COMPARING POWERPOINT EXPERTS' AND UNIVERSITY STUDENTS' OPINIONS ABOUT POWERPOINT PRESENTATIONS

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ABSTRACT

Technical communication instructors want to help students, as well as pro-fessionals, design effective PowerPoint presentations. Toward this end, I compare the advice of academic and industry experts about effective PowerPoint presentation design to survey responses from university students about slide text, visual elements, animations, and other issues related to PowerPoint presentation design and delivery. Based on this comparison, I suggest some topics, such as PowerPoint's Slide Sorter view, that technical communication instructors and other presentation instructors might address when they cover presentations in their classes or seminars.

INTRODUCTION

Particularly since the publication of Tufte's *The Cognitive Style of PowerPoint,* academic and industry experts in technical communication have intensified their efforts to develop guidelines for creating effective presentations [1]. In his essay, Tufte articulated what must have been a common sentiment in many industry and academic organizations: PowerPoint (and similar presentation software) leads presenters to simplify the content of their message or, worse, to fail to develop a coherent and substantive message. Tufte argues that PowerPoint's default settings lead presenters to create bulleted lists and simple graphs that are content-vacuous,

and his opinion mattered then and continues to matter because so many people [e.g., 2-4] know and respect his earlier work on information design [5-7].

In addition to Tufte's essay, subsequent experts' research [e.g., 8-10] and advice [e.g., 11-13] on effective PowerPoint design have gained the interest of technical communication instructors who want to help university students, as well as professionals, design effective PowerPoint presentations. Toward the end of assisting technical communication instructors and others who help presenters create PowerPoint (PP) presentations, the goals of this article are the following:

1. to analyze the advice of academic and industry experts about effective PP presentation design
2. to compare university students' survey responses about PP presentations to that expert advice
3. to suggest some strategies that technical communication instructors and other presentation instructors might use when they cover presentations in their classes.

EXPERT ADVICE RELATED TO POWERPOINT

Expert advice about effective PP practice comes from both academic and industry sources. First, technical communication researchers employ a variety of methods, including experiments and surveys, to develop theory, investigate good practice, and make recommendations for effective presentations. Second, experts who work in industry write manuals and Web pages intended to train people to use PP and guides that do not focus on PP in particular, but instead discuss effective presentations in general.

Finkelstein, an industry expert, presents a construct that is particularly useful for analyzing and discussing experts' advice on PP presentations [14]. Her manual's content-design-delivery triad helps in classifying and examining the myriad suggestions that other experts delineate. The content is the message or ideas that the presenter delivers. The design constitutes the mostly visual display of the content, including for example the color and layout of the presentation slides. The delivery constitutes the manner in which the oral language that accompanies the display of the slides is conveyed. Although the categories of Finkelstein's triad overlap, differentiating among them is useful because it allows students to analyze how they can best convey their message. For example, as presenters determine the main ideas they want to discuss (the content), they can also determine the text that they will include on their slides (the design). The amount of text on slides can in turn influence the extent to which a presenter reads off slides rather than speaking conversationally (the delivery).

In addition, the content-design-delivery triad can help students determine whether they need to use PP in the first place. For example, if a presenter's message does not involve obvious visual elements, the presenter could rely solely

on oral delivery. Presenters whose talks incorporate narratives or deal with abstract concepts (like force or fugacity) may decide that slides will not enhance their messages. However, both academic and workplace cultures often pressure presenters to use PP, even if the message does not necessarily lend itself to the software. Under such pressure, presenters may have to look for creative ways to use slides, such as using them to show photographs of relevant work sites or diagrams of processes. Such presenters may be happy to know that some classroom research suggests that students prefer instructors' use of PP during lectures [15-17], although recently Amare found higher test scores in classes taught with traditional lectures rather than PP presentations [17]. Further research will show the extent that Amare's findings apply to presentations in professional settings—the kind of presentations that technical communication instructors teach their students to create.

Knowing that many people who have little or no background in document design need to create PP presentations, industry experts offer advice about PP. Their advice facilitates the design and delivery of the presentation triad, but it tends not to focus on content, as content varies widely among presentations. That said, recent advice moves beyond the old and often cited "six by six" rule, a rule that states that presenters should use no more than six words per line of text, and no more than six lines of text per slide [18]. The slide below in Figure 1 follows the guideline.
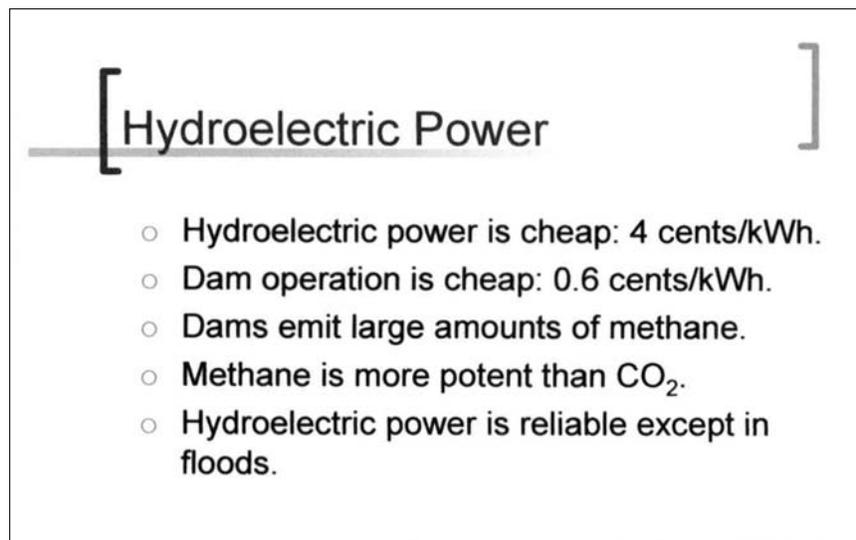
Figure 1. A slide that follows the traditional "six by six" rule.

Some experts advocate a "seven by seven" rule instead [e.g., 29, p. 85]. Both the six by six rule and the seven by seven rule developed from a perceived need to keep presenters from cluttering slides with too much text. (Although, as the slide in Figure 1 illustrates, abbreviations and punctuation will substantially affect the clarity of slide text, whether or not the slide adheres to the guideline.) The rest of this section explores three more recent pieces of advice that resound across the articles, manuals, and Web sites of academic and industry experts. These three pieces of advice relate mainly to the design of PP slides, but they also carry implications for presentation delivery.

Simplify Slide Design

Recently, experts have tended to get at the idea behind the six by six (or seven by seven) guideline by using other words, words that are not quite so specific in their prescription. Zack Anderson lists "Simplify, simplify, simplify" as her number one tip [20]. By this she not only means that presenters should limit the amount of text that they include on a single slide, but also that they should cut unnecessary punctuation and clip art and that they should delete unnecessary slides. Similarly, Reynolds advises presenters to "keep it simple" and to "limit bullet points and text" [21], advice that also leads presenters to use big fonts (at least 24 points), another concern of PP experts [e.g., 20, 22]. Atkinson, an industry expert, advocates "digestible chunks" of information both in slide design and in delivery [23].

Many experts have noted that PP's default settings lead people to clutter their slides with unnecessary and excessive text and images. Munter and Russell [24] echo Tufte [1] in saying that "Chartjunk temptations are built into presentation software packages" [24, p. 75]. According to Farkas, PP's bulleted lists create "excessive, dysfunctional body text" [25, p. 26]. Doumont says that Tufte's criticisms are justified insofar as presenters load slides with "noninformation" [9, p. 68], although Doumont goes on to point out a number faults in Tufte's arguments. One of the main guidelines that academic and industry experts try to convey, then, is that presenters should decrease the information they put on their slides.

Experts also point out that when presenters decrease the amount of text on slides, they mitigate the tendency to read slides, thus alleviating a common problem with presentation delivery. Nearly all experts point out that presenters should avoid reading off slides. For example, Norman says "in the worst cases," slides "provide everything that is to be said, so the speaker need not think, but can simply read." Norman says that people read off slides primarily because they "suffer from stage fright" or have an "insufficient command of material" and thus are "not apt to be good thinkers in front of an audience." For such presenters, says Norman, slides become "a necessary crutch" [26]. Finkelstein offers this advice: "If you need to see the slides, look at your laptop, not at the

screen. This way, you don't turn your back to the audience" [27]. In short, experts' guidelines make clear that simple slide design can generate better delivery.

Use Visual Elements

Research findings from other fields, particularly research on cognitive processing, suggest ways that presenters can design slides that enhance their messages rather than distract from them. One important insight from such research comes from Paivio's dual coding theory, which states that people process verbal and visual via two different modes; therefore, they can process verbal and visual information simultaneously [28]. Audience members can simultaneously receive and interpret a picture on a projected PP slide and a presenter's spoken words with little difficulty. In contrast, they cannot process two verbal inputs simultaneously. Therefore, audience members cannot read text off slides and simultaneously process a presenter's oral language. Both inputs are verbal, although one input is written and one is oral.

Responding to Tufte [1], Doumont cites dual coding theory to support his argument that a presentation's message "should be developed as visually as possible" [9, p. 69]. Working under this theory, technical communication instructors would help students find ways to convey the content of their messages visually, showing audiences images like graphs, maps, and drawings while they deliver their oral presentations, thus increasing the amount of information that the audience receives. According to dual coding theory, then, a visual slide like in Figure 2 is preferable to a slide like the one displayed in Figure 1. Moreover, it is preferable to a slide like the one in Figure 3, which displays a quotation (and even less text than the six by six slide of Figure 1).

The slides in Figures 2 and 3 both could be used to address the idea of teamwork, but the slide in Figure 2 would not compete with the presenter's spoken words. In addition, the photograph shown in Figure 2's slide would allow the presenter to discuss teamwork's complexities. Other interesting and engaging images could do similar work.

Although the first goal of technical communication instructors will likely, then, be to convince students to take advantage of PP's ability to convey messages visually, the next step is to help students choose their visuals carefully. Technical communication researchers point out the need for visual elements to be "representative" of the topic, not simply decorative [29, 30]. Decorative elements like PP's clip art tempt presenters because it can nearly effortlessly be inserted into presentations. Presenters do not need to manipulate clip art, in contrast to a specially designed graph or a cropped photograph. Manning and Amare point out that using visual elements for decorative purposes rather than informative purposes constitutes an ethical problem when the intent of the presenter is to inform—not to evoke a feeling [10, p. 200]. Whether instructors
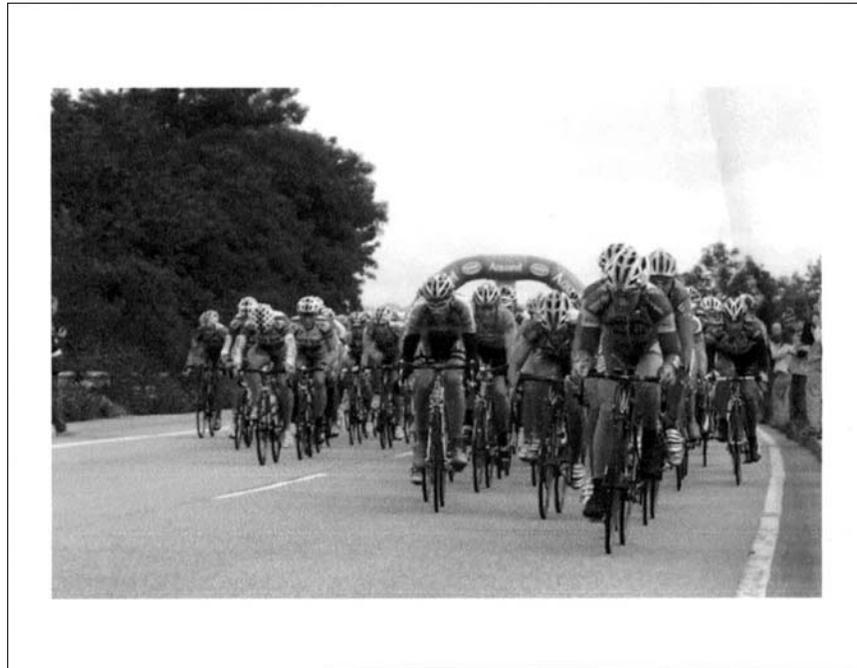
Figure 2. A visual slide that does not compete with spoken words.

Coming together is a beginning;
keeping together is progress;
working together is success.

- Henry Ford

Figure 3. A text slide that competes with spoken words.

agree that purely decorative visuals constitute an ethical breach, they will agree that visuals should not constitute an unnecessary distraction.

Use Animation Cautiously

Experts advise presenters on animation, the movement of images and text between and across slides. Although Tufte [1] strongly lambastes animations, most experts nuance their advice. For example, Bunzel argues in favor of animation when it is "the best mode of expression for your message" [31]. Zelazny refines his "commandment" of onscreen presentations to say "Thou shalt not use animations unless it helps to make a point" [32]. In addition, most experts differentiate between animated images, particularly moving clip art, and animated text; they are more accepting of the latter. Paradi, for example, warns against using animated clip art, saying that "these images have been so overused on the Web that many people now consider them to be less than professional and your use will impact your credibility with the audience" [22].

In relation to moving text, experts focus especially on transitions between slides, but also on text "builds," where lines of text get added to a slide one after the other. Reynolds says that presenters should "limit transitions and builds," as opposed to getting rid of them completely [21]. Some experts give specific tips for using animation effectively. Zack Anderson says that presenters should use "natural transitions," meaning transitions that drop text down from the top of the slide or enter it in from the left, directions of movement that improve readability [20]. Similarly, Ball advices presenters to "use basic transitions such as a dissolve or simple cuts" [33]. Paradi agrees, saying text that "moves onto the screen in any way—such as flying in, spiral or zooming—it makes it harder for the audience members to read" [22]. In regard to builds, he advocates using the "appear" effect rather than more attention-getting movements of text on the screen. The main point from experts, it seems, is that presenters who use animation risk distracting their audience from their delivery and their content and, therefore, presenters should use animation very carefully.

In this section, I have examined three pieces of advice that PP experts commonly relay. In the section to come, I describe a study that examined university students' opinions of PP presentations.

METHODS

Participants

A total of 44 students at a midwest technical university were surveyed about their opinions about PP presentations. Of the 44, 17 were undergraduates (38.6%) and 27 were graduate students (61.4%). Their fields of study included computer science, engineering, and technical communication. Their ages ranged

from 18–42, with a mean of 24.4. Nineteen females (43.2%) and 25 males (56.8%) participated.

Given their different fields of study and university levels, students' experience in viewing and creating PP presentations varied widely. Table 1 details students' experience with PP; not surprisingly, students had viewed more presentations than they had created. For example, in regard to viewing presentations, 18 students (40.9%) had viewed 11 or more PP presentations *in the last month;* in regard to creating presentations, just 8 students (18.2%) had created 11 or more PP presentations *in the last year* (not just within the last month). Thus, Table 1 shows that, in general, the student participants were not very experienced in creating presentations, but they were fairly experienced in viewing them.

Procedure

The student participants responded to a call for participants in a larger research project that incorporated this survey. The project investigated perceptions of PP design and asked student participants to rate PP graph and text slides on several scales, such as for readability. Students participated in the study in groups of 2–6. The student participants received either 10 dollars or extra credit points in a class for their participation.

Survey Instrument

The survey questions asked students to describe how they create PP presentations, to explain their own preferences and dislikes in PP design, and to relate the worst thing that they had ever seen in a PP presentation. The survey instrument

Table 1. Participants' Experience with PowerPoint Presentations

Number of presentations	Participants who viewed in last month (including instructor presentations)		Participants who created in the last year	
	Number	Percent	Number	Percent
0-5	14	31.8	26	59.1
6-10	12	27.3	10	22.7
11-15	9	20.5	1	2.3
16-20	4	9.1	4	9.1
21-25	2	4.5	2	4.5
> 25	3	6.8	1	2.3
Total	44	100	44	100

appears in Figure 4. The surveys generated sufficient qualitative data to achieve the aim of the study: comparison of experts' advice and students' opinions. Together, the 44 students wrote 6,938 words in their responses, averaging nearly 158 words per student.

Students responses to the survey questions were entered into a spreadsheet, and the search feature allowed counts of recurring words and phrases that related to experts' advice, such as "picture" and "too much" (as in "too much text"). It also allowed for searches and counts of alternative words and phrases related to experts' advice, such as "photograph," "diagram," and "image" for "visual element." Finally, it allowed for searches and counts of words that referred to a subset of a variable of interest, such as "builds" and "transitions" for "animation."

COMPARING EXPERTS' AND STUDENTS' OPINIONS

This section compares students' responses to the survey questions to the advice of academic and industry experts and discusses the extent to which students have received expert opinion. This section also offers some research-based advice for helping students, as well as professionals, create PP presentations.

1. Have you ever designed a *PowerPoint* presentation? If so, can you describe the steps you take in designing a *PowerPoint* presentation?

2. If you have designed a *PowerPoint* presentation, what is the most difficult part of designing a *PowerPoint* presentation? Why do you think that this is the case?

3. What features of *PowerPoint* do you like to use in your own presentations or see in the presentations of others?

4. What, if anything, do you dislike about the way other people design *PowerPoint* presentations?

5. What do you think is the biggest mistake the people make when they give *PowerPoint* presentations?

6. What is the worst thing you have ever seen in a *PowerPoint* presentation?

7. Do you have any other comments?

Figure 4. The survey instrument.

Simplifying Slide Design

Experts' tips do not guide presenters through the difficult task of narrowing and selecting content for presentations, but the students' responses suggest that two of the most difficult parts of creating a presentation are determining the main points of the presentation and wording those main points clearly. Closely related to these concerns was students' wish to avoid creating slides that display too much text; in responding to the question *What is the most difficult part of designing a PowerPoint presentation?, 14* students (31.8%) said determining how much text they could put on the slide. They wrote comments like the following:

- To put in the most important points in a concise manner.
- I think the most difficult part is to decide which points should be put into [the] ppt presentation.
- The most difficult part is determining content. You can't overcrowd the slides so to be concise. Discretion regarding slide content is necessary but difficult.

One student explained the urge to crowd slides with text (and other information) this way:

> Considering the information so the viewer has less reading to do but still understands the point. . . . I think it's because we have a tendency to overexplain and think our audience won't be able to comprehend it. Yet, if the slides are unreadable, then the point won't get across anyway.

Clearly, students recognized that slides filled with text are problematic. In fact, in answering the question *What, if anything, do you dislike about the way other people design PowerPoint presentations?,* 12 students (27.3%) specifically mentioned the use of "too much text," "too many lines," and "too many words." Students also noted that text-filled slides lead presenters to read slides rather than speak conversationally. For example, one student wrote, "I think the biggest mistake is relying on the ppt too much. You should know the info (presentation) and just use the slides to help the audience."

Though it is crucially important, narrowing content and determining slide text pose a substantial challenge. Experts give some suggestions. According to Farkas, presenters should use titles and bulleted text to mark the explicit structure of a presentation; the titles and bulleted text should act as a skeleton for what the speaker says [25, p. 26]. If a student bases a presentation on another document, such as a report, then much of the process of determining content for the presentation will involve whittling from the other document.

However, anyone who has summarized a report into an executive summary knows that determining the main points of any text is quite difficult. In addition, presenters do not always start with preexisting documents, and in such cases, creating a presentation involves less narrowing and summarizing and more

brainstorming and organizing content. Evaluating the importance of different information for different audiences and then finding appropriate and concise language for those ideas requires thought. This process is exacerbated when presenters force themselves to write bulleted lists, creating text-filled slides in the process. In helping students, technical communication instructors can remind them of dual coding theory's prediction: slide text will compete for the audiences' verbal processing capacity. Instructors can then drive home the importance of creating and finding visual elements for presentations.

Instructors should also help students write slide titles, or "headlines," to accompany slides' visual elements. Students may be used to writing titles like "The Economic Impact of Tulips," as opposed to "The Dutch lost faith in the tulip market in 1636." New research suggests that complete sentences used as headlines and stating a main point enhance audience recall of information and, therefore, instructors should encourage students to use them [8]. However, students may need help to avoid jamming their ideas into phrases.

Students can write headline sentences that are content-rich and clear by using terminology that the audience already knows—non-technical terminology—unless the audience will need to recall the new terms afterwards. Comprehending and recalling new terminology during a presentation uses cognitive resources that would be better used for comprehending the message of the talk [e.g., 34-35]. For example, an electrical engineering student (or an engineer) could use the terms "freezing" and "heat absorber" rather than "ice point" and "heat sink" when talking to a non-engineering audience. Presenters who use non-technical terms facilitate the audience's processing of the message.

Using Visual Elements

Students' responses about visual elements, specifically pictures, diagrams, and graphs, showed a clear understanding of visuals' ability to add information; 20 students (45.4%) mentioned the terms "picture," "graph," or "diagram" in responding to the question: *What features of PowerPoint do you like to use in your own presentations or see in the presentations of others?* Like experts, then, students saw the benefits of visual elements. One student wrote, "The most difficult part of designing a ppt presentation is 'visualization.' To show the relationship among the several different data is the most tough thing."

However, students' responses indicated specific problems that they had encountered when trying to incorporate visual elements into their own presentations, problems that experts do not usually specifically address. First, students pointed out that balance between text and image is difficult. One student noted that too many pictures (and animations) can distract the audience, but he also noted that slides lacking text explanation may be considered low quality. In relation to the question *What is the most difficult part of designing a PowerPoint*

presentation?, another student answered, "balancing visual interest" while "not distracting from the presentation."

Besides the difficulty of balancing textual and visual elements, students identified specific problems with pictures and diagrams that most PowerPoint experts do not discuss. One student pointed out that simply *locating* useful images can be a problem. In searching the Web for images, students may find only pictures that are decorative rather than informative or poorly designed diagrams and graphs. Others noted that editing images and effectively using low resolution images are difficult challenges, particularly because it is difficult to envision how they will look when they are projected. Other students pointed out problems with importing visuals, particularly gif images, saying that they do not always open as they should. Finally, students noted that creating complex diagrams in PP is difficult and asserted that diagram layout and fonts change when imported from Microsoft Excel.

Students' responses, both the ones about balancing text with image and responses about technical problems with visual elements, suggest that university students—both undergraduate and graduate—have a higher level of sophistication in relation to using visual elements in presentations than some might assume. Students in this study recognized that limiting text and using visual elements is important; however, their responses suggest that they would benefit from strategies for writing those lines of limited text and finding, creating, and inserting useful visual elements.

Using Animation

In general, students were more amenable to animation in PP presentations than experts. In responding to the prompt *Describe the steps you take in designing a PowerPoint presentation,* 11 students (25.0%) mentioned that inserting animations (or determining whether to insert animations) was a step in their PP design process. One student, for example, stated that animations are "great to make an impact." In addition, only three students (6.8%) made Tuftesque comments about animation, saying that the worst thing that they had ever seen in a PP presentation was too many animations.

However, like experts, students stressed sparing use of animations, particularly animated images, as opposed to transitions and builds. Indeed, students called animated images "stupid," "annoying," "unprofessional," and "tacky." Such comments reinforce a main finding from Blokzijl and Naeff's study of student preferences for slide design; in their study, students rated animation effects (along with poor layout/wrong color combination) as the most annoying PP design choice [36, p. 75].

Others noted that animated images that move for the slide's duration, as opposed to ones that stop after a single iteration, are particularly distracting. In responding to the question *What is the most difficult part of designing a PowerPoint presentation?,* students related horror stories related to animation:

- A tank rolling across the bottom of the screen and little helicopter flying at the top (did not suit the audience).
- Those clip art animations of a person or kooky character walking. I just stare at it and get hypnotized and sometimes wish I was with them walking wherever they are going.

In contrast, just three students (6.8%) commented negatively on transitions and builds. They stated that such animations can slow the presenter's progress through the presentation, that is, impede presentation delivery. In general, then, students differentiated among types of animations and found transitions between slides and builds within slides to be acceptable practice.

CONCLUSION

This study examined PP experts' main advice and compared that advice to university students' responses to a survey about PP presentations. It appears that the students, whether inexperienced or experienced creators of presentations, had viewed enough presentations to develop a sense of effective design and delivery.

Like experts, the students said slides should delineate the presentation's main points, but unlike experts, they noted that narrowing the slide content to a few main points and succinctly stating those points is challenging. Also, like experts, they saw the advantages of employing visual elements like pictures, diagrams, and graphs. But students also said that overcoming shortcomings or idiosyncrasies of software influenced the choices of visual elements. The students' concerns about animations differed somewhat from experts' concerns; the students seemed more open to use of animation, particularly to transitions and builds, given that the animation does not slow the presentation's progress.

Finally, it is worth pointing out one feature of PP has potential to help students with some of the worries that they mentioned in their survey responses: the Slide Sorter view, found under the View toolbar choice (see Figure 5).

In contrast to PP's Normal view, which displays slides one-at-a-time as the audience will see them, the Slide Sorter view allows presenters to view all of their slides at once. This holistic view can improve organization and encourage consistent design choice. Using the Slide Sorter view early on in the process of creating a presentation can help students outline. They can view the number of
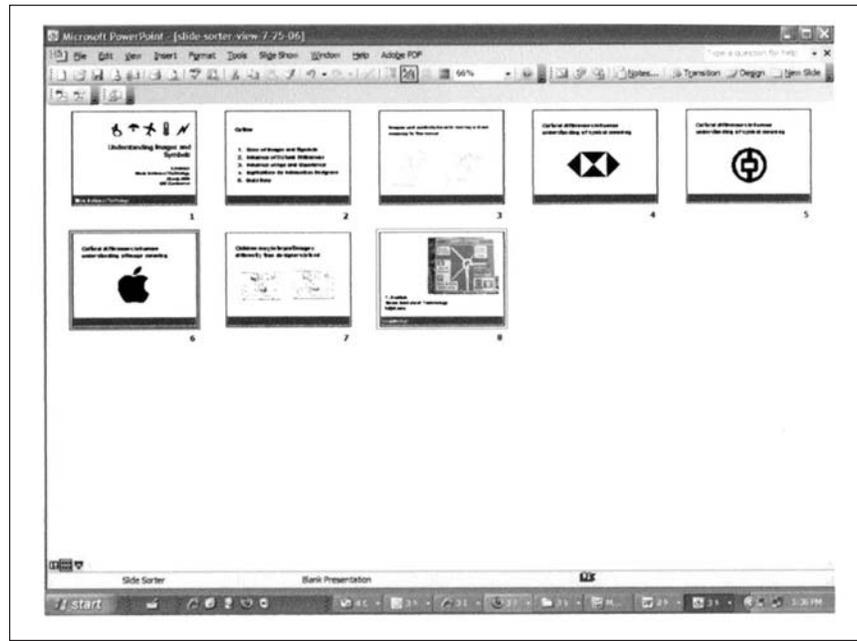
Figure 5. The Slide Sorter view of an image-heavy presentation.

sentence headlines that they have created as well as the content of those headlines, and they can gauge the extent to which visual elements appear across the presentation. Using the Slide Sorter view, then, can help students focus their content and concomitantly, choose their textual and visual elements.

Like DuFrene and Lehman [19], communication experts who encourage storyboarding presentations, Atkinson advocates storyboarding as a technique for gearing a presentation toward a specific audience and aim. He says that the Slide Sorter view helps presenters to "tap the true power of PowerPoint." He goes on to say that "When you look at a storyboard, it presents some built-in questions: What do I want to say? In what sequence? How do I start, what happens next, and how will it end? What techniques will I use to make this relevant to my audience?" [37]. These questions that the Slide Sorter view and storyboarding generate are some of the most important questions about rhetorical situation that presenters can ask; they force presenters to think about purpose, aim, audience, and organization.

Students and other presenters want to do more than create PP slides with legible text and attention-grabbing animations. They want to use the software to achieve their own communicative purposes and meet their audience's needs. In understanding students' opinions about PP and supplementing them with

the advice of experts, technical communication instructors continue to advance rhetorical effectiveness and sophistication in students' PP presentations.

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