Why Do Scholars Use PowerPoint the Way They Do?

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Brigitte Hertz[1], Cees van Woerkum[1], and Peter Kerkhof[2]

Abstract

PowerPoint has received much criticism regarding excessive use of text and the lack of contact with the audience. Why presenters use PowerPoint in this way has not been studied so far. Our study using interviews with beginning and advanced presenters shows that some use the program as a speaking note and as a means to draw the attention away from themselves. Some even think that PowerPoint can replace rhetorical skills. Slides are mainly designed on the basis of commonsense, instead of guidelines based on human information processing. Implications for the teaching of PowerPoint use in business communication are discussed.

Keywords

PowerPoint, presentations, scholars, teaching communication

In the past 15 years, the use of the presentation software PowerPoint and similar programs, such as Keynote or Prezi, have become more popular. Many people use the PowerPoint program because it is easy as well as available as an integral part of Microsoft's Office suite of programs. One can incorporate pictures, animations, films, and text on a PowerPoint slide with very little training. The slides can be made attractive without much effort and are easy to display during presentations. They can also be made available (as handouts or posted on the Internet) for students and professionals to use after the presentation.

[1]Wageningen University, Netherlands
[2]VU University, Netherlands

Corresponding Author:
Brigitte Hertz, Wageningen University, Communication Sciences, Hollandseweg 1, Wageningen 6706KN, Netherlands.
Email: brigitte@bhertz.nl

Despite its popularity as a presentation tool, the use of PowerPoint suffers a considerable amount of criticism. The most famous examples of this are the satirical video "Life After Death by PowerPoint" (McMillan, 2012), the article "PowerPoint: Shot With its Own Bullets" (Norvig, 2003), and Tufte's (2003) often-cited attack on the program titled "PowerPoint is Evil" in which he states: "The PowerPoint style routinely disrupts, dominates, and trivializes content" (p. 2). Somewhat less dramatic are the complaints of numerous authors who feel that presenters use too many slides with too much text and too many bullet points. They say that PowerPoint seduces presenters to use simplified and fragmented topic lists and encourages dull oral presentations of bullet points, whereas the presenters themselves look at the projection. The critics complain that PowerPoint limits possibilities for improvisation and interaction with the audience (e.g., Hanft, 2003; James, Burke, & Hutchins, 2006; Keller, 2003; Vik, 2004) and that the presentation program reduces the role of the presenter to that of a stagehand (Blokzijl & Naeff, 2004). Cyphert (2004) summed up the criticism in her observation of students' presentation behavior: "They speak in the dark, turn their backs to the audience, and read the handouts" (p. 81).

Now, more than 10 years since Tufte's (2003) attack, the criticism of PowerPoint has mostly died away, but, presumably, not because its practitioners have changed the ways they use the software. It was found that scholars from a variety of disciplines use 55 words per slide on average (Hertz, van Woerkum, & Kerkhof, 2013). Compared with the proposed maximum numbers in instruction books, this average exceeds even the highest proposed maximum number of 36 (Hilgers & Vriens, 2010) by 50%. The scholars looked on average 73 times at the projection during their 20-minute presentation time (more than three times a minute). The criticism on at least these two aspects still seems to hold. Yet despite the widespread use of PowerPoint and the criticism of the way it is used, little is really known about why presenters use the program in the ways they do. In this article, we intend to add to the knowledge of how presenters use PowerPoint and the motives behind their methods. We will discuss the relevant guidelines for PowerPoint use and provide possible explanations for why presenters use the program in less than optimal ways. We will then describe the findings of a qualitative study with beginning and experienced PowerPoint users in an academic community.

Guidelines for Effective PowerPoint Presentations

Instruction books do provide useful guidelines for working with PowerPoint. They state that making (eye) contact is the most important factor for a good delivery, whereas looking away from the audience (e.g., to look at the words on a PowerPoint slide) is considered a poor way of presenting (see Lucas, 2004; Malmfors, Garnsworthy, & Grossman 2004; McCroskey, 2006; Shephard, 2005; Zanders & MacLeod, 2010). Research into the perception of auditory speech supports this position by suggesting that perception of speech is improved when the audience sees the speaker's facial articulatory movements (van Wassenhove, Grant, & Poeppel, 2005).

Instructional books also advocate a limit to the number of slides, bullet points, and words on a slide (see, for instance, Knispel & Bemelmans, 2010; Shephard, 2005), and

writers have advised presenters to minimize slide density in favor of more visuals instead of text (DuFrene & Lehman, 2004). However, there is no agreement by the critics on exact numbers, which vary from "no more than four lines with four words" to "a maximum of six lines with six words," resulting in a maximum of 36 words per slide. Writers also mention that pictures can enhance the processing of information by the audience and enable a better retention of the presentation (Atkinson, 2005; Lucas, 2004; Malmfors et al., 2004; Shephard, 2005).

Literature Review

Scientific evidence for the advice to use pictures over text can be found in the experimental studies of Mayer (2009). His cognitive theory of multimedia learning focused on the combination of words and pictures, and supposed an active process of information processing in which a limited amount of information is selected, organized, and integrated. Mayer proposed two different channels for information processing: an auditory channel for spoken words and a visual channel for pictures and written words. The working memory connects the presented auditory information and the presented visual information. This active integration between pictures and spoken words—which Mayer calls the multimedia effect—creates increased processing and better comprehension of the material. People learn better from text and pictures than from text alone—the central hypothesis and first principle of multimedia learning. The second principle, the modality principle, stated that combining the visual mode (for instance pictures on a slide) with the auditory mode (spoken text) enhances learning (Low & Sweller, 2005). When text is projected on a slide, it has to compete with pictures for the limited processing space in the visual channel. When spoken words are presented simultaneously with text in an animation, there is a third and detrimental effect at work, called the redundancy principle (Sweller, 2005) that impairs the processing of information due to the duplication of textual information.

Mayer conducted numerous studies on this subject, which were published in a book (2009) and many articles (e.g., Mayer & Johnson, 2008; Mayer & Moreno, 1998, 2002). Others have also demonstrated these principles—for instance, Downs, Boyson, Alley, and Bloom (2011), who found a modality effect in the use of MP3 players in the classroom, and Wecker (2012) who studied the retention of oral information in PowerPoint presentations and found that retention was lower with slides containing many words than slides with fewer. Atkinson and Mayer (2004) demonstrated how Mayer's principles can be applied to PowerPoint slides, and Burke (2007) showed how they could be used in designing educational presentations.

Given the guidelines for the use of text and pictures on the slides, the question of why presenters would use PowerPoint with many text slides becomes more pressing. Are presenters not aware of these guidelines, or is there something inherently wrong with the program itself, as, for instance, Tufte (2003) suggested in his blog "PowerPoint is Evil?" Worley and Dyrud (2004) stated that the fault is not with the software but with the user (see also Bucher & Niemann, 2012; Farkas, 2010; Shwom & Keller, 2003). One explanation for the way PowerPoint is often used could be that presenters

employ a commonsense approach that is not in line with scientifically established principles of human information processing. Kosslyn, Kievit, Russell, and Shephard (2012) stated that the "psychological foundations for effective slideshow presentation design are neither obvious nor necessarily intuitive." For this reason, Hentz (2006) advocated a more contemporary and multimodal literacy, meaning knowledge about how "written, oral, visual, and electronic modes of communication inform one another to generate meaning" (p. 426).

Cornelis and Tielens (2004) provided yet another explanation for presenters' violations of Mayer's principles: Most presenters are using PowerPoint as a tool for themselves, to structure their presentation, instead of using it to communicate with the audience. Farkas (2005) argued that presenters use many words on their slides out of "performance anxiety." Out of fear of forgetting to mention certain subjects, they include words as a reminder. Little is known about the reasons why presenters use PowerPoint in the way they do. Feelings of speaking anxiety, easy-to-use default settings, and support focused at the presenter rather than on the audience may all be reasons why presenters use PowerPoint the way they do.

Research Questions

This article will address the following research questions:

Research Question 1: Why do scholars use PowerPoint in the way that they do?
Research Question 2: For what purposes do scholars use pictures and text on their slides?
Research Question 3: How do scholars learn to present and use PowerPoint?
Research Question 4: Are there differences between beginners and advanced scholars?

Because we have not yet found any data on this subject, we intended to explore the reasons behind PowerPoint use by interviewing scholars. We collected a broad overview of ideas using in-depth interviews and present the results as a qualitative study.

Method

Participants

We conducted our study among academic scholars, asking beginning and advanced presenters about the way they use PowerPoint and their motives for doing so. In addition, we asked these presenters how they learned to present and work with PowerPoint. Given presenters' apparent ignorance about guidelines that deal with the use of PowerPoint slides (Kosslyn et al., 2012), we hypothesized that the way presenters mastered (to their own satisfaction) the use of the program would provide an important explanation for the way they use it.

We were specifically interested in participants' use of PowerPoint during their presentations at conferences, since these presentations are important for their work and form an important stage in the construction of scientific facts and in the network of scientific communication (Rowley-Jolivet, 2004). In our study, we distinguished between beginners and advanced presenters. Scholars at the beginning of a possible scientific career might suffer more from speaking anxiety and therefore use more words on their slides than those who are more advanced and successful. In addition, these scholars, who were born in the1980s, might never have presented with any other supporting tool. Their habits and ideas might differ from those of an older generation who can compare the use of PowerPoint with the use of transparencies, single slides for a projector, or a blackboard and who can remember presenting without PowerPoint. Scholars at the beginning of their careers may have different ideas on using pictures since they have grown up in a time in which images are easier to find, produce, and share.

We interviewed 24 scholars in total: 12 first-year PhD students and 12 advanced, prizewinning scholars. The PhD students consisted of eight selected participants in a course on "Effective PhD Management" from VU University Amsterdam (VUA; a general course for all first-year PhD students), another first-year VUA PhD student in the physical sciences, a PhD student in the humanities from VUA, and two first-year PhD students in the physical sciences from the University of Amsterdam. The group of PhD students was made up of nine women and three men, with an average age of approximately 25 years.

The category of "advanced presenters" was almost entirely made up of Spinoza prizewinners (the most prestigious Dutch award in science for "outstanding, pioneering, and inspiring scientific work"). We approached one person at a time from the list of 52 winners until we had three respondents in each category of faculty (humanities, physical sciences, social sciences, and medical sciences). By selecting subjects from these categories, we strived for a complete representation of scientific disciplines. We found two social scientists willing to participate in this study (there were only four in total) and the third social scientist we included was an "Academy Professor" (a prize awarded to researchers "for exceptional achievement throughout the course of their careers"). The group of advanced presenters was made up of four women and eight men. They came from six different Dutch universities, and their average age was 56 years. We had six respondents (three PhD students and three advanced presenters) in each category (humanities, physical sciences, social sciences, and medical sciences).

Procedure

Semistructured interviews of approximately one hour were held with all respondents and were conducted by the same interviewer (see the appendix for the questionnaire). The interviews were recorded and processed from the notes of the interviewer with the recordings as a backup to consult if necessary. We used the PowerPoint slides of the most recent relevant scientific presentation of the interviewee to discuss the use of PowerPoint and the slides containing pictures and texts. This made it easier not only for the respondent to remember the presentation but also for the interviewer to check

their remarks or to inquire after topics that were not discussed without being prompted. The PowerPoint presentation was later analyzed on both the number of words and pictures per slide, and the number of words, pictures, and slides per minute. The transcripts of the interviews were sent to the respondents for comments; these comments, if present, were then processed.

The questions in the questionnaire represented different topics including acquisition of PowerPoint skills, preparation of a presentation, advantages and disadvantages of PowerPoint use, the purpose of the various slides, and the appreciation of and feelings about PowerPoint when used by others. In analyzing and coding the interview data, the first step was to organize the answers to the different questions into a scheme.

In the second step, additional topics were coded. All topics were then organized in a new scheme. Also in this step, the differences were marked among scholars from different scientific disciplines, as well as those differences between the groups of beginning and advanced presenters. This coding was done by two independent coders, the interviewer plus an additional coder, who was taught how to perform this task. The coders were both professional psychologists, trained in interviewing and interpreting interview data. Whenever differences in coding occurred, they were discussed until consensus was reached. Relevant quotes were marked within the text. In the third step, through a process of axial coding, relating new categories to the original categories in the questionnaire and finally relating the categories to each other (Glaser & Strauss, 1967), the final categories and subcategories were established.

Results

In this section, we will report the results regarding the use of PowerPoint, the advantages scholars see in using the tool, the alternatives they perceive when having to present without PowerPoint, and their use of pictures and text on the slides. We will also describe the perceived disadvantages of using PowerPoint and the ways scholars have learned to present and use the program. Differences between beginners and advanced presenters are mentioned whenever they apply.

Reasons for Using PowerPoint

All respondents used PowerPoint, though some of them also used a blackboard or a flip-over for their lectures. The reasons for using PowerPoint and its advantages can be categorized as

- Support for one's memory
- Diverting the attention of the audience
- Support for the audience
- Entertainment
- Practical reasons
- Conforming to the audience's expectations

First, beginners as well as advanced presenters used PowerPoint as a prompt, a memory aid for themselves, helping them with the structure of their presentation: "PowerPoint offers structure," "It is like a track which you can lay out beforehand," and "I use the items on the slide as a frame to build my story around." Many respondents would otherwise have used speaking notes, but they thought that the audience would rather watch a PowerPoint slide than someone reading from a piece of paper (an argument which takes the audience into account as well).

Second, some beginning presenters liked PowerPoint because the direct (eye) contact with the audience is interrupted. One presenter felt she would need charisma to sustain this contact, something she felt she lacked. Others stated that "without PowerPoint it feels scary having all eyes focused on me without a distraction," or they said that "without PowerPoint I have to look at the audience all the time and that feels awkward."

Third, most presenters also used PowerPoint for the benefit of the audience, to enable them to process and remember the information. One participant commented that it allows the audience to "hear and read at the same time." Another respondent felt his English pronunciation was not adequate and that the audience could at least read the slides to get meaning.

Fourth, some presenters used PowerPoint for entertainment; presentations with PowerPoint are "more fun" was one comment. One respondent used PowerPoint "to draw the attention of the audience and to entertain and challenge them, because otherwise they will fall asleep." Some respondents in particular mentioned the use of pictures: "It adds something extra for the audience, which loves visuals." The use of pictures will be discussed in depth later in this article.

Fifth, the technical and practical possibilities of PowerPoint were often mentioned. Using (moving) pictures, including other media, and the possibility to animate items were seen as advantages of PowerPoint, as well as the fact that the slides can be altered at the last moment. The presentation can also, with changes made so easily, be passed along to someone else. Respondents found the PowerPoint format more practical than a collection of separate transparencies; they appreciated the fact that one could upload the presentation online, that it works faster than using a blackboard, and that it is easier to use than a written speaking note.

Finally, some respondents (beginners and advanced presenters alike) said that they use PowerPoint simply because audiences expect it to be part of their presentation.

In order to get a better understanding of the importance of PowerPoint, we asked the respondents what they would do if it were not possible to use the program in a presentation. Some people felt that presenting without PowerPoint was not an option; others said that it would be possible, and, in fact, some would even prefer it. Most respondents said that presenting without using PowerPoint would cause them to adjust their presentation. One way of adjusting, respondents say, would be to use another tool: the blackboard. But that could lead to "pictures that have a less long lasting effect, because they were not prepared that well" or being "more messy." Some presenters, if not able to use PowerPoint, would adjust the presentation's rhetorical aspects. They would, they told the interviewer, present more conclusions, give more

examples, more descriptions, tell more anecdotes, invite the audience to think about subjects, and improvise more. Some would adjust their voice to maintain the audience's attention and to emphasize structure, or would adjust their articulation or vocabulary.

Two respondents would prepare their presentations differently: "It would force you to prepare well," "It would take more time in preparing," "I would practice more," "I would write the presentation down," and "I would think about what I would like to say with keywords."

Respondents saw different and sometimes opposite effects on audiences when presenting without PowerPoint: "An advantage would be that the audience would learn better and remember better," said one respondent. Others felt that the presentation would be harder to follow and less understandable without pictures; the audience would retain less information. "PowerPoint is a memory aid for the audience," said one respondent. One person said PowerPoint makes it easier to involve the audience, whereas others felt that it makes a presentation more pleasurable.

Regarding the reasons for using PowerPoint, we did not find major differences between beginners and advanced presenters, apart from the fact that some beginners liked to use it to divert attention from themselves. However, when asked about presenting without PowerPoint, most of the enthusiastic reactions were from advanced presenters: "fantastic, very relaxed," "nice challenge," "I would feel more free, I am stuck to text now," and "It will create more discussion." One advanced presenter remembered the time when one could not use visual projections and there were not any blackboards in bigger auditoriums. It was a challenge to talk about mathematics: "One had to possess didactic skills, because every word counted, (*but rethinking his remark*), actually it still does." One response identified differences between disciplines: "It is all very well for historians to just stand and talk but that does not work for physicists; the audience needs to see the subjects." Another respondent also mentioned a difference, pointing out a distinction within language studies where theorists present without PowerPoint, whereas linguists with a social scientific background do use PowerPoint to present the results of their experiments.

Use of Pictures

We found five reasons why presenters use pictures in their PowerPoint presentations. These can be categorized as:

- Explanation
- Audience support
- A noninformative bridge
- Creating a pleasant atmosphere
- Support for the presenter

Almost all respondents said they used pictures to explain concepts. Some used the phrase "a picture is worth a 1,000 words" or a similar expression. Respondents used

pictures to "show how something functions," "to sketch the context," "to trace a line of thought (using an animated flowchart)," and/or "to symbolize."

Second, presenters felt that the audience would better understand the presentation when there were pictures, because "people think visually" or "one remembers better when information is presented in two different forms."

Third, many respondents used pictures not to transfer information, but to do the opposite: "to give people a chance to process information before going on to more data, or to create moments of recognition," "as a way for the audience to move from concentration to relaxation," "as something contrasting from text," or "as a bridge to a new subject."

Fourth, pictures were used to make, or sustain, connections with the audience, or to establish a positive mood, when presenters use pictures "as a fancy decoration," "as a joke," "to look cheerful," "to evoke a nice atmosphere," or to "liven up the presentation and make it less dull." Some advanced presenters said that "one can explain and illustrate in a more attractive way with pictures."

Finally, although respondents had the audience mainly in mind with their comments, some of them said that they liked to present with the help of pictures because doing so gave them support in knowing what to talk about: "It provides support and at the same time it gives me more freedom than the projection of words. They are like anchors."

Some respondents felt, however, that one should only use pictures when they added something to the story. One respondent felt strongly that, if she was a member of the audience, she would not want to be manipulated by a slick presentation, and another used the term "psychological trick" regarding the use of pictures. One respondent claimed she does not use pictures at all because she finds them childish.

Some advanced presenters said their use of pictures depended on the audience they were presenting to: "I use very visual material for students, like diagrams, maps, photographs, and other pictures. The less educated the audience, the more pictures. This level of audience needs to be entertained." Another responder differentiated among three sorts of presentations: (a) "cinema" for a broad audience with many pictures and little explanation; (b) mathematical formulas for presenting at a conference; and (c) "real-time" animations for a small group of peers, drawing on the blackboard for more schematic sketches at a much slower speed. This is the best way of presenting, he felt, because one sees the building up of a drawing, which brings the audience into the thought process, whereas merely presenting clever pictures might draw their attention away. Advanced presenters in general used almost twice as many pictures as beginners.

Looking at differences between disciplines, we found that one physicist and all three medical scientists among the advanced scholars found the use of pictures a necessity in giving a presentation: "An illness has to be shown." Advanced presenters from the physical sciences felt that they had a lot to offer regarding the visual aspects of PowerPoint. We have "an enormous visual tool kit," said one. A physicist colleague thought that the international community of physicists had developed a method of explaining the most difficult concepts in a colorful way. According to him, the arrival

of PowerPoint was a great revolution, since it allowed for heavy use of pictures (in contrast to the scribbles on a transparency). "One creates a kind of MTV atmosphere in which you create a story by showing clips in rapid order." It might seem that other disciplines are following suit, since another advanced presenter said that historians also use more pictures in their PowerPoint presentations as well as in their publications.

Use of Text

Both beginners and advanced presenters used on average 29 words per slide. Beginners used more than twice as many words per minute as advanced presenters, whereas the latter group used almost twice as many pictures (see Table 1). Although we did not specifically ask about the reasons for using text on PowerPoint slides, this topic was often addressed when discussing what respondents disliked about PowerPoint presentations. Many said that they disliked the use of too much text on a slide and said that they do not use too many words themselves: "One still wants to respond to the audience and the atmosphere," "Too many words on a slide constrict the presenter," "In this presentation I have one core message on each slide," and "PowerPoint is for support; it does not make sense to read aloud what the audience themselves can read." Many respondents also said that they like presenters who do not read from their slides. They liked it when "someone talks freely," when the audience can listen to the story and "feel the passion of the presenter."

One presenter justified using lots of text by saying

> I usually put the most important points on the slide. On this slide, that calls for a lot of text. . . . If I just told the audience the main points, why would I use PowerPoint in the first place? . . . A listener cannot be focused all the time, and when you miss something, there is no other way to catch up with it.

We did not find differences among presenters of different disciplines in their likes or dislikes of the use of text.

Disadvantages of Using PowerPoint

Many respondents also saw disadvantages in the use of PowerPoint. These can be categorized as

- Loss of contact with the audience
- Use of too much text
- Presentation of previously made graphics
- Fragmentation of the narrative
- Lack of passion

First, some respondents mentioned that using PowerPoint could lead to losing contact with the audience, because the audience too frequently looks at the pictures on the projection, or is busy copying the text from the slides. Or, they lose contact because

Table 1. Mean and Standard Deviation of the Average Number of Words, Bullet Points and Pictures per Slide, Number of Slides, Words, and Pictures per Minute.

	PhD		Spinoza	
	M	*SD*	*M*	*SD*
Average words/slide	29.33	15.98	28.88	14.62
Pictures/slide	0.67	0.54	1.01	0.87
Words/min	1.72	1.36	0.82	0.65
Pictures/min	0.68	0.51	1.25	1.34
Slides/min	1.10	0.48	1.03	0.58

Note. PhD, $n = 12$; Spinoza, $n = 12$.

the presenter too frequently looks at the projection and not at the audience. It is hard for an audience to listen and read at the same time, said one respondent.

A second disadvantage is that the presenter uses too much text on a slide, which can lead to information overload, can be confusing, and can "convert the presenter into a reading out loud machine."

A third problem comes from a pedagogic point of view. Some advanced presenters said that presentations with PowerPoint move too fast for the processing of the information. Students must be able to follow the ideas behind presented graphics, and this takes time. It is often better to write on a blackboard to explain concepts, instead of presenting them ready-made on slides.

A fourth problem concerns the method of storytelling, which, some people said, is hindered by the fixed order in which PowerPoint slides are usually presented. Respondents said the program often prevents the ability for the presenter to improvise.

Finally, the last disadvantage some mentioned was that a PowerPoint presentation can lack passion, because it is simply read from the slides.

No differences were observed between beginners and advanced presenters or among scholars of different disciplines regarding the disadvantages of PowerPoint use.

Learning to Present and Use PowerPoint

In order to see if scholars are aware of guidelines regarding the use of PowerPoint, we asked them how they learned to present using the program. Most respondents had no training in the use of PowerPoint; they simply learned to present by experimenting and by observing colleagues ("copying and borrowing").

A difference between beginners and advanced presenters is that most beginners had to present when they were students. However, they do not remember much useful feedback on their presentations from these sessions. Advanced presenters do not mention that they had to give presentations as a student. Some of them offer anecdotes about how they were thrown in "the deep end" at the beginning of their career.

Another difference between the two groups is that some advanced presenters mentioned that they possess skills that are related to the audience, such as "adapting to the audience," "engaging the audience," "appealing to the audience," and "assessing the right level of knowledge of the audience." Again, we did not find differences among the different disciplines.

Discussion

What are the reasons that scholars use PowerPoint the way they do, when these presentations are so often criticized and might not be effective? This was a central question of our research. Scholars agree with the critics that presenters use too much text on their slides. We found a difference between beginners and advanced presenters in their use of text. The latter group used only half the number of words. We did not, however, find differences in opinion between the two groups about the use of text. If we combine some findings, we might be able to offer an explanation for the fact that beginners, perhaps unknowingly, do in fact use more text. The beginning presenters in our study had little experience in presenting their research compared with the advanced presenters; they probably suffered more from speaking anxiety. We also found that presenters use PowerPoint for their own support—to keep themselves on track of their presentation. We can therefore speculate that beginners require more words on their slides to help them overcome their anxiety and to support them through their talk. They may be less aware of their use of a relatively large number of words, because they probably have seen many presentations of their peers who use similar quantities of text. Conversely, they may not have seen and heard too many presentations of award-winning keynote speakers who, we can assume, would use much less textual material.

Regarding the use of pictures on PowerPoint slides, we found a similar difference between beginners and advanced presenters. The latter group used almost twice as many pictures as the beginners. Although we did not find any clear differences in statements about picture use between the two groups of scholars, we do think that these differences are related to experience. Scholars have said that they use pictures almost exclusively for the benefit of the audience. Beginners, having less experience and greater speaking anxiety, might be more concerned with their own performance, whereas advanced scholars have indicated that they have their audience in mind when preparing and giving a presentation.

An important criticism of PowerPoint use is that presenters lose contact with their audience (Hanft, 2003; James, Burke, & Hutchins, 2006; Keller, 2003). This is a criticism that is shared by the presenters we interviewed in this study, as well as those in the study of Shephard (2005). Instruction books advocate eye contact between the presenter and audience and suggest the presenter avoid looking at the slides. We understand that using PowerPoint as a memory aid to help remember the structure of the presentation can make presenters look at the projection (or computer screen) instead of at their audience. When scholars use PowerPoint to explain an idea or to entertain their audience, they lose eye contact as well, because the audience is also

looking at the screen. Some beginners, in fact, indicated that they preferred that the audience look at the projection rather than at them. In maintaining contact with the audience, there is again a difference between beginning and advanced scholars. Advanced presenters might often like to present without the use of PowerPoint because this would allow more contact with their audience. Unlike beginning scholars, advanced scholars mention skills such as "engaging the audience." It appears, then, that advanced presenters are more skillful presenters in this aspect as well, but that their (what they perceive as obligatory) use of PowerPoint puts limits on how they make their presentations.

It is interesting to see that PowerPoint use also seems to influence presentation behavior in other ways. If presenters were not able to use PowerPoint, they might give more examples, encourage the audience to give more consideration to particular subjects, and allow themselves more opportunities to improvise. Some would adjust their voice, their volume and articulation, or otherwise control their use of language. They would, in general, employ more rhetorical skills. Some presenters would spend more effort in preparing and rehearsing their presentation. It is striking that these scholars believe that the use of PowerPoint makes speaking skills superfluous, and that one needs to spend less time on preparations for a presentation. This might be why presenters like to use PowerPoint, and, at the same time, why presentations using the program are so often criticized.

One limitation is that the group of advanced presenters we interviewed for this study is not representative of the total population. They are a small and highly selective group. They are scholars who were rewarded for their outstanding scientific work and are often invited as keynote speakers at conferences and meetings. It is probably safe to say that their efforts are better than those of the average presenter. We believe that the group of beginning presenters, however, does not differ much from groups of other students or beginning presenters and that the practical implications we present are applicable to all students of business communication.

Practical Implications for the Teaching of Business Communication

Presenters in our study lacked specific training in the use of PowerPoint; they learned to present with it by experimenting and by observing colleagues. Some seemed to think that the use of PowerPoint could replace rhetorical skills, such as the proper use of voice and articulation. The fact that presenters are able to make slides without any previous training can be a double-edged sword: with no training, presenters are unaware of some basic communication principles. They, like the presenters in the study by Kosslyn et al. (2012), can design their slides based on what can be considered to be "commonsense." But we have also seen that this "commonsense" might lead to outcomes that are inconsistent with the guidelines for slide design.

We agree with Hentz (2006) that more multimedia knowledge is called for. Users of PowerPoint should know how the use of text and pictures on the slides interacts with speech and how this use influences the information processing of the audience. Effective slideshow design is not obvious or intuitive (Kosslyn et al., 2012), and this

is something presenters should understand. We advocate a three-step method for teaching PowerPoint. First, students should be taught rhetorical skills while presenting without PowerPoint. Second, they should be taught how to design slides. Only when completing the first and second steps, should students be taught how to present with PowerPoint and receive assessment.

Teaching Rhetoric Skills

We agree with Lucas (2004) in believing that the best method for presenting is not to read verbatim from a script, reciting a memorized text, or improvising completely, but to speak freely and discuss major points—which have been previously considered—without memorizing precise terminology. The challenge at this stage would be to explain principles of rhetoric and to teach students to speak freely, perhaps with the help of prepared written keywords. The presenters in our study would spend more time and effort in preparing and rehearsing their subject if they were not allowed to use PowerPoint. Learning how to present without this tool would mean that students would have to memorize key topics and spend more time rehearsing.

Speaking freely without PowerPoint would also encourage one of the most important aspects of a presentation: making eye contact with the audience (e.g., Lucas, 2004; McCroskey, 2006). This can be daunting for beginners, and PowerPoint slides might provide some support in drawing the attention of the audience away from the speaker. It is important in this first phase to diminish the speaking anxiety of students and increase their sense of mastery (Bandura, 1989; De Grez, Valcke, & Roozen, 2009). This can be done by providing them with a series of small exercises, increasing in difficulty, while giving positive feedback and emphasizing success. The importance of rehearsing should be stressed, not only for the quality of the presentation but also to diminish speaking anxiety.

Once students master the ability to speak freely in public, PowerPoint can be used as a complement to an oral presentation, not as a memory aid or to distract listeners, but to enhance the information processing of the audience.

Designing Slides

A separate assignment should be the design of the PowerPoint slides. Slides should be critiqued by the teacher and improved as necessary by the student before the actual presentation. Cyphert (2004) believed that the first task at this stage is to mitigate the damage that has already been done; students have likely been exposed to many poorly designed and ineptly delivered presentations by the time they arrive in the classroom.

Guidelines for slide design should be discussed and demonstrated. Techniques are supplied by Kosslyn (2007) and Atkinson and Mayer (2004).

Attention should be given especially to the amount of text on a slide. Simple instructions to limit the amount of text might not be sufficient. It would be more productive to demonstrate that speaking simultaneously with text projected on a slide can interfere with audience understanding and that text should be used only if it clearly

benefits the audience. The function of pictures in general and different kinds of pictures (such as graphs, diagrams, and cartoons) in particular should be explained and demonstrated.

Presenting With PowerPoint

The third step in the three-step method for teaching PowerPoint involves students presenting with the PowerPoint slides they have designed. The role of positive feedback should not be underestimated. In addition, one could ask for feedback by fellow students. Presenters, sitting in the audience, are likely better at identifying negative examples of a PowerPoint presentation than they would be as presenters themselves. This perspective might help them look more critically at their own presentations.

Conclusion

We realize that our suggestions involve longer periods of teaching and practicing communication skills with the intensive involvement of students and teachers. This, we think, would be time well spent. Presentations with PowerPoint are important in the professional workplace, and a good knowledge of this technique certainly has the potential to enhance the understanding of an audience.

Appendix

Questionnaire

1. How did you learn to give presentations?
    - Training course, books, important experiences?
2. How did you learn to give presentations using PowerPoint?
    - Training course, books, important experiences?
3. What type of presentations do you give?
4. Skills
    - What do you find easy to do, and why?
    - What do you find difficult to do, and why?
    - What are you good at, what are you not good at, and what points do you have concerns about? (What do you find daunting?)
    - What grade would you give yourself for presenting (on a scale of 1-10), and why?
    - What could be improved upon and why?

5. How do you prepare yourself?
    - Where do you begin and what are the next steps?
    - How much time do you require for the various steps?
    - Do you practice?
    - Do you get any help with your preparations? (an audience to practice on, making slides, assessment)

6. Do you use PowerPoint in your presentations?
    - If the answer is yes, why? If it is no, why not? For which type of presentations do you or do you not use it?
    - What are the advantages and disadvantages?

7. The example presentation
    - For which audience was the example presentation intended?
    - How long was the presentation allowed to be?
    - Which slides are essential to a PowerPoint presentation?
    - Were standard slides used in this presentation? What was the purpose?
    - Why is the chosen format used? Is this format always used?
    - What was the purpose of the images chosen for the presentation?
    - How did you find the images you used?
    - Is this presentation typical of those given in your field?

8. Imagine if you would have to prepare a lecture without PowerPoint. What difference would that make?
9. Which presentations of others were you impressed by, and why?
10. Which presentations of others did you feel critical of, and why?

Authors' Note

This study was conducted according to generally accepted ethical standards for human subjects; participant comments are reproduced by permission.

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Author Biographies

Brigitte Hertz is a psychologist and an external PhD student at Wageningen University Research. She owns "Hertz, training for scientists." Her specialties are presentation skills, working with PowerPoint, and visual communication.

Cees van Woerkum is a professor emeritus in the Strategic Communication Department at Wageningen University Research. He has published in the field of (applied) mass communication research, health communication, and organizational communication.

Peter Kerkhof is a professor of social media in the Department of Communication Science at VU University Amsterdam. His research focuses on the private and professional use of social media.