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Pharmacology Lecture Classes with Powerpoint Presentation: Perception of Phase II Medical Students

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ABSTRACT

Medical education is using technology extensively to make teaching-learning more impactful. When supported with visual aids, the learning process gets enhanced. Nowadays, PowerPoint (PPT) is used widely to deliver lecture content effectively. Different studies have shown that although PowerPoint is effective, students' perception is highly polarized. An observational, cross-sectional questionnaire-based online study was conducted by the Faculty of Pharmacology for Phase II Medical students of Bharati Vidyapeeth Medical College, Pune. One hundred twenty-four students were included in the study.71% of students showed an inclination towards PowerPoint with a whiteboard as an effective teaching aid. Although students showed a positive perception of PPTs, saying they are helpful in different ways, 62% of students asserted that they cannot be considered a substitute for the lecture class. For better impact, 75% of students insisted on sharing PPTs on the students' portal, while 18% felt sufficient time should be given to note the content. PPT was not favored when the presentation was speedy (60%), the content and number of slides were copious (29%), its delivery was monotonous (32%), and without interaction (27%). 47% of students believed that student-teacher interaction during lectures depends upon the teacher rather than the teaching tool. PowerPoint emerged, hands down, as the best teaching tool, provided it's used skillfully to make teaching interactive and well-paced.

Key words: *PowerPoint, Medical education, Pharmacology lectures, Perception.*

INTRODUCTION

In this Era of Modern Technology, human life is pervaded by evolving technology, affecting how individuals communicate, learn and think in ways like never before. Medical education has been using modern technology to make teaching and learning more impactful [1, 2].

Since ancient times, lectures have been the commonest form of teaching-learning for large group teaching [3]. Traditionally, Chalk and Board were used to deliver lectures; now, it has changed to Whiteboard, Overhead projectors, and finally, PowerPoint [4, 5]. In the Indian scenario, on one side, the strength of the class is 100+, and on the other, faculty is scarce, making lecture classes inevitable [6].

The learning process gets enhanced when supported by visual aids [7]. Many tools are used to give visual assistance during lecture classes. Different studies have observed that each teaching tool has its advantages and disadvantages [8]. Traditionally used, chalk and board is an effective teaching mode, albeit with pros and cons. Nowadays, PowerPoint presentations are used widely to deliver lecture content effectively [9]. Teachers prefer PPTs with the expectation that students would understand better, as images, videos, graphs, diagrams, and text material can be projected easily with one click. Lots of information can be transferred comfortably. Lectures can be made more interesting with more visual impact [7].

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For students' benefit and a better understanding of the subject, PPTs are being used as a powerful assistance tool during lectures. But how far do students get benefitted? This is the million-dollar question! Different studies have revealed that although PowerPoint is an effective tool, students' perception is highly polarized [10-12]. Understanding the students' perception regarding the use of PowerPoint during lecture classes is essential. Therefore, this study was planned to understand the perception of phase II MBBS students about the pharmacology lectures using PowerPoint presentations in our setting.

MATERIALS AND METHODS

An observational, cross-sectional questionnaire-based online study was conducted by the Faculty of Pharmacology for Phase II Medical students of Bharati Vidyapeeth (DTU) Medical College, Pune, during the academic year 2021-2022

The college has good infrastructure, including generator backup, maintaining continuous electricity supply throughout the lecture.

Inclusion criteria

Phase II MBBS students attending pharmacology lecture classes.

Exclusion criteria

1. Students who were not willing to give Informed consent.
2. Questionnaires with incomplete information or missing data were excluded from the analysis.

Study design

This Questionnaire-based study started after approval from Institutional Ethics Committee (BVDUMC/IEC/206). A pre-validated questionnaire was designed to assess the perception of phase II medical students about Pharmacology lectures PPT. The questionnaire consisting of 16 questions (13 MCQ and 3 open-ended) was circulated through a Google form. Students were briefed about the purpose of the questionnaire. Sufficient time was given to read, comprehend and fill out the Google form. Statistics were represented by percentages through a pie diagram and bar graph.

Assumption –We assumed that PPTs prepared by our department were Standard as far as the content, font size, and color contrast were concerned.

RESULTS AND DISCUSSION

A total of 150 Phase II medical students were sent the online questionnaire, out of which 126 medical students (n = 126) responded. Two questionnaires were found to be incompletely filled and excluded from the study, and a total of 124 students were included in the study.

Most of the students (71%) were inclined towards the power-point with a whiteboard (combined approach) as an effective teaching aid. All the students insisted on sharing PPTs on the student portal. There was a difference of opinion regarding the timing of sharing PPTs **(Figure 1)**.

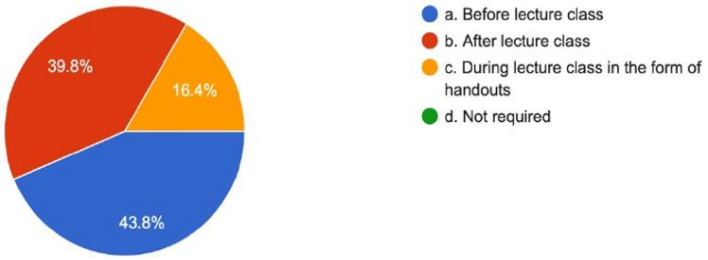

Figure 1. Perception of students about sharing PPTs

Table 1. Benefit of PPTs

Parameters observed	n(%)
Holding attention	40(31%)

Recalling the topic	69(53%)
Simplified topic	101(79%)
Better understanding of the subject	86(67%)

According to 62% of students, lecture PPTs cannot be considered a substitute for a lecture class, while 23% of students responded the reverse. 14 % of students gave a neutral response.

Students preferred bullet point text (69%), visual images (66%), and animated graphics (63%) in the PowerPoint presentations to recall the content during exams.

For the better impact of lectures with PPTs, 75% of students favored sharing the PPTs on the student's portal, while 18% of students felt that sufficient time should be given to note down the content of PPTs during ongoing lectures. A few students suggested that audio PPTs should be made available after the lecture.

PowerPoint presentations were not favored when the presentation was very fast (60%), the content and number of slides were copious (29%), and also when the delivery was monotonous (32%) and without any interaction (27%)

PPTs were downloaded for all the topics by 73% of students, while 22% of students downloaded only the essential topics and the rest of the students downloaded less frequently.

According to 62% of students, the pace of teaching matches with the students' grasping, while 18 % of students disagreed and 18 % were neutral.57% of students felt they had insufficient time to note down their notes or diagrams from the lecture PPT.

Students were asked to give their preference, in descending order, about the preparation material used during exam time **(Figure 2)**.

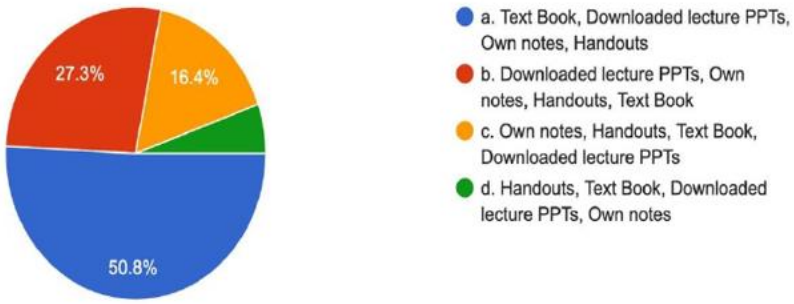

Figure 2. Student's preference for Reference material during exam preparation

47 % of students believed that student-teacher interaction during lecture class depends upon the teacher rather than the teaching tool they were using, while 24 % of students noted that it was better with PowerPoint, and 25% of students felt that PPTs and chalk and board fared better on that count.69% of students noted that content should be animated whenever possible for better understanding.

Three open-ended questions were asked regarding the positive and negative aspects of PPT presentations they found during lecture class and any suggestions from their side to make it more effective.

Students actively reacted to these questions and were satisfied with the quality of the PPTs. They liked the PPTs because of the incorporated videos, diagrams, flow charts as well as relevant bulleted text. Students were comfortable with PPTs as they simplified the topic, in turn helping them to a better understanding of the subject. PPTs enable teachers to deliver a large amount of complex information in a short time.

Students wanted to note down the content as well as the explanations given during the lecture classes. 50% of students could not note down their notes during lecture class because of the fast presentation. Lectures with PPTs became monotonous when there was no interaction with students as well as content was displayed and read out without any explanation. Too much content was another letdown for students.

The students came up with a slew of valuable suggestions. According to them, PPTs should contain more pictorials, questionnaires, and MCQs at the end of class. They also suggested that some topics can be taught with a relevant case-based approach. At the end of the lecture PPTs, a summary of pharmacotherapy should be added, and PPTs should be shared after class to facilitate revision during exam preparation.

Teaching learning is a continuous, complex, and dynamic process. The process becomes more fruitful in terms of understanding the subject through the complementary role of the teacher and students [13].

In Didactic lectures, students learn passively. To make lessons more effective, different tools like chalk and board, PPTs, and OHPs are being used by teachers. Teachers widely use PowerPoint, assuming it will augment the visual impact during the lectures.

But whether the students are getting benefited or not? Whether the teachers' assumption reflects in the learning experience of the students? This study was conducted to understand the facts, to unravel their opinion for the betterment of teaching-learning, and to make necessary amendments.

Numerous comparative studies have been conducted to compare the effectiveness of various tools. In our study, we obtained input from students regarding their perception of the utility of different teaching tools. Our study revealed that most (71%) of the students preferred the combined method, i.e., PPTs with blackboard as an effective tool. Some studies observed that students preferred PowerPoint as an effective tool [4, 6, 14-17], while many other studies preferred traditional chalk and board [18-20]. our results are similar to the studies conducted by Saha N. *et al*. and Chaudhari R *et al*. [21, 22], giving preference to the combined method.

Considering the large class size, PowerPoint is obviously, the preferred teaching tool nowadays. So we focused on the effectiveness of PowerPoint presentations used during the pharmacology lectures. PowerPoint presentations helped students in different ways, i.e., by simplifying the topic, improving understanding, making the subject more interesting, etc. **(Table 1)**. Similar results were shown in the study conducted by Seth *et al.* [6].

Taking notes is an integral part of the lecture class, which is important for future studies. Students note down the essential points, explanations, and examples the teachers gave. The pace of teaching must match the student grasping. Students should get sufficient time to take their notes. In our study, around 57.8% of students replied that they did not get adequate time to jot down, likely due to a fast presentation or too much content. In most of the studies, it was observed that PPTs are better for taking notes because of the legibility of the content [12]. Lectures with PPT are more organized and ensure effective use of time than writing on the board [23].

With the Chalk and board (whiteboard), students would get sufficient time, but for teachers, it is time-consuming, as shown by the study conducted by DeSa SB *et al.* [10]. One of the exclusive comments we received was that students are accustomed to whiteboards from childhood and are more comfortable with them. In the CBME curriculum duration of Phase II is reduced to one year from one and a half years. The syllabus is very vast; teachers have to cover more topics in one lecture slot. They are always under pressure to complete the syllabus because of the scarcity of time and hence reluctantly resort to delivering the content at a faster pace, thus reducing students' time. To tide over this problem, we started sharing the PPTs on the students' demand on their portal. Our keen interest was to know whether students were actually utilizing PPTs as a learning resource or not. Keeping this in mind, we enquired further about their perception of PPTs.

One of the advantages of PowerPoint is that one can download PPTs or get handouts. It may reduce their notes-taking time, and they can use this material for self-study [24]. This fact is reflected in our study too. Most of the students expressed that lecture topics would have more impact if handouts or PPTs were shared on the students' portal.

Most of the students downloaded the PPTs all the time, choosing them after textbooks for exam preparation. **(Figure 2)** However, few of them downloaded only essential topics. These findings are in tune with the study by Garg *et al.* [25].

Although the intention of sharing PPTs is to make the content available for students, it should not become counter-productive, with the students considering it as a substitute for lectures. While sharing the slides with students, one should keep in mind that slide matter is a guideline rather than comprehensive notes, ensuring that the students have to attend lectures [24]. In our study, 62% of the students were not considering PPTs as a substitute, whereas others (23%) did. During lecture class, the most important aspect is understanding the concept or topic, not just getting ready-made PPTs.

PowerPoint provides multiple design elements like animations and images to enhance the students' engagement. It also simplifies the subject, especially the mechanism of action of different drugs in Pharmacology. In our study, students gave preference to bullet point text, visual images as well as animations; findings are consistent with those of the study conducted by Vikas Seth *et al.* [6].

Maintaining interactivity with the students is essential to keep them attentive. A major drawback of lectures with PPTs is that it becomes monotonous if proper care is not taken. Students become passive learners with a lack of interaction [26]. Many studies revealed better interaction with the chalk and board [19] as the teacher can keep an eye to eye contact with students, helping the teacher analyze the students' understanding reciprocally. With PowerPoint, most teachers are compelled to look at the screen rather than at students, leading to poor interaction [25, 27].

Few studies mentioned that interaction was better with the PowerPoint as teachers get more time facing the students rather than while writing on the board [23].

In our study, students gave equal weightage to both PPTs and chalk and board. Most students felt that interactivity depends on the teacher rather than the tool used. Our findings are consistent with the studies conducted by Ahmad C. and others [28]. PowerPoint is a mixed blessing; when used wisely, it works as an effective tool [29]. On the other hand, it may end up deviating the attention in the hands of a less discerning teacher [30]. It depends upon the teacher's ability to make the most of the PPTs [31].

Maintaining a balance between listening, reading, and writing, the three complex processes of learning, is a tightrope walk. With the chalk and board, it happens organically because of the natural pauses and breaks. Students are with the teacher and the matter throughout the session [32]. A good teacher's skills would be put to the test to reproduce the same result while using the PPTs. Looking at the feedback given by the students in open-ended questions, they like the PPTs as they simplify the topic, help with revision and recall and help to understand and get more information in a short duration. Diagrams, pictures, and videos help to clarify the concept.

Students were least interested in PPTs delivered too fast, monotonously, and in a mundane manner. Merely reading out PPTs without explanation and giving no time to take down the notes were found to be most students' pet peeves.

As the attention span is found to dwindle after every 10-15 minutes, attention-grabbers in the form of MCQs, pictures, diagrams, and puzzles have to be used to refocus their mind.

The students gave valuable suggestions like more interaction, pictorials, revision slides, and MCQs at the end lecture class. They also desired that mnemonics be used in PPTs to facilitate memorization. Students felt that PPTs should be shared immediately after the class and not after a week's gap, preferably before tutorial classes which we conduct regularly. Few students suggested including relevant case-based problems in the PPTs to expedite learning. Important suggestions given by students will be useful for the betterment of the teaching-learning process.

There are a few limitations to the study in that it was conducted in only one organization and pertained to only one subject, i.e., Pharmacology. Hence, the result cannot be generalized and applied to other teaching-learning settings.

CONCLUSION

In this study, students preferred lectures with combined tools (PPTs and whiteboards). They derived benefits in understanding, recalling, and simplifying the subject through PPTs and also demanded sharing of PPTs as reference material. However, as a teacher, we feel that instead of sharing whole PPTs, highlights of lecture topics can be shared as a guideline on the student's portal. PowerPoint emerged, hands down, as the best teaching tool, provided it is used skillfully to make teaching interactive and well-paced.

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REFERENCES

1. Seth V, Upadhyaya P, Ahmad M, Kumar V. Impact of various lecture delivery methods in pharmacology. EXCLI J. 2010;9:96-101.
2. Prasad S, Roy B, Smith M. The art and science of presentation: electronic presentations. J Postgrad Med. 2000;46(3):193-19.
3. Atkins M, Brown G. Effective teaching in higher education. Routledge; 2002.
4. Mishra H, Kumar V, Modi PK. Comparison of different teaching methodologies in a medical college in North India. Indian J Basic Appl Med Res. 2013;6(2):464-9.

5. Yao JE, Ouyang JR, Wang H. A Farewell to the Traditional Instructional Media and Technologies in the New Millennium. 2000.
6. Seth V, Upadhyaya P, Ahmad M, Moghe V. PowerPoint or chalk and talk: Perceptions of medical students versus dental students in a medical college in India. Adv Med Educ Pract. 2010;1:11-6.
7. Sahu DR, Supe AN. The art and science of presentation: 35-mm slides. J Postgrad Med. 2000;46(4):280-5.
8. Bamne SN, Bamne AS. Comparative study of chalkboard teaching over PowerPoint teaching as a teaching tool in undergraduate medical teaching. Int J Med Sci Public Health. 2016;5(12):2585-7.
9. James KE, Burke LA, Hutchins HM. Powerful or pointless? Faculty versus student perceptions of PowerPoint use in business education. Bus Commun Q. 2006;69(4):374-96.
10. DeSa SB, Keny MS. PowerPoint versus chalkboard-based lectures in pharmacology: evaluation of their impact on medical student's knowledge and their preferences. Int J Adv Health Sci. 2014;1(5):10-4.
11. Novelli EL, Fernandes AA. Students preferred teaching techniques for biochemistry in biomedicine and medicine courses. Biochem Mol Biol Educ. 2007;35(4):263-6.
12. Petimani MS, Adake P. Blackboard versus PowerPoint presentation: Students opinion in medical education. J Educ Psychol Res. 2015;1(4):289-92.
13. Papanna KM, Kulkarni V, Tanvi D, Lakshmi V, Kriti L, Unnikrishnan B, et al. Perceptions and preferences of medical students regarding teaching methods in a Medical College, Mangalore India. Afr Health Sci. 2013;13(3):808-13.
14. Lalvarmawi F, Ningthoujam S, Mishra M. Perception of postgraduate students on teaching aids. J Med Soc. 2013;27(1):36-8.
15. Swati C, Suresh T, Sachin D. Student assessment on learning based on PowerPoint versus chalkboard. Int J Recent Trends Sci Technol. 2014;13:347-51.
16. Manohar T, Dashputra A, Suresh C. Students' perception about teaching learning media in didactic lectures. J Educ Technol Health Sci. 2015;2(3):103-7.
17. Kumar SD. Perception of medical students on lecture methods: PowerPoint or Chalkboard. IJHRMLP. 2016;3(01):77-80.
18. Sawant SP. Powerpoint versus chalkboard: Impact on the medical student. Int J Pharm Sci Rev Res. 2015;5(3):282-5.
19. Priyadarshini KS, Shetty HV, Reena R. Assessment of different teaching aids and teaching methods for the better perception of biochemistry by 1st MBBS students. J Evol Med Dent Sci. 2012;1(6):1159-65.
20. Shaguphta T. Teaching learning aids in medical education. The student's perspective. Int J Clin Surg Adv. 2015;3(1):32-7.
21. Nirmalya S, Kaushik T, Rituparna D. Students' opinion towards audiovisual aids used in lecture classes. Hindu. 2015;92:93-9.
22. Choudhary R, Dullo P, Gupta U. Attitude of 1st MBBS medical students about two different visual aids in physiology lectures. Pak J Physiol. 2009;5(2):16-9.
23. Daniels L. Introducing technology in the classroom: PowerPoint as a first step. J Comput High Educ. 1999;10(2):42-56.
24. Frey BA, Birnbaum DJ. Learners' Perceptions on the Value of PowerPoint in Lectures. 2002.
25. Garg A, Rataboli PV, Muchandi K. Students' opinion on the prevailing teaching methods in pharmacology and changes recommended. Indian J Pharmacol. 2004;36(3):155.
26. Casanova J, Casanova SL. Computer as electronic blackboard: Remodeling the organic chemistry lecture. Educom Rev. 1991;26(1):31-9.
27. Abusharib AB, Nourein IH, Huneif MA, Abdelrahman AM, Elshaikh MA. Limitations and Pitfalls of PowerPoint Presentations: Najran University Medical Students' Point of View. Garjerr. 2015;4(3):43-7.
28. Ahmed C. Powerpoint versus Traditional Overheads. Which Is More Effective for Learning?. 1998.
29. Ruffini MF. Creating animations in PowerPoint to support student learning and engagement. Educ Qtrly. 2009;32(4):1-4.
30. Bartsch RA, Cobern KM. Effectiveness of PowerPoint presentations in lectures. Comput Educ. 2003;41(1):77-86.
31. Harden RM. Death by PowerPoint - the need for a 'fidget index'. Med Teach. 2008;30(9-10):833-5.
32. Biswas S, Mondal S, Mukharjee J. Impact of Electronic and Non-Electronic Teaching Methods in Medical Physiology. 2013.