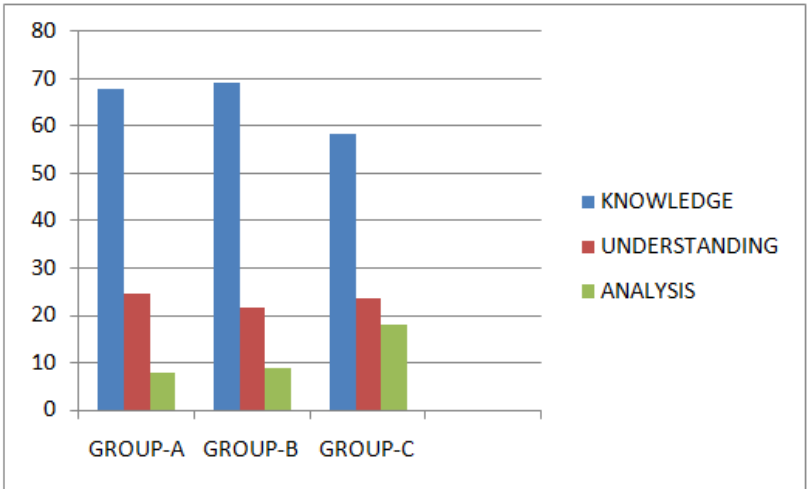
III. Analysis Of Results

The following results were obtainedfor the quiz held immediately after the lecture.

Group	Knowledge	Understanding	Analysis
A	67.77 %	24.44%	7.77%
B	69.23 %	21.79 %	8.97%
C	58.49%	23.58 %	17.92 %

Table.1 showing the percentage of students showcasing their ability on Recall, Understanding and Analysis.

It shows that the Group A students who haven't prepared with the topic did well in the questions of recall than on the questions on understanding and analysis. The Group B students who came well prepared with the topic did the best in the questions of knowledge when compared to both the groups but were falling behind on the understanding and analytical components. They showed an overall better performance when compared to Group A, but were falling behind Group C in the understanding and analyzing components.



1. Analysis showing the quiz showing the data immediately after the class.

The students of Group C who already went through the Online lecture and the teaching notes showed a reduced ability in questions of recall when compared to the other two groups but were better off than the other two in understanding and analysis.

After a period of one month a surprise test was held for the same students and the following results were obtained.

Group	*Knowledge*	*Understanding*	*Analysis*
A	*67.10 %*	*23.68 %*	*9.21 %*
B	*62.26 %*	*20.75 %*	*13.20 %*
C	*50 %*	*26.92 %*	*23.07 %*

Table.2 Showing the results of quiz a month after the lecture.

The Group A students retained the knowledge component better off than the other two groups even a month after the lecture.

The Group B students maintained the same amount of retention and understanding but improved on the analytical component during the ensuing month.

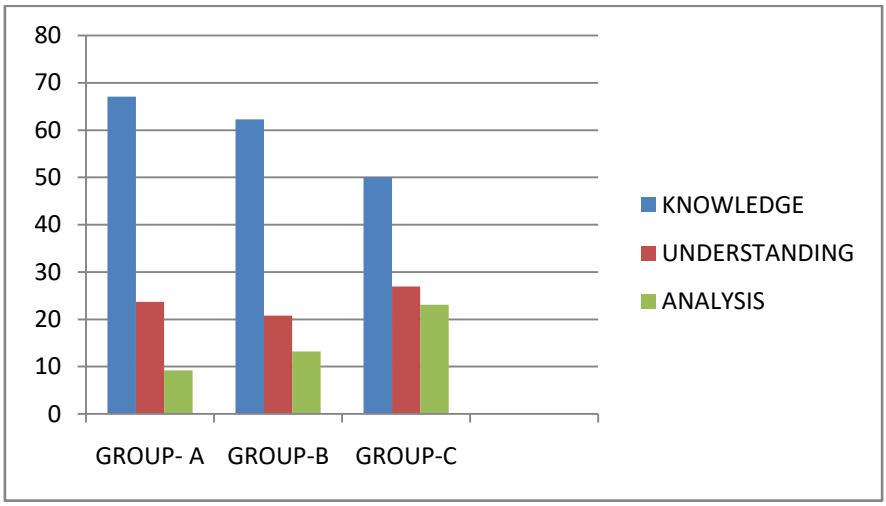


Table.2 showing the results of quiz after a month after the lecture.

The Group C showed reduced retention during the past one month but a vast amount of improvement was observed in the understanding and analytical components of learning.

IV. Discussion

A comparison of the results obtained show the effects of a Flipped classroom method of teaching on the learning and retention skills and also the understanding and analytical skills developed by the student in a large group. It was seen that the students who have witnessed the online lecture and went through the teaching notes did not show improvement in the recall as the cognitive process was engaged in higher level of thinking during the ensuing lecture. This could also be attributed to the Halo effect in which a student becomes over confident and assumes he knows everything after going through the online lecture and teaching notes. Whereas the students who were not even aware of the topic of the lecture were showing better retention as the working memory was not involved during the lecture and worked as a clear slate enabling registry of the content with ease. On the contrary, the flipped classroom group exhibited a great improvement in the analytical component, which is a higher order cognition. The process of higher thinking which was initiated during the lecture has improved upon itself during the gap of one month which is required of by a medical student to become a competent professional. But the reduction in knowledge component has to be improved upon by reading the topic again as possibly the lecture and teaching notes provided have induced a clinical sense of analysis and the irrelevant things were discarded during the study process.

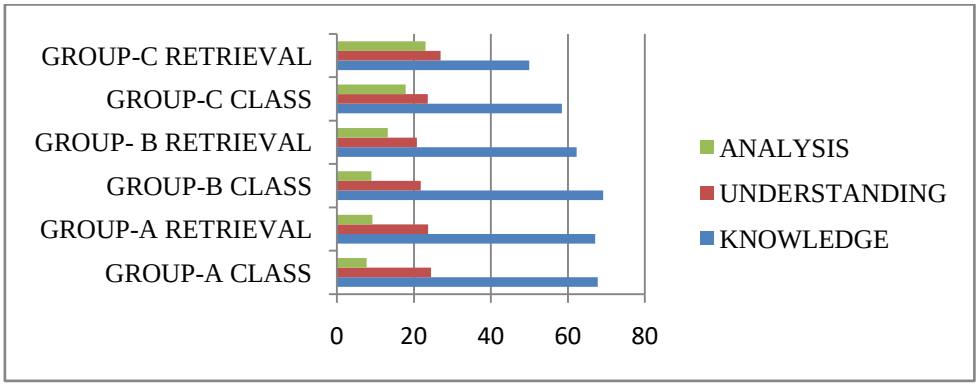


Table 2. Showing the changes in knowledge, understanding & analysis components immediately after the class and a week after the class.

V. Conclusion

Higher level of cognition, critical and analytical thinking are the basic components required of by a medical student in the making of a competent physician. Competency based medical education is the recent buzz word for attaining which,the present medical education system under the process of transformation. The most important aspects of medical school training which are in accordance with the opinion of medical practitioners[6][7] ,are clinical problem solving, learning how to acquire knowledge, developing bedside manner, teamwork, technology training, and clinical research.[8] These fall in line with the Competency based Medical Education module of the Indian Medical Graduate proposed by the Medical Council of India.Training physicians to imbibe these competencies requires a deviation from the traditional methodology of teaching. The critical thinking and problem solving approaches required thereof, must be nurtured from the basic sciences itself by inducing problem oriented teaching from the beginning itself.This method helps in improving the learning in educating students even in the preclinical departments for improving the clinical orientation and applied aspects of the students and also helps in improving the critical thinking skills.

Conducting small group sessions for such a large number of students with the available staff pattern, is a difficult proposition in the present circumstances as most of the Institutions in our country are suffering from dearth in faculty. Large group focused lectures are the only way out in the present scenario. The future of medical education lies in technology. Various types of software are available for preparing video lectures and uploading online even though it is time consuming for the faculty.The cost and effectivenessof technology focus in utilizing faculty, space, finances, and other resources.The extension of technology to the nook and corner of the country helps in percolating the educational content to the students even though connectivity might be a problem at times.The millennium generation students with technology and connectivity at hand in the form of high tech smart phones can access the content at the time and place of their convenience. The flipped classroom method shows that the higher thinking skills required of bythe medical student is well achieved even in the large class room and should be taken up in implementing the same in the basic sciences.The flipped classroom is looked upon as the next frontier of medical education.[9]

Flipped classroom method for the large group fails to facilitate team work as students in the group have different strengths and weaknesses in knowledge and skills.[10] Visual and auditory learners go along with video lectures, whereas reading/writing learners may prefer written notes. Kinesthetic learners need problems and

vignettes as learning material. This program is now making its way into medicine [11] and represents a potential future for improved instructional efficiency. The most important aspect of this method enables students to be better prepared for the clinical experience which they are likely to undergo further in their training.

However, by pushing students to learn essential medical knowledge and build skills and abilities beyond information recall, the flipped classroom represents a promising modality in medical education even for a large class room teaching.

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References

[1]. King, Alison. "From sage on the stage to guide on the side." *College teaching* **41** 1: 30–35.
[2]. Eric Mazur (1997). Peer Instruction: A User's Manual Series in Educational Innovation. Prentice Hall, Upper Saddle River, NJ
[3]. C. Crouch & E. Mazur (2001). Peer Instruction: Ten Years of Experience and Results, Am. J. Phys., v69, 970-977.
[4]. Maureen Lage, Glenn Platt, Michael Treglia (2000), Inverting the Classroom: A gateway to Creating an Inclusive Learning Environment, Journal of Economic Education.
[5]. Kaw, M. Hess (2007). Comparing Effectiveness of Instructional Delivery Modalities in an Engineering Course Autar Kaw and Melinda Hess, International Journal of Engineering Education, Vol. 23, No. 3, pp. 508-516.
[6]. Pershing S, Fuchs VR. Restructuring medical education to meet current and future health care needs.*Acad Med*. 2013. December; 88 12: 1798- 1801. doi: 10.1097/ACM.0000000000000020. [PubMed]
[7]. Kebede S, Pronovost P. It is time to reinvent the wheels of medical training. *Acad Med*. 2015. February; 90 2: 126 doi: 10.1097/ACM.0000000000000600. [PubMed]
[8]. The Ohio State University College of Medicine. College of Medicine News: The State of Medical Education. http://medicine.osu.edu/news/archive/2014/11/20/the-state-of-medical-education.aspx . Accessed September 29, 2015.
[9]. Prober CG, Khan S. Medical education reimagined: a call to action. *Acad Med*. 2013. October; 88 10: 1407- 1410. doi: 10.1097/ACM.0b013e3182a368bd. [PubMed]
[10]. Association of American Medical Colleges. Recommendations for Clinical Skills Curricula for Undergraduate Medical Education.https://www.aamc.org/download/130608/data/clinicalskills_oct09.qxd.pdf.pdf . Accessed September 29, 2015.
[11]. Sandars J, Patel R. Self-regulated learning: the challenge of learning in clinical settings. *Med Educ*. 2015. June; 49 6: 554- 555. doi: 10.1111/medu.12695. [PubMed]

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