

Evaluation of the effectiveness of providing powerpoint slide handouts before the class

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ABSTRACT

Background: Many teachers are now using powerpoint presentations as a method of presenting lectures. Hence, unknowingly, teachers may rush through the slides without giving much time for the students. Teachers should allow the students to process the information and to write sufficient notes for their later review. To fill this gap, keeping in mind, the requirements of teachers, students, and university allotted time slots for the topic, one of the remedies suggested by several authors is to allow the access to the power-point slides of the topic either in electronic or in the print format as handouts. **Objectives:** The aim of this study is to study the advantages and disadvantages of providing PowerPoint slide handouts before the class. **Materials and Methods:** A batch of 100, 1st MBBS students were divided into two groups with 50 students each by lottery method. Group “A” served as control, and were not provided with handouts of PowerPoint slides of the topic to be dealt with. Another Group “B” were provided with handouts of the PowerPoint slides on the previous day of the class. The study was carried out during a regular class of 1 h. Pretest was conducted only before the class in the form of MCQs. After the class, posttest was conducted with the same set of MCQs. Results of the pretest and posttest within the group and between groups A and B were compared. Questionnaires were provided to get the feedback regarding powerpoint handouts. **Results:** Results of the pretest and posttest comparison within the group and between the groups showed value of $p < 0.0001$, which is statistically significant. Students feedback analysis showed good positive response regarding the handouts of the powerpoint slides of the lecture class. **Conclusion:** Providing PowerPoint slide handouts of the topic prior to the lecture would benefit students.


KEY WORDS: Students; Lecture; Power Point Slide; HandOuts

INTRODUCTION

Most of the standard textbooks on psychiatry define the learning as a change in behavior. Thus for a clear concept of “learning,” it is not enough to focus on overt change in behavior only but also on how people understand, experience and conceptualize the world around them.

The focus is on gaining knowledge, ability, and skills.^[1] Several authors have detailed, the most effective properties of power point presentation and powerpoint slides in the classroom. Accordingly for a student strength of 100–200, the recommendations are 36 point font for headings and a 28 point font for the text.^[2]

Many teachers are now using powerpoint presentations as a method of presenting the lectures. It is clear that they cannot or should not rush too quickly through the material. The teachers have to allow the students to process the information and to write sufficient notes for their later review.^[1] Since some students learn by writing the material themselves, and hence, it becomes compulsion on the instructor to go slowly enough to allow them to write. However, there are another set of

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students who might feel burdened by the necessity of copying materials from the screen while attempting to listen to the professor's elaboration. Hence, all these indicate that the time taken to complete a given topic, to understand and copy down the material of slides by the students would definitely be more than the time allotted by the universities for completion of the topic.^[1,3-6] So to finish the lecture in time most of the times the teacher will rush through the slides without giving enough time for the students to digest the material. To overcome, this either teachers have to provide access to the PowerPoint slides, or they can give handouts of the PowerPoint slides to the students or the teachers have to increase the number of lectures to complete the university syllabus. However, the problem in providing the handouts is that students may be prejudice regarding the class and may even cut the class thinking that any way they are getting class notes.

Hence, there is a need to fill this gap, keeping in mind the requirements of teachers, students, and university allotted time slots for the topic being covered. One of the ways suggested by several authors is to allow the access to the slides either in electronic format or the in print format as handouts.^[1,3-6] To prevent students from getting already prejudiced with the coming class, the notes have been prepared in such a way that, they are only the basic outlines of the slides and elaborate presentations was done only during the class. The copies of the slides will serve as a starting point for developing a comprehensive set of class notes for their later review. Hence with this study, we intend to see if there is any use of providing students with the print copies of the slides, the handouts before the class, with an anticipation that it may.

1. Decrease the amount of time students have to spend on the more clerical process of copying notes from the screen.
2. It may help the students to understand the topic by listening to the instructor's elaborations.
3. Allow the students to process the information more deeply when the focus of the class is other than just copying material from the screen.

Objectives

To study the advantages and disadvantages of providing PowerPoint slide handouts before the class.

MATERIALS AND METHODS

Study Design

Cross-sectional comparative study with random allocation of groups.

Study Type

This was quantitative study.

Study Setting

1st-year MBBS students studying in Amala Medical College, Thrissur.

Sample Size

100 1st year MBBS students.

Methods

A batch of 100, 1st MBBS students were divided into two groups with 50 students each by lottery method. One group A would serve as control, and were not provided with handouts of PowerPoint slides of the concerned topic to be dealt with during the study. Another Group B would serve as study group and were provided with handouts of the powerpoint slides of the topic to be dealt with during the study on the previous day of the class. The strict advice was given to the students in each group not to exchange the handouts, as it might dilute the study results. Consent was obtained from all the students before the start of the study.

The study was carried out during a regular class of 1 h. Before the start of class, a pretest in the form of MCQ'S related to the topic to be taught was conducted for all 100 students. After completion of the class, a posttest was conducted with the same set of MCQ'S. The results of the pretest and posttest within the Group A and B were compared (intra-group), and pretests and posttests between the Groups A and B were compared (inter-group).

Questionnaires were provided for their feedback. One set of validated questionnaires (questionnaires A) for all 100 students based on YES/NO type response were given. Another set of validated questionnaires (questionnaires B) for the Group B students based on 5-point Likert scale, with 1 being strongly disagree too, 5 being strongly agree were given. After the study, Group A was also given handouts of the class to clear the study ethically. Ethical clearance was sought and obtained from the Institutional Ethics Committee before conducting the study.

Method of PowerPoint Slide Handout Preparation

The handouts with 2–3 PowerPoint slides per sheet were prepared, printed on both the sides of the sheet. The font size for the headings was 36 in Cambria font format. The font size for the text was 28 in Caliber font format. Slides were prepared with white coloured background and with black coloured text.

Statistical Analysis

Paired t-test was used to compare the results of the pretest and posttest within the group (intragroup). Unpaired *t*-test was

used to compare the results of the pretest and posttest between the groups (intergroup). Responses from the feedback forms were observed and analysed.

RESULTS

As it was observed from the above tables that, the results of the pretests and posttests comparison within the groups and between the groups showed of p-value 0.0001, which was statistically significant. Which indicates the handouts given before the class were beneficial to the students [Tables 1-4]. Responses of the Group B students regarding handouts from questionnaire B based on Likert scale was shown as percentages in Table 5. From Table 5, it can be appreciated that 74% of students opined that handouts helped them in taking down notes properly. About 76% felt that handouts increases the understanding of the topic being taught. According to the responses of the questionnaire A based on yes/no type response, out of 100 students both Group A and B, 76% of students said they take down notes regularly in all classes; 90% of students opined that the time given to take down notes is inadequate in all classes; and 90% of students replied that they refer class notes for their later review.

Table 1: Comparison of the results of the pretest and posttest within the Group A

Test	Mean	n	SD	SEM	P value
Pretest	1.08	50	0.804	0.114	0.0001
Posttest	4.38	50	0.667	0.094	

SD: Standard deviation, SEM: Standard error mean

Table 2: Comparison of the results of pretest and posttest within the Group B

Test	Mean	n	SD	SEM	P value
Pretest	3.72	50	1.051	0.149	0.0001
Posttest	4.82	50	0.438	0.062	

SD: Standard deviation, SEM: Standard error mean

Table 3: Comparisons of the pretest results between the Group A and Group B

Group	n	Mean	SD	SEM	P value
Pretest in Group B	50	3.72	1.051	0.149	0.0001
Pretest in Group A	50	1.08	0.804	0.114	

SD: Standard deviation, SEM: Standard error mean

Table 4: Comparisons of the posttest results between the Group A and Group B

Group	n	Mean	SD	SEM	P value
Posttest in Group B	50	4.82	0.438	0.062	0.0001
Posttest in Group A	50	4.38	0.667	0.094	

SD: Standard deviation, SEM: Standard error mean

DISCUSSION

In the present study, we observed that the group of students (study group) which received the handouts of the PowerPoint slides before the class has scored better in pre-test as well as in the post-test as compared to the control group, which has not received the handouts and it is statistically significant. Majority of the students felt that the handouts made the class more interesting and helped them in a better understanding of the topic. Majority of them also opined that handouts benefited them in taking down complete class notes and they will use it for their later review.

In general, the intent of a lecture is to present the material to students so that they can understand the material for their recall and application in the examination. During the lecture, students are usually encouraged to take notes for their later review in preparation for the exam. In the present study, we observed that 90% students opined, the time given for them to take down notes is inadequate in almost all classes, and most of them replied they cannot do both listening and writing together effectively. However the problem faced here is that in the university syllabus, there is lack of allotted time for the topic and some of the students may not be good at taking down notes and some students were unable to cope up with taking notes and listening to the class together at a time. Research indicates that the most of the students get $\frac{1}{2}$ of the critical points of the class into their notes.^[7] In general most of the research shows that students are bad in taking notes. Kierwa, *et al.* mentioned that there are two processes that take place for learning to occur, these are encoding and external storage. Encoding means what a student hears the information from the professor, and external storage means from writing the information down and reviewing it. Routinely, it is observed that students are writing everything the professor says, and they are unable to think and reflect about the information that is being presented. Poor note-taking results in insufficient encoding, and inadequate external storage.^[8] One of the methods to improve students note taking is by providing handouts to facilitate note-taking. By providing handouts to students showed improvement in encoding and external storage.^[9] In the present study, we also made the similar observations.

In the present study, students were served with handouts of the powerpoint slides one day before the class and to prevent students from getting already prejudiced with the coming class. The notes have been prepared in such a way that, they are only the basic outlines of the slides and elaborate presentations were done only during the class. Providing handouts to students, to include what types of handouts and when the handouts should be provided (i.e., before or after the lecture). There are various types of handouts that can be provided to students: The lecturer's full lecture notes, skeletal or guided notes, full-slide deck of powerpoint slides (if powerpoint is used), slides with information missing, and

Table 5: Responses of the Group B students regarding handouts from questionnaire B based on likert scale

Questions	1 – strongly disagree (%)	2 – disagree (%)	3 – neither agree nor disagree (%)	4 – agree (%)	5 – strongly agree (%)
1 – Handouts made class more predictable	0	0	12	46	42
2 - Getting predictable about the class is a disadvantage	38	52	8	0	2
3 – Handouts made class more interesting	0	6	26	48	20
4 - Do handouts helped in taking down notes	0	8	18	38	36
5 - No more notes need to be taken down if handouts are provided	14	12	16	30	28
6 - I would prefer to add on lecture notes in my handouts	2	2	0	44	52
7 - Handouts before the lecture class makes me lazy	36	44	20	0	0
8 - Handouts increases the understanding of the topic being taught	0	6	18	46	30
9 - I will use the handouts for later review	0	0	4	52	44

outlines. Various studies indicate there are advantages and disadvantages to each of these types of hand-out. Providing the lecturer's full lecture notes is one option for providing handouts. Advantage of providing the full lecture notes is that the students are able to have all of the important points of the lecture. Kenneth.^[10] showed that students who had the lecturer's full notes performed better on recall events than students who had their own notes. It is found students were able to encode more while taking their own notes and then their external storage improved because they had the instructor notes. Another view is that by providing the full notes by the lecturer, students might remain to abstain from the class and he may not pay attention during the lecture.^[11] In the present study, we observed the handouts made the class more predictable, but students felt it was really useful.

In the present study, responses of the students regarding the advantages and disadvantages of the handouts were depicted in Table 5, showed a positive response toward getting the handouts before the class.

Another option for providing handouts is providing guided, or skeletal, notes. Austin defines guided notes as "modified versions of the instructor's notes or slides that require students to fill in missing information as the lecture progresses,"^[12] and Barbetta defines guided notes as "hand-outs that guide students through a lecture by providing a format that includes basic background information with standard cues and space for students to write the key points."^[13] Issacs states an advantage of skeletal notes is they keep students engaged because they will need to fill in blanks and empty spaces on the hand-out, which aids in encoding^[11] and Brazeau stated that students who used partial notes (e.g., guided/skeletal notes) performed better than those students who received full notes from the instructor.^[14] When creating skeletal notes, research suggests it is better to provide some space so that students can write some additional

points. Kinchin reported that slide handouts could be effective because the lecturer can put graphics on the slide handouts that are difficult for students to copy into their notes and the slide handouts should be more than the lecture slides. A disadvantage of providing skeletal notes or guided notes is that students might only pay attention to keywords in the lecture to fill in the blanks and then not pay full attention to the rest of the lecture.^[15] Jones adds that slide handouts can have additional information on them, such as applications, questions, etc.^[16]

As discussed by various authors, there are advantages and disadvantages to providing handouts. In addition to providing handouts, the timing of providing handouts is also important. Instructors can provide handouts before class by posting the appropriate hand-out format to an online forum, provide the handouts in class, or provide the handouts after class. Skeletal notes and outlines are generally best suited for being provided before the lesson be taught so students can use them while preparing for the lecture because the skeletal notes or outline would have the main ideas that will be discussed. Full lecture notes, if to be provided, should be provided after the lecture. Again, this is to encourage students to take their own notes and then use the full lecture notes to augment their own notes instead of using the instructor notes to replace their own note-taking. However, if students know they will be getting the instructor's notes after the lecture, they may not take their own notes (Babb,^[17] Kierwa,^[10] Weatherly.^[18]

Although most research suggests providing some sort of handout is beneficial to students, there is some research that indicates providing handouts may not be beneficial. Brazeau determined that students become passive learners when they are provided all the information.^[14] When students receive handouts, they may think the handouts are complete since they came from the instructor. Thus, the student relies on the handout for all the information, instead of being engaged in

the lecture and doing the reading in support of the lesson. Another study indicates that when students do not receive handouts, they focus more on writing down details.^[11] Finally, Weatherly argues that there is actually a negative correlation between providing outline notes before a lecture. Over three exams, students who had access to the online notes before the lecture performed more poorly on the exams than students who did not have access to the notes before the lecture.^[18] One reason for this is that students may decrease their attendance to the lecture since they have notes. By not attending lectures, students miss the application and examples that are provided by the instructor. Some of these examples may not be included in the outline notes. Contrary to this the present study showed students with handouts prior to the lecture class performed better. However, the present study was done for only one class. The study has to be continued to see the long-term outcome.

The efficacy of lecturing is not solely based on handouts. However, there is an abundance of literature and research about conducting effective lectures, to include cueing, writing on the board, and allowing time for writing notes. In addition, there is significant research about how to conduct effective lectures using Powerpoint slides.^[16] Some research also indicates instructors should spend some time teaching students how to take notes as well.^[19] There are several factors that go into enhancing a lecture with handouts. However, the general consensus seems to be that providing a handout is beneficial because it aids in note taking, allowing the student to focus on the lecture and processing the information.

Based on the above study, PowerPoint slide handouts before the class may be recommended for a short-term period and evaluate results and responses of the students in due course. Based on the outcome of that, it can be implemented.

Limitations of the Study

Since the study was pertained to only one class, the inferences made should be reconfirmed by adopting the same method for various topics and in various subjects.

The possibility of sharing the handouts between the groups.

CONCLUSION

From the present study, it is inferred that providing handouts of the powerpoint slides before the class, the majority of the students felt that it increases the understanding of the topic being taught. Most of the students opined that handouts helped them in taking down notes properly and also they were able to listen to the class effectively. The pretest and posttest results showed handouts had a good impact on students. There are several advantages as well as disadvantages, but it seems that providing a hand-out is beneficial because it helps in taking down the notes and pay proper attention in the class.

Overall, it can be concluded that providing handouts of the topic before the class appears to be beneficial to the students.

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