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The Power of PowerPoint: The Conduction of a Faculty Development Workshop at the Faculty of Medicine, Suez Canal University

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Abstract

Background: **Microsoft PowerPoint is a presentation software used in many medical schools. Its popularity comes from its user-friendly nature, widespread popularity, and how it can save time for both educators and students. Through the past years, many criticisms have been directed at the software. These included the excessive use of bullets which make the presentation more like presenter notes, the content overload, and absence of evidence- based practices. Aim: To improve the faculty members' knowledge and skills in developing PowerPoint presentations in order to enhance students' engagement, thus improving the educational process. Materials and Methods: A Quasi-experimental study design was conducted in the Faculty of Medicine, Suez Canal University, for the conduction of a PowerPoint workshop, then evaluating its effect on the knowledge acquisition of faculty members (pre-test/post-test. Results: the results of experts' opinions towards the PowerPoint workshop content were positive reflecting the well-construction, easy-to-follow, and practical nature of the workshop. The evaluation of faculty members' satisfaction with the PowerPoint workshop was high, with a total mean score of 4.89, indicating how relevant, useful, and important the workshop was. There was a statistically significant improvement in faculty members' knowledge in the pre-test/post-test (P < .001). Conclusion: The PowerPoint workshop was well-structured and practical as evaluated by medical education experts. It improved faculty members' knowledge regarding the effective use of PowerPoint and was perceived as being valuable by the faculty members.**

***Keywords*:** PowerPoint, Faculty Development, Instructional methods

Introduction

Interactive lecturing is still considered one of the main instructional methods used in higher education, which drives many faculty members to use PowerPoint for presenting their lectures as it allows them to easily integrate graphics, videos, and charts into their presentations [(1)].

PowerPoint (© Microsoft Corp.) is a software created to allow educators to create professional slides for oral presentations, in different medical settings [(2)].

Its use is so common that in 2003, the founder of PowerPoint stated that the software is used by over 500 million users who make more than 30 million presentations yearly. Despite the lack of recent updates, this equals over 10 billion presentations annually. On average, PowerPoint is used around 350 times each second [(3)].

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Although PowerPoint provides presenters with many useful tools, its default settings have drawbacks, such as the excessive use of bullets, content overload, and the lack of evidence-based practices. Since there is a lack of evidence-based practices in creating effective PowerPoint presentations [4].

Despite the growing numbers of medical students in the Faculty of Medicine, Suez Canal University and worldwide, there is an ongoing decrease in the number of students attending lectures. This phenomenon occurs due to various reasons, among them is that students have access to multiple online materials including recorded lectures and other learning resources. Thus, they perceive attending lectures as a waste of their time, unless those lectures allow them to interact and integrate information [5]. A trial was attempted in this study to overcome this challenge by conducting a faculty development workshop on how to effectively use PowerPoint for conducting interactive lectures.

Subjects and Methods:

This is a quasi-experimental (Pre-test/Post-test) study designed to assess the effect of conducting a faculty development workshop on faculty members' knowledge regarding their practices toward the use of PowerPoint presentations. A non-randomized convenience sample was chosen where invitations were sent to all faculty members teaching at the Faculty of Medicine, Suez Canal University, during the academic year 2023-2024. A total number of 136 faculty members attended both workshops, among them, only 79 completed both the Pre-test vs Post-test and the satisfaction questionnaire. Approvals from the Research Ethics Committee and the Vice Dean for Student Affairs at the FOM-SCU were obtained.

The data was collected using a pre-test/Post-test) assessment of faculty members' knowledge of the use of PowerPoint presentations. A mini test composed of 8 MCQs was administered before and after the delivery of the PPT Workshop. The 8-question test was divided into three subthemes to align with the workshop overview: 1 question for (the planning PPT phase), 5 questions for (Preparing PPT phase) and 2 questions for (Delivering PPT). The test was revised and modified by 3 medical education experts. A questionnaire was also used to assess faculty members' satisfaction with the workshop. The questionnaire was developed, and it was 7 questions to assess different aspects of the workshop. A 5-point Likert scale was used to evaluate each question, responses ranged from strongly agree to strongly disagree. The questionnaire was validated for both face validity and content validity by medical education experts.

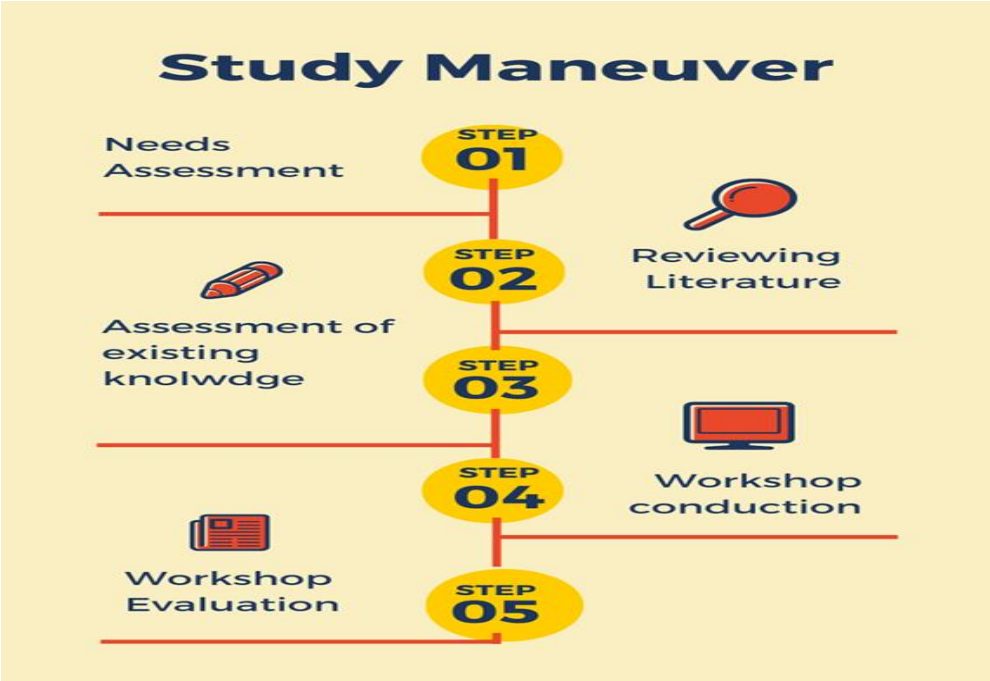

Figure 1: Study Maneuver

Regarding the study process as shown in Figure (1), it started with a needs assessment by conducting a meeting with the administration to discuss the problems of lectures. It was found that many basic, yet important fundamentals were missed during the construction and delivery of lectures, such as content overload in the slides, reading from slides instead of looking at students, and excessive use of unclear bullets. This hindered student interaction and engagement, subsequently, it was one of many reasons why students were demotivated to attend lectures. A review of relevant literature was done over 6 months. References used were research articles and books published from PowerPoint presentation experts. This extensive review revealed that many problems occurred due to the absence of best practices based on relevant research. This is why in this study; the authors attempted to construct and conduct a faculty development workshop on how to effectively use PowerPoint as a tool that educators can use for facilitating information delivery and students' engagement. The PowerPoint (PPT) workshop was developed after reviewing relevant literature in multiple databases (such as PubMed, Scopus, and Cochrane Library) discussing the use of PowerPoint in educational fields with special attention to the Medical Education field.

After the literature review, the workshop structure was outlined in five themes. The first was to highlight the importance of PowerPoint as a tool that can be used in active learning. The second theme was the problem with PowerPoint and how it can hinder students' engagement when not properly used. The third theme was the proposed steps of planning, implementing, and evaluating PPT that each medical educator should use when using PowerPoint in interactive lecturing. The fourth theme was the common pitfalls that medical educators can fall for while preparing PPT. The last theme was a practice-based discussion between faculty members and the workshop instructor. The content of the workshop was revised by 10 medical education experts for content validity.

A pre-test was administered to faculty members before the introduction of the PowerPoint workshop to establish their baseline knowledge of PowerPoint. The assessment aimed to identify existing strengths and weaknesses in PowerPoint utilization among participants. An eight-item multiple-choice questionnaire was employed to gather data on faculty members' PowerPoint proficiency. By pinpointing specific knowledge gaps, the pre-test enabled participants to recognize areas requiring improvement and focus their attention accordingly during the workshop. The questionnaire was administered electronically through Google Forms to facilitate data collection and analysis.

To maximize participation among faculty members, the workshop was delivered in an online format via Zoom software. The workshop was structured into two distinct sessions, one tailored for basic science educators and another specifically designed for clinical educators with a focus on the importance of integrating a case-based approach whenever delivering a clinical topic. Each workshop was allocated ninety minutes to ensure adequate coverage of the intended content. The workshop was conducted in an interactive manner, where educators were allowed to share their questions, experiences, and positive practices with each other. Each workshop was divided into 3 parts; the first part was introducing PowerPoint guidelines for best practices, the second part was the application of the guidelines in the form of interactive exercises on evaluating PowerPoint slides against guidelines, while the third part was an open discussion for sharing questions, real-life experiences and opinions among faculty members. Both workshops were identical except that the second workshop – which was conducted for clinicians – provided extra information for the role of case-based teaching in interactive lecturing. To evaluate the effectiveness of the PowerPoint workshop, faculty members' satisfaction levels were assessed using a satisfaction questionnaire via Google Forms. The questionnaire was composed of 7 questions that were developed to assess three themes. The questions were divided as follows, three questions for assessment of workshop structure, three questions for instructor style, and one question to evaluate overall perception. Each question was evaluated using a 5-point- Likert scale [6]. This evaluation aligns with the first level (Reaction) of Kirkpatrick's Evaluation Model. Subsequently, a quantitative assessment of faculty members' PowerPoint knowledge was conducted following the workshop delivery. The post-test aimed to measure changes in PowerPoint proficiency compared to the pre-test results. The post-test was delivered via Google Forms immediately after the end of the workshop. The post-test used the same MCQs that were used in the pre-test. By calculating the difference in pre-test and post-test scores, the workshop's impact on faculty knowledge acquisition was evaluated. This analysis corresponds to the second level (Learning) of Kirkpatrick's Evaluation Model [7].

Results

As shown in Figure (2), among the 79 faculty members who attended and actively participated in PowerPoint workshops, 71% of them were basic sciences educators, while only 29% were clinical educators.

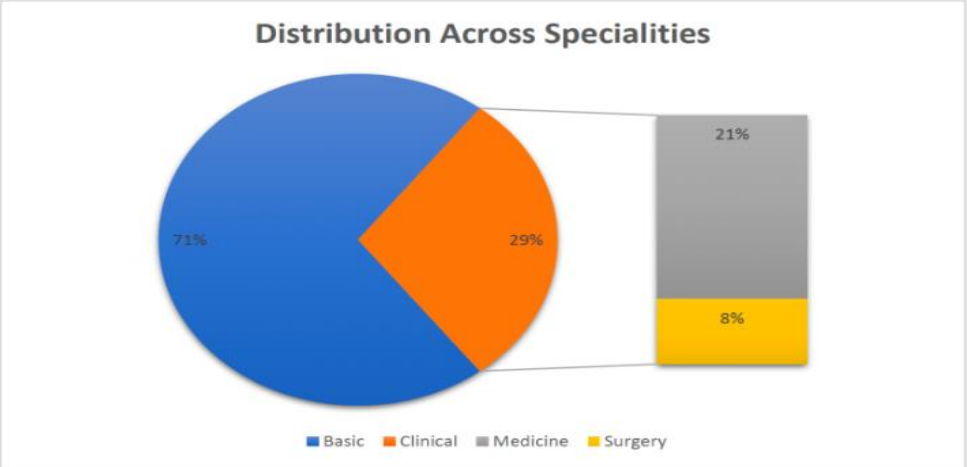

Figure 2: Distribution of Faculty members' specialties across Basic and Clinical Sciences. (n = 79)

A) Faculty members' satisfaction with PowerPoint Presentation Workshop

The results obtained from faculty members' responses to the workshop satisfaction questionnaire show high satisfaction levels and a strong positive reaction. As shown in table (1) A high percentage of participants strongly agreed that the workshop content was useful and relevant to their work. Also, a majority of 83.54% strongly agreed that it covered useful items, and 81.01% strongly agreed that it was relevant to their work. Additionally, all the participants agreed that the workshop was well organized. These high percentages suggest that the workshop was well-received and considered valuable by all participants.

The feedback on the instructor was particularly strong. A significant majority (87.34%) strongly agreed that the instructor mastered the topic, and 83.54% strongly agreed that the instructor's presentation style was effective. Notably, 94.87% strongly agreed that the instructor was responsive to questions, indicating excellent engagement and interaction with the participants.

B) Difference between faculty members' knowledge before and after implementing the PowerPoint presentation workshop.

As shown in Table (2), the data suggested significant improvement in faculty members' knowledge or skills related to planning a PowerPoint (PPT) presentation

The results obtained from comparing faculty members' scores in the Pre-test versus Post-test regarding preparing PPT strongly support the effectiveness of PowerPoint workshop in enhancing participants' competencies in key areas such as choosing appropriate colors and fonts and understanding infographic features. As shown in table (3).

Table (4) shows the difference between faculty members' knowledge of PowerPoint presentation be. Analysis of question 7 suggests that there was a positive shift in the mean score, the p-value of 0.063 indicates only marginal improvement in faculty members' understanding of preferred practices for delivering presentations. While Question 8 was associated with a statistically significant improvement in knowledge. The comparison between total mean scores before (4.64 ± 1.67) vs after (6.31 ± 1.41) workshop conduction shows that there was a statistically significant enhancement of faculty members' knowledge regarding PowerPoint construction (P value = 0.000).

Table 1: Evaluation of faculty members' satisfaction towards PowerPoint Presentation Workshop (n = 79)

Question	Likert scale	Number	Percentage
Workshop Structure			
It covered useful items.	Agree	13	16.46%
	Strongly agree	66	83.54%
	Total	79	100.00%
It is relevant to my work.	Agree	15	18.99%
	Strongly agree	64	81.01%
	Total	79	100.00%
It was well organized.	Agree	11	13.92%
	Strongly agree	68	86.08%
	Total	79	100.00%
Instructor Style			
The instructor masters the topic.	Agree	10	12.66%
	Strongly agree	69	87.34%
	Total	79	100.00%
The instructor's presentation style is good.	Agree	13	16.46%
	Strongly agree	66	83.54%
	Total	79	100.00%
The instructor responds to questions.	Agree	4	5.13%
	Strongly agree	74	94.87%
	Total	78	100.00%
Overall Perception			
The presentation is useful for me.	Agree	9	11.39%
	Strongly agree	70	88.61%
	Total	79	100.00%

Table 2: shows difference between Pre-test/Post-test Faculty members' knowledge about planning PPT				
N	Questions	Pre-test	Post-test	P value
		Mean ± SD	Mean ± SD	
	Planning PPT			
1	What is the first step to create an effective presentation?	0.68 ± 0.47	0.87 ± 0.33	0.003*

Table 3: difference between Faculty members' knowledge of Preparing PPT.				
N	Questions	Pre-test	Post-test	P value
		Mean ± SD	Mean ± SD	
	Preparing PPT			
2	Regarding the use of colors in PowerPoint, which of the following you should avoid?	0.21 ± 0.41	0.53 ± 0.50	0.000*
3	What is the safest and most appealing color to use for graphic schemes?	0.48 ± 0.50	0.67 ± 0.47	0.015*
4	When choosing a font type, which of the following applies?	0.49 ± 0.50	0.81 ± 0.39	0.000*
5	You are kindly requested to present a lecture in a room with 50 seats. What is the recommended font size that allows your attendees to easily read your content?	0.55 ± 0.50	0.82 ± 0.38	0.000*
6	Which of the following is a feature of infographics?	0.89 ± 0.32	1.00 ± 0.00	0.002*

Table 4: shows difference between Pre-test/Post-test of Faculty members' knowledge about Delivering PPT and Total scores				
N	Questions	Pre-test	Post-test	P value
		Mean ± SD	Mean ± SD	
	Delivering PPT			
7	When delivering a presentation, which of the following is a preferred practice?	0.67 ± 0.47	0.80 ± 0.40	0.063
8	When conducting a virtual presentation, which of the following is contraindicated?	0.65 ± 0.48	0.81 ± 0.39	0.022*
Total Workshop Score		4.64 ± 1.67	6.31 ± 1.41	0.000*

Discussion

The PowerPoint workshop was evaluated using the Kirkpatrick model for evaluation, both the first (Reactions) and the second levels (Learning) were assessed in this study [8].

The faculty members' reactions to the PPT workshop were highly positive; it was well-organized, useful, and relevant. This can be explained due many factors. Firstly, the workshop provided a clear, well-constructed, and practical framework for improving presentations. Secondly, it allowed them to apply their knowledge by analyzing a sample of PPT slides and suggesting means for improving them. Thirdly, it helped educators from different specialties discuss their different expertise regarding PowerPoint presentations, the challenges they may face, and how to overcome them. Fourthly, it allowed them to reflect on their presentations and share improvement plans. A study [9] reported a similar rate of agreement while conducting an interactive workshop for medical educators on planning and presenting workshops. These positive results are also congruent with the findings of Spicer, et al (2021) [10] regarding their evaluation of a faculty development workshop for planning and implementing interactive virtual case-based teaching, which used a similar approach for conducting the workshop via Zoom App and focused on interactive lectures as well. Also, another study [11] used a guide to successful workshops and peer discussions and reached similar findings of faculty satisfaction during their evaluation of a faculty development workshop on "Developing Successful Workshops", their evaluation of a similar workshop to promote interactive lecturing, reported similar positive results of participants' overall satisfaction, that aligned with the high findings of the current study.

The evaluation of the pre-test/post-test revealed a statistically significant improvement in the overall test scores. This proves how the workshop managed to bridge the knowledge gap and present information clearly and easily to remember. This finding was similarly reported by an interventional study [12]. to evaluate the effectiveness of a teacher training workshop on teaching & learning methods including interactive lecturing. Despite the similarities, in the current study, the levels of improvement were less than what was reported by Mokkapati & Mada, 2018 [12]. The reason for that may be that in the present study, the virtual workshop was conducted on a single day unlike the two-day and onsite workshop conducted by Mokkapati & Mada, 2018 [12].

From the results of the evaluation of medical teachers' training on how to effectively apply teaching & learning methods by Baral, et al, 2007 [13], similar findings can be concluded where participants also showed a significant increase in knowledge following the workshop.

Even though there was a statistically significant improvement in the pre-test vs post-test scores. The MCQs tested lower cognitive level of recalling and understanding of knowledge, which doesn't guarantee the application of knowledge and reaching higher levels of cognition [14]. However, faculty members' discussion and sharing of real-life experiences allowed further integration and evaluation of knowledge. Also, the focus of the workshop evaluation was on the faculty members' acquisition of knowledge and changing their perceptions towards the traditional use of PowerPoint to a more interactive, and student-centered approach. Further evaluations should be conducted to guarantee that these changes have been put into practice.

Conclusion

This study concluded that conducting a PowerPoint presentation workshop for faculty members at the Faculty of Medicine, Suez Canal University has proven valuable as evaluated by both faculty members' satisfaction with the workshop material and the significant improvement in their knowledge of properly using PowerPoint in interactive lecturing. Further assessment of the long-term effects of PowerPoint workshop on behavioral changes of faculty members and the subsequent change in students' satisfaction should be conducted.

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