SOCIETY FOR THE TEACHING OF PSYCHOLOGY

Teaching of Psychology
38(4) 293-297

DOI: 10.1177/0098628311421333
http://top.sagepub.com
SAGE

A Comparison of Simplified-Visually Rich and Traditional Presentation Styles

Douglas A. Johnson[1] and Jack Christensen[1]

Abstract

Microsoft PowerPoint and similar presentation tools have become commonplace in higher education, yet there is very little research on the effectiveness of different PowerPoint formats for implementing this software. This study compared two PowerPoint presentation techniques: a more traditional format employing heavy use of bullet points with text and a newer format referred to as the *Simplified-Visually Rich Approach,* which uses frequent visuals and minimizes on-screen text. These techniques were assessed with a quasi-experimental between-groups design that analyzed the impact of these two formats on college student satisfaction and learning outcomes in a general psychology course. No differences in learning outcomes were demonstrated, although the Simplified-Visually Rich Approach produced significantly higher student satisfaction.

Keywords

multimedia learning, PowerPoint, media in education, student evaluations, teaching/learning strategies, pedagogical issues

Since its creation in 1985, the popularity of Microsoft PowerPoint and similar *slideware* programs in college classrooms has continued to grow, to the point where there is an expectation that instructors must use such programs in their teaching (Craig & Amernic, 2006; Hardin, 2007). In 2002, the estimated number of PowerPoint programs in circulation ranged around 400 million copies, and that number continues to grow (Simons, 2004). Indeed, PowerPoint presentations have become so commonplace in college lectures that reference to their popularity is often made without cited sources (Noppe, Achterberg, Duquaine, Huebbe, & Williams, 2007).

However, some authors have criticized the usage of PowerPoint presentations. Kewney (2007) states, "PowerPoint inherently ruins a presentation in ninety-five percent of cases." Eliot Masie called PowerPoint "The single most dangerous tool invented on the planet" (Masie, 2006). Masie further claims that typical PowerPoint presentations encourage instructors to list facts instead of presenting those facts in the context of a story and that students' interest in the subject matter suffers as a result. Masie's claim echoes those made by many other authors. For example, Creed (1997) and Bly (2001) commented that a PowerPoint reduces the connection between a speaker and an audience because both students' and instructor's eyes focus on the screen rather than on each other. Other authors claim that PowerPoint can influence students' perceptions and interpretations of information (Farkas, 2009).

The research on the effectiveness of PowerPoint presentations has often resulted in mixed outcomes. For example, Amare (2006) found that lectures without PowerPoint produced superior learning outcomes compared to PowerPoint-based lectures, whereas Erwin and Rieppi (1999) found that PowerPoint-based lectures enhanced learning outcomes. Beets and Lobingier (2001) and Susskind (2005) found no differences between PowerPoint and non-PowerPoint lectures. Research by Savoy, Proctor, and Salvendy (2009) suggested that the effectiveness of PowerPoint presentations may depend in part on the type of information to be conveyed. One consistent finding across research studies is that student interest is enhanced by PowerPoint usage, although this does not necessarily translate to improved performance (Leffingwell, Thomas, & Elliott, 2007; Szabo & Hastings, 2000; Yilmazel-Sahin, 2009). Questions on the effectiveness of PowerPoint presentations are difficult to answer in part because of the variation in style, content and context that is inherent to instructors' presentations. Furthermore, there is little research comparing different types of PowerPoint presentation styles, with much of the previous research devoted to comparing the presence and absence of PowerPoint on retention and preference in classroom settings.

PowerPoint presentations are frequently characterized by an abundance of bulleted and lengthy information being presented textually to learners, while they are simultaneously presented with the same information vocally. Many researchers in multimedia learning have demonstrated reduced learning under such conditions (Mayer, 2005). One of the most prominent researchers in this area, John Sweller, considered these

[1] Western Michigan University, Kalamazoo, MI, USA

Corresponding Author:
Douglas A. Johnson, P.O. Box 20415, Kalamazoo, MI 49019, USA
Email: djohnson@operant-tech.com

conditions bad enough that he stated in a news article that, ''The use of the PowerPoint presentation has been a disaster'' and ''It should be ditched'' (Patty, 2007).

Although multimedia research suggests that the common usage of PowerPoint may be problematic, this type of research also suggests ways in which it may be improved. For example, a recent review paper found that integrating text into graphics produced superior learning outcomes as compared with a split approach (Johnson & Rubin, 2011). Research has also suggested that using just a single brief sentence on a slide can improve retention over sentence fragments or large amounts of text (Alley, 2009; Atkinson, 2008).

Two recent popular books on PowerPoint presentation techniques, *Beyond Bullet Points* (Atkinson, 2008) and *Presentation Zen* (Reynolds, 2008), offer an alternative to presentations that rely heavily on bullet points presenting large amounts of text. The recommendations from these two books may address many of the concerns noted above. These two books outline the following rules for effective presentations:

- Use slides as support for the speaker rather than as a source of information.
- Keep on-screen text and extraneous details to a minimum to foster attention to more important details and avoid redundancy with speaker.
- Text should be a complete sentence, not a topic statement.
- Text should be integrated into the visuals of the presentation.
- Each slide should present only one idea and information should be presented in small chunks.
- Bullet points should be rare.
- Visual cues such as contrast should be used to direct attention (e.g., differing font sizes on slide to highlight key words).
- Given that slides are speaker support and cannot stand alone, presentation slides should not be distributed to audience.
- Separate handouts should be generated to accompany presentation. Handout material should be more detailed than presentation slides.

The approach described above will be referred to as the *Simplified-Visually Rich Approach* for the remainder of the article. According to advocates of this approach, these rules will minimize cognitive load and allow an audience to actually listen to the speaker, rather than simply just reading the slide. Tangen et al. (2011) examined this presentation approach and discovered that a visually rich style that was congruent with the information being presented neither enhanced or harmed student accuracy in comparison with a more traditional bullet point presentation style, although a visually rich and image incongruent condition did impair learning.

Although performance and learning measures such as test scores should be the primary measure of instructional effectiveness, it is not the only important measurement. Student satisfaction should also be an important consideration. For example, if two instructional approaches are equal in terms of learning gains, but have a differential impact on satisfaction, then there would be a reasonable basis for recommending one approach over another. Tangen et al. (2011) examined this variable as well and found that visually rich presentation styles increased student ratings in comparison to a more traditional bullet point PowerPoint style.

The researchers in the Tangen et al. (2011) study utilized a within-subjects experimental design in which participants were exposed to three different presentation styles in rapid succession. Although the researchers took precautions to counterbalance the order of presentations, the experimental design may still have been subject to contrast and sequence effects (Komaki & Goltz, 2001). Although contrast effects are desirable when assessing preference, they should be avoided when assessing performance. Furthermore, the study utilized only a single 5-min exposure for each format (15 min total instructional time across three conditions). Such a brief learning duration is not representative of a typical classroom format and may not have been sufficient to allow for differences in learning to emerge. For example, it may be possible for student attention to decline to a greater extent under certain presentation formats during prolonged exposure, leading to differences on later examination performance.

This study is one of the first to compare the differential effectiveness of traditional PowerPoint designs and the Simplified-Visually Rich Approach in terms of their effect on both student opinion and test scores. This study also extends the research of Tangen et al. (2011) by using a between-subjects design to eliminate the possibility of sequence and contrast effects during the acquisition of information, although a within-subject approach was briefly used to assess preference following the collection of performance measures. This study also greatly increased the instructional duration for the purpose of increasing the relevance of the obtained results to a typical classroom learning environment. Finally, this study is more in line with the recommendations listed above by providing students access to detailed lecture handouts (in contrast to Tangen et al.). Previous research has noted that the availability of handouts prior to lecture does increase student satisfaction without having a detrimental effect on learning or attendance (Babb & Ross, 2009; Bowman, 2009; Marsh & Sink, 2010).

Method

Participants

Two hundred sixty-nine students enrolled in two sections of general psychology, both of which were taught by the first author at Western Michigan University, participated in this study. The two sections met on the same days for 1 hr and 15 min, twice per week. One section met at 12:30 p.m. and one section met at 3:30 p.m. Both sections had the same study objectives, textbook, examinations, and supplemental lecture handouts. The supplemental lecture handouts were Portable Document Formats (PDF) of the slide presentations used in the

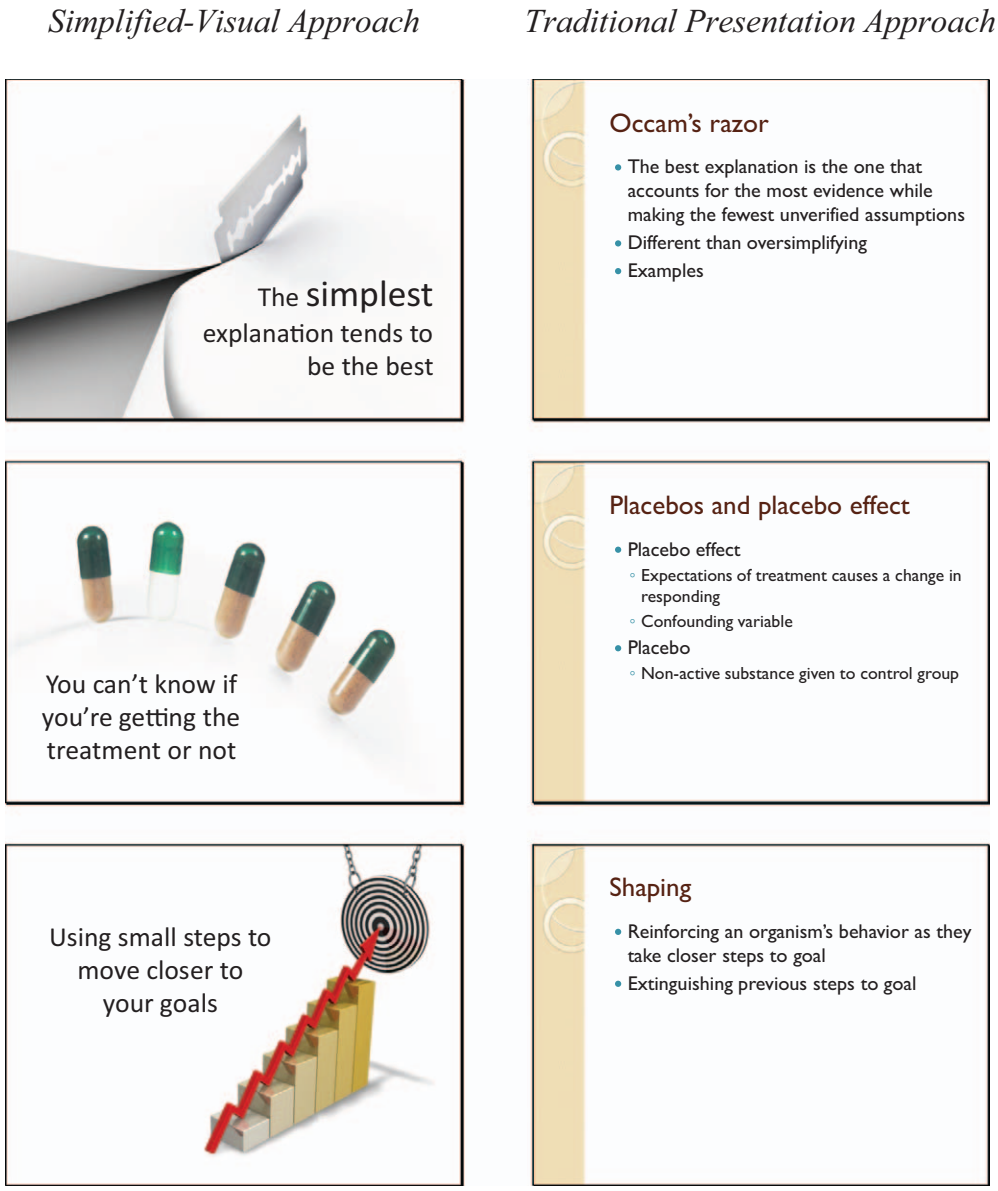

Figure 1.

traditional presentation method and were available via the standard university E-Learning website. The first author verbally presented the same information in both sections.

Procedures

For the first three units (7.5 hr of instructional time), one section of the general psychology course was taught following the presentation guidelines outlined by the Simplified-Visually Rich Approach, whereas the other section was taught using more traditional presentation methods (i.e., bullet point format and large amounts of on-screen text). See Figure 1 for a side-by-side comparison of sample slides used in the two different formats.

During the fourth unit (2.5 hr of instructional time), the presentation methods were switched so that the section that had been getting the traditional presentation then received the Simplified-Visually Rich Approach and vice versa. It was important for participants to be exposed to both conditions to foster meaningful comparisons regarding the relative satisfaction with each condition (Bucklin & Dickinson, 2001; Dickinson & Gillette, 1993).

Measures

Examination scores on the first three units (during which participants had only been exposed to one approach) and participants' survey responses after the final lecture of the fourth unit (subsequent to exposure to both approaches) were used to compare the presentation formats in terms of satisfaction and performance. Examinations consisted of multiple-choice and short-answer questions. The opinion survey presented five questions. Participants were asked on a 1 to 10 scale (1 = *very*

Table 1. Average Preference Ratings (1–10 Scale; 1 = *Very Little*, 10 = *A Great Deal*)

Group	Simplified-Visually Rich Approach	Traditional Approach
Overall ($n = 269$)	7.15	6.22
Students exposed to Simplified-Visually Rich Approach for first three units ($n = 130$)	8.01	5.98
Students exposed to Traditional Approach for first three units ($n = 130$)	6.35	6.44

little, 10 = *a great deal*) how much they thought they learned during the first three units, how much they liked the presentation style of the first three units, how much they thought they learned during the fourth unit, and how much they liked the presentation style of the fourth unit. The last question was a forced-choice question that asked participants to indicate a preference for one of the presentation styles.

Results

Student Reactions

Opinion surveys were analyzed using one-factor analyses of variance (ANOVAs). The presentation formats did not differ in regards to perceived learning ($p = .558$). However, there was a statistically significant difference between formats with regard to preference ($p < .05$). Overall, students preferred the Simplified-Visually Rich Approach and assigned it an average rating of 7.15, whereas they assigned the Traditional Approach an average rating of 6.22 (1 = *very little,* 10 = *a great deal*) in response to question asking how much students liked each method. When forced to choose only one method, 55.76% of students favored the Simplified-Visually Rich Approach method over the Traditional Approach.

As shown by Table 1, there did seem to be an inclination for students to prefer the method that they had the most exposure to. For the students who were exposed to the Traditional Approach for the first three units, they gave an average rating of 6.35 to the Simplified-Visually Rich Approach and 6.44 to the Traditional Approach. For the students who were exposed to the Simplified-Visually Rich Approach for the first three units, they gave an average rating of 8.01 to the Simplified-Visually Rich Approach and 5.98 to the Traditional Approach.

Student Learning

A one-factor ANOVA was used to assess the impact of presentation format on student examination performance. No statistically significant differences were found in examination performance ($p = .301$).

Discussion

Similar to previous research, the results demonstrate a positive impact of the Simplified-Visually Rich Approach on student satisfaction ratings. However, instructors should be cautioned not to implement these guidelines during the middle of a semester. Although students did prefer the Simplified-Visually Rich Approach overall, it was much more effective when implemented at the beginning of the semester. (See Table 1.) In fact, when the students were exposed to the Simplified-Visually Rich Approach late in the semester, there was a slight preference for the more familiar Traditional Approach.

Although higher preference did not translate to improved examination performance, this should not be surprising when considered in the light of previous research demonstrating that student satisfaction is frequently altered by variables besides instructional effectiveness (Riniolo, Johnson, Sherman, & Misso, 2006; Tang & Austin, 2009). Furthermore, it has been demonstrated that some presentation styles can both improve satisfaction and simultaneously harm learning (Tangen et al., 2011). The classic example of this phenomenon is the *Dr. Fox effect.* This effect refers to a series of studies in which an actor unfamiliar with the course content pretended to be a professor and garnered high student evaluations due to his interpersonal skills, despite the fact that his lecture had virtually no educational content (Naftulin, Ware, & Donnelly, 1973; Ware & Williams, 1975). However, it is worth noting that the present research used a presentation technique that had both educational merit and improved student preference.

Even though preference did not improve performance, it would be worthwhile for future researchers to see whether the increased preference associated with the Simplified-Visually Rich Approach does translate to other important areas. For example, whether it influences the likelihood of students pursuing a career in psychology or motivates students to read further material on the topics presented in class. Although these were not measured in the present study, it is plausible that these variables would be influenced by higher student satisfaction. Future researchers could also conduct a component analysis to isolate the critical features that resulted in higher satisfaction or add refinements to the present method.

The Simplified-Visually Rich Approach style described in this study is not the only method for presenting visually rich content. For example, the Pecha Kucha technique uses no text at all and presents images for very brief durations, typically less than 1 min for each slide (Beyer, 2011). Future research could compare different visually rich styles and examine how they compare in terms of satisfaction and learning.

Although the Simplified-Visually Rich Approach did not improve examination performance, this technique could be easily incorporated with other techniques that do improve student retention. Overall, the results show that the guidelines outlined by Atkinson (2008) and Reynolds (2008) are an effective way of improving student satisfaction without negatively affecting student retention of material.

Declaration of Conflicting Interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research and/or authorship of this article: This research was supported in part by a Psychology Department student grant.

References

Alley, M. (2009). *The craft of scientific presentations: Critical steps to succeed and critical errors to avoid.* New York: Springer-Verlag.

Amare, N. (2006). To slideware or not to slideware: Students' experiences with PowerPoint vs. lecture. *Journal of Technical Writing and Communication*, *36*, 297-308.

Atkinson, C. (2008). *Beyond bullet points: Using Microsoft Office PowerPoint 2007 to create presentations that inform, motivate, and inspire.* Redmond, WA: Microsoft Press.

Babb, K. A., & Ross, C. (2009). The timing of online lecture slide availability and its effect on attendance, participation, and exam performance. *Computers & Education*, *52*, 868-881.

Beets, S. D., & Lobingier, P. G. (2001). Pedagogical techniques: Student performances and preferences. *Journal of Education for Business*, *76*, 231-235.

Beyer, A. M. (2011). Improving student presentations: Pecha Kucha and just plain PowerPoint. *Teaching of Psychology*, *38*, 122-126.

Bly, R.W. (2001). The case against PowerPoint. *Successful Meetings*, *50*, 51-52.

Bowman, L. L. (2009). Does posting PowerPoint presentations on WebCT affect class performance or attendance? *Journal of Instructional Psychology*, *36*, 104-107.

Bucklin, B. R., & Dickinson, A. M. (2001). Individual monetary incentives: A review of different types of arrangements between performance and pay. *Journal of Organizational Behavior Management*, *21*, 45-137.

Craig, R. J., & Amernic, J. H. (2006). PowerPoint presentation technology and the dynamics of teaching. *Innovative Higher Education*, *31*, 147-160.

Creed, T. (1997, May). PowerPoint, no! Cyberspace, yes. *The National Teaching and Learning Forum, 6*(4). Retrieved from http://www.ntlf.com/html/pi/9705/creed_1.htm

Dickinson, A. M., & Gillette, K. L. (1993). A comparison of the effects of two individual monetary incentive systems on productivity: Piece rate pay versus base pay plus incentives. *Journal of Organizational Behavior Management*, *14*, 3-82.

Erwin, T. D., & Rieppi, R. (1999). Comparing multimedia and traditional approaches in undergraduate psychology class. *Teaching of Psychology*, *26*, 58-61.

Farkas, D. (2009). Managing three mediation effects that influence PowerPoint deck authoring. *Technical Communication*, *56*, 1-11.

Hardin, E. E. (2007). Presentation software in the college classroom: Don't forget the instructor. *Teaching of Psychology*, *34*, 53-57.

Johnson, D. A., & Rubin, S. (2011). Effectiveness of interactive computer-based instruction: A review of studies published 1995–2007. *Journal of Organizational Behavior Management*, *31*, 55-94.

Kewney, G. (2007, April 16). Missing the PowerPoint of public speaking. *The Register.* Retrieved from http://www.theregister.co.uk/2007/04/16/death_by_powerpoint/

Komaki, J. L., & Goltz, S. M. (2001). Within-group research designs: Going beyond program evaluation questions. In C. M. Johnson, W. K. Redmon & T. C. Mawhinney (Eds.), *Handbook of organizational performance: Behavior analysis and management* (pp. 81-137). Binghamton, NY: The Haworth Press, Inc.

Leffingwell, T. R., Thomas, D. G., & Elliott, W. H. (2007). Microsoft Producer: A software tool for creating multimedia PowerPoint presentations. *Teaching of Psychology*, *34*, 57-63.

Marsh, E. J., & Sink, H. E. (2010). Access to handouts of presentation slides during lecture: Consequences for learning. *Applied Cognitive Psychology*, *24*, 691-706.

Masie, E. (2006, October). Learning in a flatter world. Keynote address at the IEEE international Professional Communication Conference (IPCC), Saratoga Springs, NY. (Transcribed by D. Farkas.).

Mayer, R. E. (2005). *The Cambridge handbook of multimedia learning.* New York: Cambridge University Press.

Naftulin, D. H., Ware, J. E., & Donnelly, F. A. (1973). The Doctor Fox lecture: A paradigm of educational seduction. *Journal of Medical Education*, *48*, 630-635.

Noppe, I., Achterberg, J., Duquaine, L., Huebbe, M., & Williams, C. (2007). PowerPoint presentation handouts and college student learning outcomes. *International Journal for the Scholarship of Teaching and Learning*, *1*, 1-13.

Patty, A. (2007, April 4). Research points the finger at PowerPoint. *The Sydney Morning Herald.* Retrieved from: http://www.smh.com.au/news/technology/powerpoint-presentations-a-disaster/2007/04/03/1175366240499.html

Reynolds, G. (2008). *Presentation Zen: Simple ideas on presentation design and delivery.* Berkeley, CA: New Riders.

Riniolo, T. C., Johnson, K. C., Sherman, T. R., & Misso, J. A. (2006). Hot or not: Do professors perceived as physically attractive receive higher student evaluations? *The Journal of General Psychology*, *133*, 19-35.

Savoy, A., Proctor, R. W., & Salvendy, G. (2009). Information retention from PowerPoint and traditional lectures. *Computers & Education*, *52*, 858-867.

Simons, T. (2004, April 7). Does PowerPoint make you stupid? *Presentations, 18*(3). Retrieved from: http://www.presentations.com/msg/search/article_display.jsp?vnu_content_id=1000482464

Susskind, J. E. (2005). PowerPoint's power in the classroom: Enhancing students' self-efficacy and attitudes. *Computers & Education*, *45*, 203-215.

Szabo, A., & Hastings, N. (2000). Using IT in the undergraduate classroom: Should we replace the blackboard with PowerPoint? *Computers & Education*, *35*, 175-187.

Tang, T. L. P., & Austin, M. J. (2009). Students' perceptions of teaching technologies, application of technologies, and academic performance. *Computers & Education*, *53*, 1241-1255.

Tangen, J. M., Constable, M. D., Durrant, E., Teeter, C., Beston, B. R., & Kim, J. A. (2011). The role of interest and images in slideware presentations. *Computers & Education*, *56*, 865-872.

Ware, J., & Williams, R. (1975). The Dr. Fox effect: A study of lecturer effectiveness and ratings of instruction. *Journal of Medical Education*, *50*, 149-156.

Yilmazel-Sahin, Y. (2009). A comparison of graduate and undergraduate teacher education students' perceptions of their instructors' use of Microsoft PowerPoint. *Technology, Pedagogy and Education*, *18*, 361-380.