

EVALUATION OF STUDENTS' RESPONSE TO TEACHING METHODOLOGIES IN
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ABSTRACT

Introduction: Due to the Covid pandemic, there has been a marked shift in the teaching methodologies. E lectures have largely replaced didactic lectures taking place physically in a face to face interaction. How it has affected the students needs to be evaluated. **Objective:** This study was proposed to compare the students' responses to previously used teaching methodologies with the current mode of e-lectures. **Methods:** 77 students of first year BDS course were taught various topics from their Physiology syllabus, using different teaching methods which included blackboard teaching, blackboard teaching with notetaking, powerpoint teaching and powerpoint teaching with note taking initially. The Covid pandemic set in and further lectures were conducted online, and the study was continued, including the e-lectures in the teaching methodologies. The students' responses were collected with respect to whether they grasped the concept, found lectures interesting, found the matter clear and easy to understand and rate their satisfaction on a Likert scale, ranging from very satisfied, satisfied, neutral, unsatisfied to very unsatisfied. Students' consent was obtained prior to the study. The responses obtained from them were tabulated. **Results:** 85.7% found it easy to grasp concepts during e-lectures. 75.32% of students found e-lectures interesting. 72.72% of students rated powerpoint without notetaking for matter being clear and easy to understand. Only 15.6% students found it easy to take notes. In grading satisfaction, the highest percentages of very satisfied were 25.97% for e-lectures, satisfied were 38.96% for e-lectures, closely followed by 37.66% for both blackboard teaching with note taking and powerpoint teaching with note taking. 59.74% were neutral for powerpoint lectures without notetaking. For unsatisfied grade, 37.66% opted for blackboard teaching without notetaking, while for very unsatisfied grade, 14.28% opted for blackboard teaching with notetaking. **Conclusion:** The students rated e-lectures better for grasping concepts and most found e-lectures interesting. While they rated powerpoint lecture without notetaking for matter being clear and easy to understand, the percentage for e lectures was also not far behind. The students had good satisfaction level with the e-lectures. It is postulated that the students favored this mode of teaching because these lectures could be viewed again and again at the students' convenience. The limitations of the study were identified as the lack of supervision during the e-lectures, and the fact that different topics were chosen for different teaching methodologies. Overall, blackboard teaching was preferred least and although majority of the students found it difficult to take notes, they also found notetaking helped to make the matters clear and easy to understand. This study offered a unique opportunity to compare the same students' responses to different teaching methodologies employed before and after the pandemic.

KEYWORDS: Covid pandemic, teaching methodologies, dental students, physiology.

INTRODUCTION

Lecture strategies and teaching aids used in dental/medical colleges in India are usually the same as those used for the students in Europe and the US. Some teachers modify their lecture strategy (e.g. by providing the names of diseases, conditions, and symptoms in the local language also) to suit the needs of the Indian students. To the best of our knowledge, such modifications have not been documented.^[1]

Lecturing or large group teaching is one of the oldest forms of teaching. Whatever their reputation, lectures are an efficient means of transferring knowledge and concepts to large groups. They can be used to stimulate

interest, explain concepts, provide core knowledge, and direct student learning.^[2]

At present, the most common ways of lecture delivery include the lectures using PowerPoint (PPT) presentations, lectures utilizing the transparency and overhead projector (TOHP) besides the traditional 'chalk and talk' method.^[3]

Cell phones, palmtops, and handheld computers; tablets, laptops, and media players are included under mobile learning devices. With the evolution of technology, students achieved competence and interested in interactive learning. The education industry has moved from distance learning to e-learning and finally to m-

learning as knowledge expanded exponentially and the demand escalated.^[4]

It was only around 2005 that the term m-learning became known. It was first used to channel e-learning which was being imparted on desktop computers. However, the lack of functionality, processing speed and battery life served as limitations of this approach.^[5]

On 30 January 2020, the WHO declared the COVID-19 outbreak as a public health emergency of an international scale.^[6]

The outbreak has changed the schedule of conferences and sports events, and institutions are canceling classroom-based classes and converting them to online sessions. Colleges are being forced to consider large-scale preventive measures to keep students and professors healthy as well as to create plans for when infections materialize on *campus*.^[7]

With modern technology at our fingertips, it is practical for the students to access the contents of each lecture from home and avoid unnecessary attendance at the lectures than can increase the risk of spread of infection. E-learning in some way encourages self-learning independency amongst the students and improves their ability to use online resources.^[8]

The students show more interest and participation when they view lecture as something they participate in rather than being a passive listener. At the same time, we need to train students to be more active in learning and in finishing the task.^[9]

The final challenge is ensuring that students have the teaching, experience and are assessed to ensure the competency of the graduating student.^[10]

The current climate in health care is one of reform. Dentistry is not separate from this movement and moreover, dental education should remain a major focus of reform.^[11]

Assessment and evaluation form the basis of reform. So with this in view, the present study was undertaken to

assess the perception of dental students towards various teaching methodologies employed before and after the Covid 19 pandemic. The study was started before the pandemic but before the results could be tabulated, the pandemic set in, so the evaluation was expanded to include the e-learning methodology introduced during the pandemic when students had to study from home.

MATERIAL AND METHODS

This study was conducted at Dasmesh Institute of Research and Dental Sciences, Faridkot which offers Bachelor of Dental Surgery course during which students study Physiology as one of their subjects in their first year curriculum. The teaching methodologies include didactic lectures tutorials and practicals. Total number of students admitted in the course for the session was 84. Consent was procured and 79 agreed to take part in the study, but due to attendance problem, 77 students participated till the end. A series of lectures in the topic of cardiovascular system were conducted using different teaching methods, namely, blackboard teaching, blackboard teaching with notetaking, powerpoint teaching and powerpoint teaching with note taking. The Covid pandemic set in and further lecture were conducted online, in the topic of endocrinology, and the study was continued, including the e lectures in the teaching methodologies. E lectures were recorded as video lectures on screen-castomatic and shared with the students.

The students were asked to be attentive during the lectures and submit feedback about the different methodologies with respect to whether they could grasp the concept, found lectures interesting, found the matter clear and easy to understand and to rate their satisfaction level according to Likert scale ranging from very satisfied, satisfied, neutral, unsatisfied upto very unsatisfied. The results were collected and tabulated on excel sheets and plotted on graphs.

RESULTS

85.7% found it easy to grasp concepts during e-lectures while 67.5% of students grasped concepts well during the powerpoint lectures without notetaking.(Figure1.)

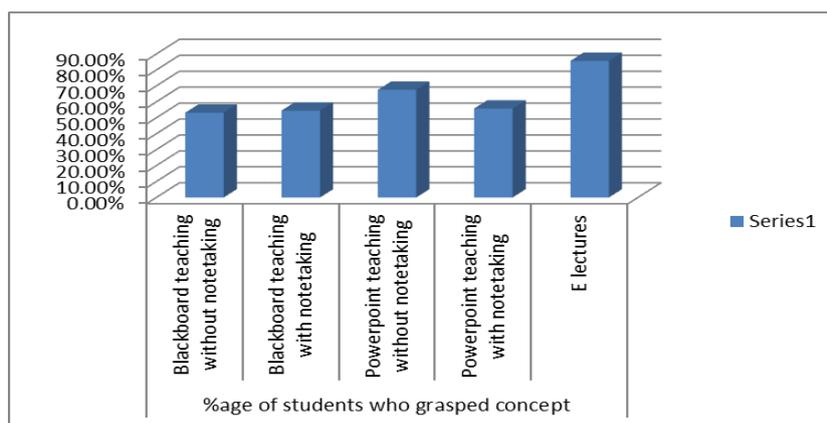


Figure 1. Percentage of students who grasped concept.

For E-lectures, 75.32% of students found them interesting. 55.84% of students found the powerpoint lectures with notetaking interesting while for blackboard teaching with note taking, it was 53.24 %. (Figure2)

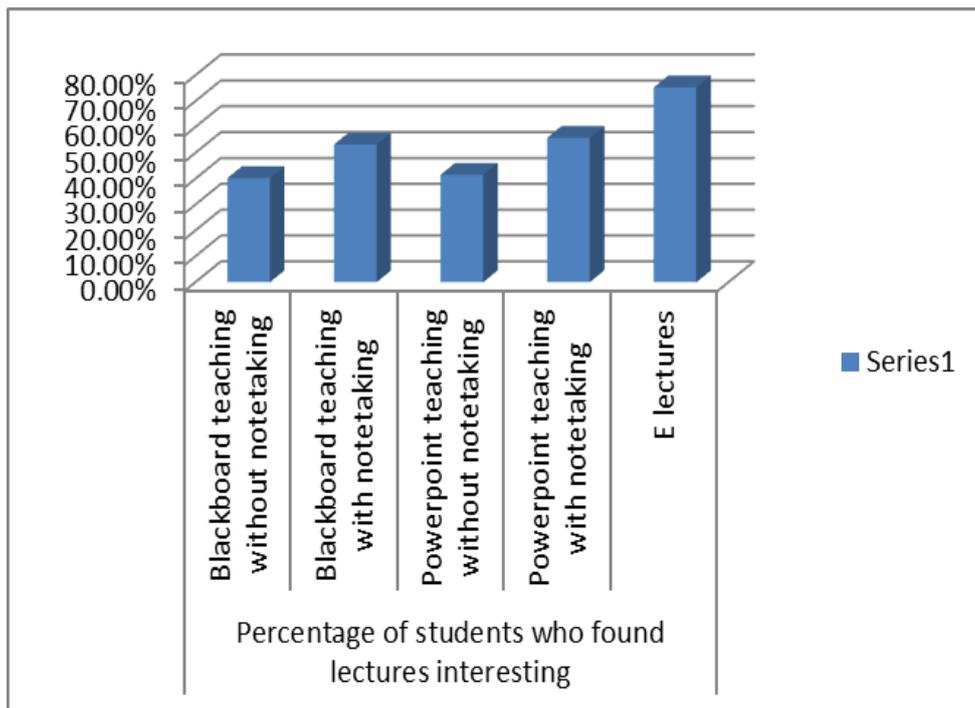


Figure 2: Percentage of students who found lectures interesting.

72.72% of students rated powerpoint without notetaking for matter being clear and easy to understand, while for e-lectures, it was 71.42%. (Figure 3).

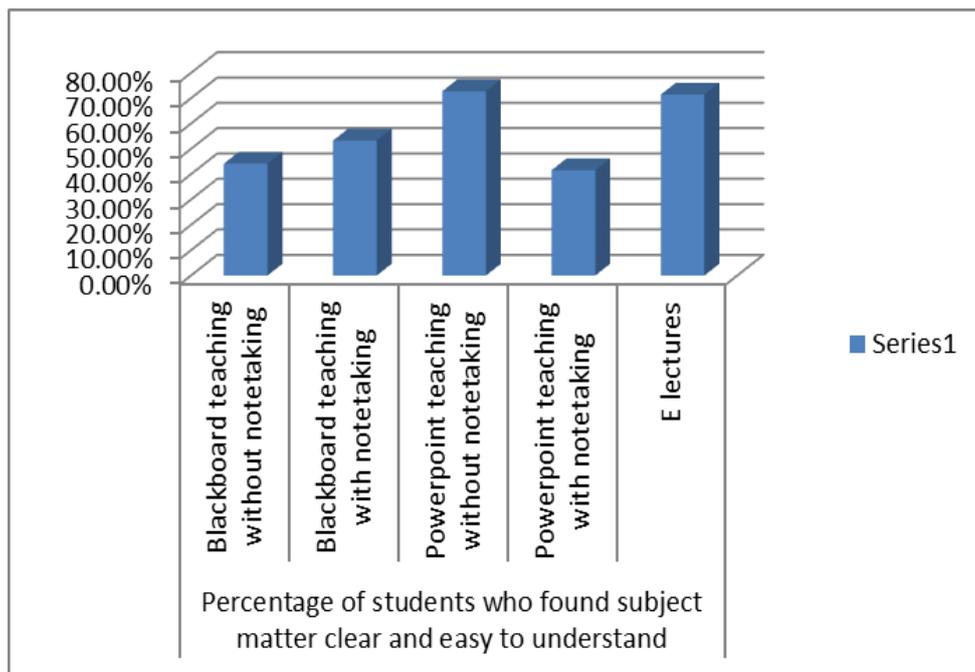


Figure 3: Percentage of students who found subject matter clear and easy to understand.

For grading satisfaction, the highest percentages of very satisfied were 25.97% for e-lectures, satisfied were 38.96% for e-lectures, closely followed by 37.66 % for both blackboard teaching with note taking and powerpoint teaching with note taking. 59.74% were

neutral for powerpoint lectures without notetaking. For unsatisfied grade, 37.66% opted for blackboard teaching without notetaking, while for very unsatisfied grade, 14.28% opted for blackboard teaching with notetaking. (Figure 4)

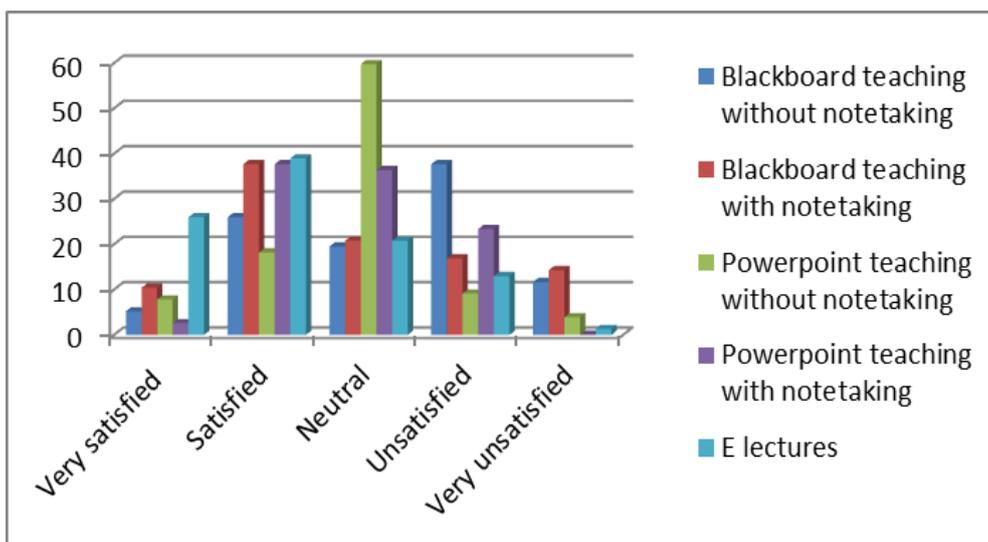


Figure 4: Percentage of students' satisfaction grade with different methodologies.

Only 15.6% found it easy to take notes. (Figure 5.)

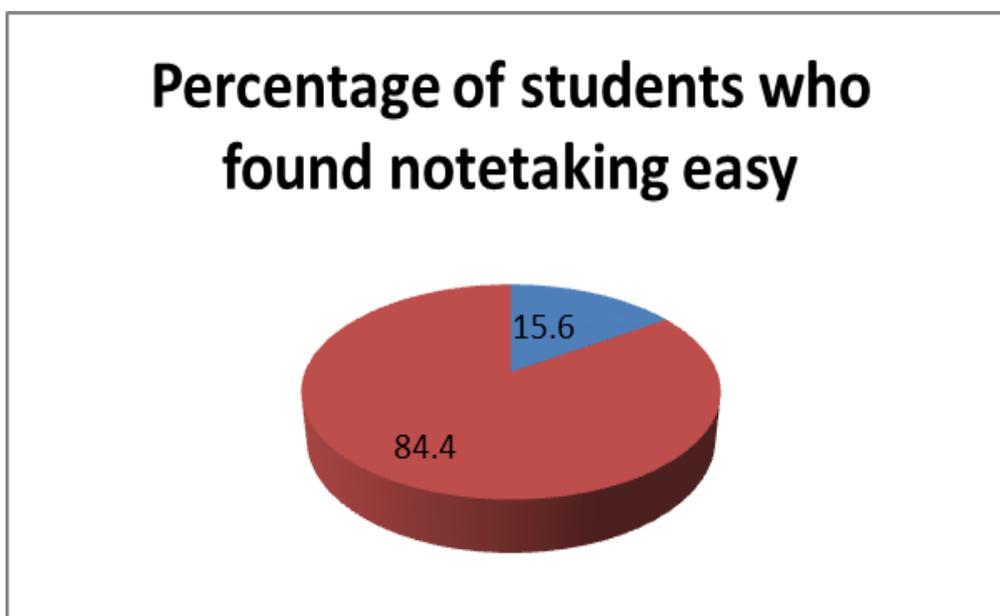


Figure 5: Percentage of students who found notetaking easy.

DISCUSSION

In this study, students' responses to different teaching methodologies were studied, including the impact of electronic teaching learning media during the covid pandemic. The learning experience in higher education has shifted paradigms from an instructor-focused approach to learner centered pedagogical methods.^[12] Hence finding out students responses to the teaching methodology is a must to ensure effective teaching. Chalk and blackboard and powerpoint were quite popular among teachers as classroom teaching methods, until the onset of the lockdown during the covid pandemic. Several studies proved the students showed no particular preference of blackboard (BB) teaching over powerpoint

(PP) teaching and even preferred both in combination.^{[13][14][15]}

The present study also included electronic teaching learning media in the form of video lectures that the students could download and study at any time. The videos ran powerpoint slides along with the teacher's audio providing explanation of the text, diagrams and figures. The use of these e-lectures was well received by the students. They showed higher satisfaction grade also (Figure 6). This is similar to results found by Yamauchi^[16] who also found that while comparing two student groups, those who watched the DVD had a higher level of overall satisfaction with the instruction than students who did not.

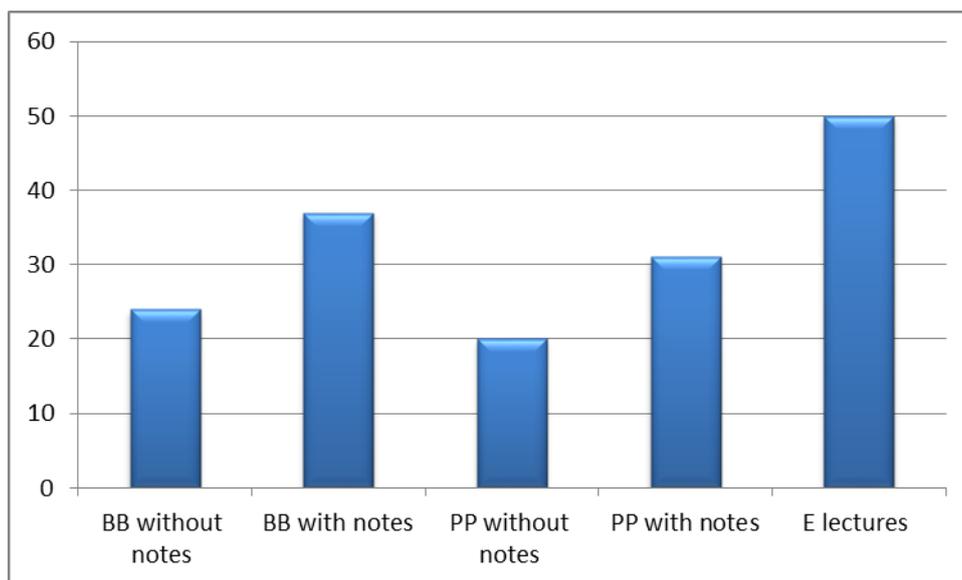


Figure 6: Percentage of students with combined highly satisfied and satisfied grading with different methodologies.

The current trend in education is mobile teaching and without even formally adopting it, many of us teachers are guiding and carrying out discussions with students over social media applications which are easily usable over smartphones. E lectures offer the same advantage. Perhaps the most important step is to stop thinking of these devices as phones; they are really powerful and portable computers. It is entirely possible that over the coming decade these devices may affect education in ways that match or exceed the personal computer revolution that has impacted education over the past two decades.^[17] We found the dental students readily adopting the change in teaching methodology during the pandemic.

A difference in students' responses for the same teaching method was noted depending on whether or not the student took notes. Grasping concept was more with PP teaching without notetaking (figure 1) while more students found lectures interesting with PP teaching with notetaking (figure 2) For finding subject matter clear and easily understandable, more students favoured BB teaching with notes, while PP teaching without notes was preferred (figure 3). Considering figure 6, if we just consider BB and PP teaching, then more number of students have combined highly satisfied and satisfied grading for these methods with notetaking, although as seen in figure 5, most students found notetaking difficult. Whether taking notes helps or not probably depends on the cognitive load that the students can handle in the note-taking process.^[18] The limitations of the study were identified as the lack of supervision during the e-lectures, and the fact that different topics were chosen for different teaching methodologies.

CONCLUSION

Students adopt electronic media readily. In our study, most of the dental students grasped concepts with the e-

lectures and found e-lectures interesting and were overall satisfied with them. However the job of the teacher is to deal with different motivation and the learning capacity of the student. There is no substitute for paying attention.^[19] The flexibility of teaching hours with downloadable lectures seems to work for the student. More research is needed to conclude whether a student preferred a particular mode depending on the difficulty level of the topic.

REFERENCES

1. Kumar M, Saxena I, Kumar J, Kumar G, Kapoor S. Assessment of lecture strategy with different teaching AIDS. *J Clin Diagn Res.*, 2015 Jan; 9(1): CC01-5. doi: 10.7860/JCDR/2015/10805.5413. Epub 2015 Jan 1. PMID: 25737979; PMCID: PMC4347070.
2. Cantillon P. Teaching large groups. *BMJ.* 2003 Feb 22; 326(7386): 437. doi: 10.1136/bmj.326.7386.437. PMID: 12595386; PMCID: PMC1125317.
3. Seth V, Upadhyaya P, Ahmad M, Kumar V. Impact of various lecture delivery methods in pharmacology. *EXCLI J.* 2010 Aug 25; 9: 96-101. PMID: 29255392; PMCID: PMC5698892
4. Muttappallymyalil J, Mendis S, John LJ, Shanthakumari N, Sreedharan J, Shaikh RB. Evolution of technology in teaching: Blackboard and beyond in Medical Education. *Nepal J Epidemiol.* 2016 Oct 3; 6(3): 588-592. doi: 10.3126/nje.v6i3.15870. PMID: 27822404; PMCID: PMC5082488.
5. Traxler J, Wishart J. *Making Mobile Learning Work: Case Studies of Practice*, Bristol: ESCAlate (HEA Education Subject Centre) 2011; 4 - 12.
6. The Lancet Emerging understandings of 2019-nCoV. *Lancet.* 2020; 395: 311. doi: 10.1016/S0140-6736(20)30186-0.

7. Araújo FJO, de Lima LSA, Cidade PIM, Nobre CB, Neto MLR. Impact Of Sars-Cov-2 And Its Reverberation In Global Higher Education And Mental Health. *Psychiatry Res.* 2020 Jun; 288: 112977. doi: 10.1016/j.psychres.2020.112977. Epub 2020 Apr 12. PMID: 32302818; PMCID: PMC7152919.
8. Prati C., Pelliccioni G.A., Sambri V., Chersoni S., Gandolfi M.G. COVID-19: Its impact on dental schools in Italy, clinical problems in endodontic therapy and general considerations. *Int. Endod. J.* 2020; 53: 723–725. doi: 10.1111/iej.13291.
9. Vasudeva R., Das S., Sodhi SPS. BFUDJ, volume 9; Issue 1 (June) 2019 Assessing Students' Response to Problem Based Learning as a Teaching Methodology for Teaching Physiology in a Dental College
10. Deery C. The COVID-19 pandemic: implications for dental education. *Evid Based Dent.* 2020 Jun; 21(2): 46-47. doi: 10.1038/s41432-020-0089-3. PMID: 32591653; PMCID: PMC7317244.
11. Saffari et al. *BMC Medical Education* 2018; 18: 89.
12. Hsu, C. H. C., & Wolfe, K. Learning styles of hospitality students and faculty members. *Journal of Hospitality & Tourism Education*, 2003; 14(3): 19-27.
13. Nagothu RS, Reddy Indla Y, Paluru R. Effective physiology teaching methods: from the perspective of first year MBBS students. *Indian J Clin Anat Physiol.* 2016 Jul-Sep; 3(3): 336-338. doi: 10.5958/2394-2126.2016.00076.1. PMID: 27617306; PMCID: PMC5014394
14. Prabhu R., Pai K.M., Prabhu G., Shrilatha A Lecture in Medical Physiology- PowerPoint versus Chalkboard South East Asian Journal of Medical Education, 2014; 8(1): 72 – 76.
15. Manohar T., Dashputra A., Suresh C. Students' Perception about Teaching Learning Media in Didactic Lectures JETHS-Volume 2 Issue-III September-December 2015; 103 – 107.
16. Yamauchi, L.G. Effects of multimedia instructional material on students' learning and their perceptions of the instruction (2008). Retrospective Theses and Dissertations. 15324.
17. Williams A. J., Pence H. E. Smart Phones, a Powerful Tool in the Chemistry Classroom ChemSpider, dx.doi.org/10.1021/ed200029p, *J. Chem. Educ.*, 2011; 88: 683–686.
18. Baddeley, A. D., Chincotta, D., & Adlam, A. Working memory and the control of action: Evidence from task switching. *Journal of Experimental Psychology: General*, 2001; 130(4): 641–657.
19. Fink JL. Why we banned use of laptops and "scribe notes" in our classroom. *Am J Pharm Educ.* 2010 Aug 10; 74(6): 114. doi: 10.5688/aj7406114. PMID: 21045956; PMCID: PMC2933023.