Original Article

Slide Designing by "Microsoft Power Point Software" in a Dental School of Iran

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Abstract

Presentation with PowerPoint slides has become a widely used technique in teaching. Although PowerPoint software has provided numerous features to make the presentation more effective g, poor preparation of slides could lead to lower students' learning. The aim of the current study was to evaluate the quality of PowerPoint slides used in theoretical courses in an Iranian Dental School. A validated check-list was designed according to the criteria mentioned in papers. Teaching slides of 51 professors were collected. Slides were all put into a union file and became blind. An instructed operator filled the check-list for these union files in the same situation of classroom in Mashhad Dental School. Data were qualitatively reported. Total of 2218 slides were collected. 56.5%, 48.3%, and 30.1% of the slides had inappropriate tables and graphs, used complete sentences, had low quality images respectively. Most of the slides had appropriate font size, type, and color and the text and background had good contrast. 6.7% of the slides had misspellings and 5% had inappropriate abbreviations. According to the results of current study, some features of PowerPoint presentation were used inappropriately in the school and it have to be mentioned in faculty staff development workshops.

Keywords: Slide; Power point; Dentistry.

Introduction

The PowerPoint software is a powerful slide projection tool which was first introduced in 1984 (by Thomas Rudkin and Dennis Austin) with the name of Presenter.[1] In 1987 it was sold to Microsoft and nowadays has been replaced blackboards and overheads transparencies in educational and academic environments.[2] It is estimated that 20 to 30 million presentations with PowerPoint software had been performed each day around the world in 2002.[3]

Although the presenter abilities are still the main point in successful teaching[4] the effectiveness of PowerPoint in students' performance is in doubt,[5-9] several studies had indicated the preference of PowerPoint to other types of presentations by students.[7,9-11] In addition, improvement in recall ability of students with use of graphics has been reported.[7,9,12-14] PowerPoint software provides a variety of options to improve the quality of a PowerPoint-based presentation. Text, font type, font size, color, sounds and graphics are part of numerous options to enrich the PowerPoint slides. However, incorrect use of these options and inaccurate slide preparation may lower quality of presentation and also learning.[15]

The aim of the current study was to evaluate the quality of PowerPoint presentations professors had made for teaching in theoretical courses in an Iranian dental school.

Method

To evaluate the accordance of PowerPoint slides with standard quality, a list of standard PowerPoint criteria obtained based on previous papers.[15-23] This list was evaluated by three professors of Mashhad Medical University which had post graduate degree in

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Medical Education with experience of teaching PowerPoint principles in workshops or by IT chief manager of faculty. All the criteria which were accepted by all of them were included as an item of an evaluation check-list (table 1). From 10 educational departments in Mashhad Dental School, total of 55 professors had theoretical courses in the second semester of 2009 academic year. From each professor, one PowerPoint was obtained at the end of a randomly selected session of teaching. After each class, a letter containing full description of the study was given to each professor and the PowerPoint file was included in the study (each session was 1 hour in the school).

Names and descriptions which could lead to recognition of the professor who had made the PowerPoint were deleted. A unique file was made with putting all slides of obtained files randomly in one file by one of the professors (containing 2218 slides) to ensure blindness of study and avoid bias due to recognizing the subject. Evaluation of the slides was performed based on the check-list in the regular class setting (middle seat of classroom, lights off, curtains pulled, door closed, 3M data projector, PC with Intel graphic card, and

screen resolution of 1360 × 768).

An instructed and blinded person (who had been filled the check-list for 10 PowerPoint files in presence of mentioned three professors to ensure calibration) which was seated in the middle of the class filled the check-list during presentation of slides. Data were collected based on the frequency of each option in the check-list and descriptively reported.

Results

In this study 51 professors participated (4 professors didn't give their PowerPoint files)

Table 2: Frequencies of appropriate and inappropriate features in PowerPoint slides according to the tables/graphs, images, text/background, and font

Feature	Appropriate (%)	Inappropriate (%)
Tables and Graphs	43.4	56.6
Images	69.9	30.1
Coordination of Text/ Background	94.9	5.1
Font Size	86.4	13.6
Font Type	96.8	3.2
Font Color	94.4	5.6

Table 1: Designed check-list of PowerPoint slides quality evaluation

| Criteria	Choices			
Language	English	Persian	Combination	
Using Complete Sentences	Yes	No		
Font Size	Appropriate*	Inappropriate		
Font Type	Appropriate†	Inappropriate		
Font Color	Appropriate‡	Inappropriate		
Misspelling	Yes	No		
Not Standard Abbreviations	Yes	No		
Background	Dark	Light		
Images	Yes: Appropriate		Yes: Inappropriate	No
Tables and Graphs	Yes: Appropriate^		Yes: Inappropriate	No
Sound	Yes: Appropriate		Yes: Inappropriate	No
Animation	Yes: Appropriate		Yes: Inappropriate	No
Coordination of Text and Background	Yes	No		

*font size of 36-40 for headings and 28-32 for body according to the class size was regarded as appropriate
†font types of Sans Serif were regarded as appropriate
‡font color with which text was easily readable and had a good contrast with background regarded as appropriate
^ Maximum of 4 rows in two-column table and 3 rows for three-column one. Maximum of 8 bars in bar charts

Graph 1: Frequencies of background and language type in slides
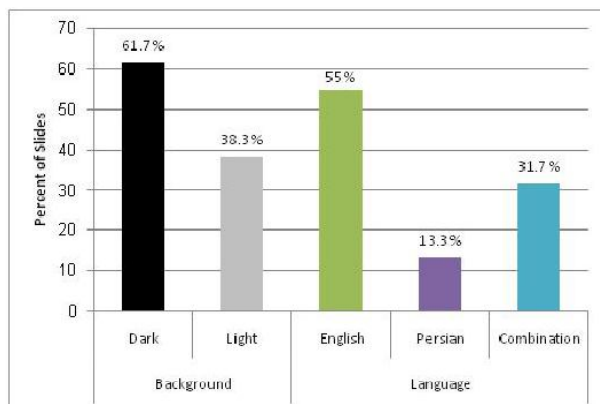
and finally a total of 103 hour PowerPoint files were collected. The percentages of slides with appropriate and standard usage of some features are listed in table 2. Only 36% of slides had used animation and all of them were appropriately used. In 48.3% of slides complete sentences demonstrated. 6.7% of slides had misspelling and 5% of the abbreviations were inappropriate. Graph 1 shows the description of language and background color status in the slides. No sound was used in any of slides.

Discussion

Use of PowerPoint in educational and academic context has provided a good opportunity to improve presentations and data projections. Numerous features of PowerPoint software had made presentations more attractive and less boredom.[15] Due to numerous advantages of this software, it has become so popular.[3] The friendliness and simplicity usage of this software, has led to lack of interest among faculty staff for attendance workshops and learning sessions to use these features correctly.

Common mistakes in presentation with PowerPoint software include: too many lines in each slide, too many words in each line and inappropriate font size, inappropriate font type, misspellings, using too much animations and graphs/tables, misuse of colors.[16]

The results of the current study revealed that nearly half of slides had long and complete sentences in text. This may decrease interest of students toward subject as it reduces their concentration on subject as students try to read a very long text. Keywords are suitable to emphasize on key points instead of complete sentences.[17] Another source of distraction due to text is non-standard abbreviations which could engage the students mind and lessen their concentration. In the current study 5% of slides had these kinds of abbreviations. In 2002, from total of 862 comments in an international congress in Radiology, 37 (4.3%) of the comments were about low quality of texts in slides of 26 (32%) of 81 presenters.[16]

In this study 6.8% of slides had misspellings. It should be mentioned that misspelling had a negative connotation for students and show that presenter has made slides carelessly and enough time had not dedicated for preparing the PowerPoint. It is recommended that for English texts, Spell Check feature is used to overcome this problem.

There exist two major font formats: Serif and Sans Serif. Times New Roman, Courier New, and Georgia are examples of Serif and Arial, Arial Unicode MS, and Comic Sans MS are Sans Serif fonts. Serif fonts distinguishes from Sans Serif with a tiny tail added to the letters which make this font be easier to be followed in a reading. However, in projection, Serif font is not appropriate and Sans Serif is a better choice.[18,19] It has also recommended that using two different fonts (for example one for headings and one for body) make the text more attractive and readable.[19] This study revealed that more than half of the presentations were in English and totally 86.7% of presentations had English words. Most of the presentations had appropriate font style (96.8%). However, it could be mentioned that Arial font is default font style in the software and this high percentage of appropriate font style may be result of no changing in font style and was unintentionally.

Another feature which needs attention is font size. This feature determines number of words in each text. The size of the room in which presentation is performing play the

most important role in choosing font size as persons seating at the back seats should be able to read the text easily. As a result, appropriate font size in Mashhad Dental Faculty classrooms is 36 for headings and 28 for body- as it has been recommended for presentation rooms with 50 to 200 seats and mentioned faculty classrooms have 90-110 seats.[15] Collins had recommended font size more than 50 for headings and 40 for body regardless of room size.[16] In the current study, font size of between 36-40 for headings and between 28-32 for body was regarded as appropriate in the check-list. The high percentage of appropriate font size in collected slides (86.4%) may also be unintentionally and due to standard font size of PowerPoint software (44 for headings and 32 for body with presumed word counts per each slide). On the other hand, putting too many words in a slide lead to smaller font to have the entire body frame be fit with the presentation page. This could be the reason of 13.6% of the slides with inappropriate font size which had too many contents in each slide.

Different colors have different messages and meanings. Two of the primary colors (red, yellow, blue) have the most contrast and on the other hand, two of the secondary colors (purple, green, orange) have the least.[20] In a presentation, colors are not printed, but they are lights. This lead to darker projection of colors in big rooms and lighter projection in smaller rooms. As a result, most contrast should be provided to bold text. The background color should also have enough contrast with text colors. Also red and green colors should be avoided as they cannot be recognized by color-blind persons.[21] It is recommended to use at last 4 colors in a presentation. In this study most of the slides had appropriate font color (94.4%) and good contrast between font color and background existed (94.9%).

Images are powerful tools to transfer data. Combining the presentation with appropriate images (voice with image) could enhance the remembrance and recall ability.[17] 30.1% of slides had poor quality or small images which

could attenuate the effectiveness of presentation. Images should have appropriate quality and size and be used in relevant place in presentation and also should be relevant to subject.

Tables and graphs are also good tools to show a large amount of data in an understandable and easy accessible way. Collected slides had tables and bar charts. In the check-list, appropriate table was defined as tables with not too much data. A two column table should have maximum of four rows and a three column one, three or less rows.[21] Bar charts with less than 8 bars in each slide and having axes labels were considered as appropriate.[22] More than half of the presentations prepared for theoretical classes had tables and graphs in this study. Too many columns and rows in each table, total percent of more than 100% at sum, multiple bar charts in each slide, and having no labels for each axis were the common mistakes of inserted tables and graphs in the slides.

Using sound in a presentation has a mutual effect; it may distract audiences or may make the presentation more effective. None of the presentations in this study had sounds. This may be due to the poor quality of sound system in Mashhad Dental Faculty classrooms. In addition, it has been reported that most of the sound cards are disable to make appropriate sound for the back seats of a lecture room.[18]

Animation is a feature which could enhance the concentration of audience on presentation (with *builds*) and prevent boredom and make presentation more interesting (with *transition*).[17] However, overuse of these features should be avoided as it may distract audiences.[23] Although the animations used in collected slides were appropriate, but only one third of files had animations.

Conclusion

According to the results of this study, high amounts of slides were inappropriate in use

of some features of PowerPoint software. As these misuses have the potential to distract students and decrease the learning capacity of students with slide projection, participating in PowerPoint workshops is highly recommended for teachers who want to get help from PowerPoint software to enhance the effectiveness of their presentations.

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