Beyond Presentations:
Using PowerPoint as an Effective Instructional Tool

by Catharina F. de Wet

I watched a social studies teacher present a lesson on the Civil War by means of a PowerPoint presentation. Slide by slide flashed on the screen, filled with bulleted lists of information that the teacher read to her students word for word. Students were staring at their handout pages with glassy eyes, lulled into a state of comatose compliance by the thought that all they had to do was study the handout for the test later that week. It strongly reminded me of my eighth-grade history teacher, more years ago than I care to admit, who had a similar teaching style, albeit without the visual component. We would walk into the classroom, sit down, and take out our notebooks. She would start talking and we would write furiously, trying to take down her notes word for word, for we would be expected to regurgitate those facts in the test coming up in the following week.

At least then we had something to do. Between these two eras, a teacher might have written notes on the chalkboard, or later, used overhead transparencies to share information with the class. Chalkboard and overheads had the advantage that teachers could make changes based on student needs and questions. The very features that make PowerPoint easy to use may also limit its versatility. Has the advent of PowerPoint presentations improved instruction in our classrooms? You decide.

A Short History of PowerPoint Use

In the late 1990s, several studies indicated that college students found PowerPoint-based lectures more interesting than traditional lectures (Harknett & Cobane, 1997; Lowry, 1999). Lowry reported that student scores on tests were even improved with PowerPoint lectures as opposed to traditional lectures (51.8% versus 43.5%). Features of the lecture style that students found appealing were the use of a PC (43%), the visual aids (22%), presentation format (16%), lecture structure (16%), and clarity (12%; Lowry).

These researchers also reported that certain elements unique to this kind of lecture presentation appeared to increase interest on the part of students. These elements include the use of color, the line-by-line or concept-by-concept presentation of information, a well-thought-out preorganization, flexibility for adding graphics, and easy variation of size and type of fonts (Harknett & Cobane, 1997; Holzl, 1997; Lowry, 1999). Aly, Elen, and Willems (2004) found that this type of lecture focused attention and reduced distraction, benefiting student learning.

Szaboa and Hastings (2000) found similar trends in their study at Nottingham Trent University in England. The five most appreciated components of the method were variation of fonts, the use of illustrations, a preference for light-colored background, the use of colors, and the line-by-line projection of lecture concepts. Seventy-two percent of their respondents reported that they wanted PowerPoint presentations to be adopted in all their classes. However, the researchers caution that they were not certain whether this desire arose from educational needs or the need to be entertained.

Changes in how we approach instruction in today's inclusive classroom suggest a curious dichotomy. On the one hand, teachers have to transmit a large amount of standardized information to prepare students for the state tests. On the other hand, teachers have to do it in a variety of modalities to suit many individual learner differences. Learner differences span the spectrum of motivation, skills, prior knowledge, and cognitive style. Researchers have described *cognitive style* as an umbrella term covering the varying ways individuals process, organize, classify, and/or label environmental factors (Grieve & Davis, 1971; Kagan, Moss, & Sigel, 1963; Odom, McIntyre, & Neale, 1971). In its broadest sense then, cognitive style is the typical mode in which an individual processes information. Cognitive style has been shown to be an influential variable in student learning (Baker & Dwyer, 2005; Dunn & Dunn, 1992; Dunn, Dunn, & Price, 2003; Gardner, 1983); problem solving (Guetskow, 1951); concept identification (Davis & Klausmeister, 1970); and fact recall (Graff, 2005). Some researchers even propose that, "regardless of academic level, students earn statistically higher standardized achievement and attitude test scores when they are taught and/or tested with resources and strategies responsive to their learning-styles" (Kritsonis, 1997/1998, p. 2). Students can also engage in high-quality, creative productive work when student strengths and potential strengths are used as a foundation for effective learning (Renzulli, 1994). Researchers have concluded that matching students with various learning environments affects cognitive outcomes and student satisfaction with different types of educational processes (Brophy & Good, 1986; Kagan et al., 1963; Renzulli).

The No Child Left Behind Act (NCLB; 2001) dictates that educators disaggregate student performance data into cells determined by various criteria, suggesting that the performance of the students in the different categories is determined by conditions unique to their groups (VanSciver, 2005). Teachers are expected to teach these students in those categories to specifically meet their needs. However, students are not neatly categorized into those groups in schools. All kinds of students with all kinds of strengths and needs sit together in today's classrooms. Teachers face stronger pressure than ever to differentiate instruction in the classroom. Many school districts embrace technology as part of the differentiation solution.
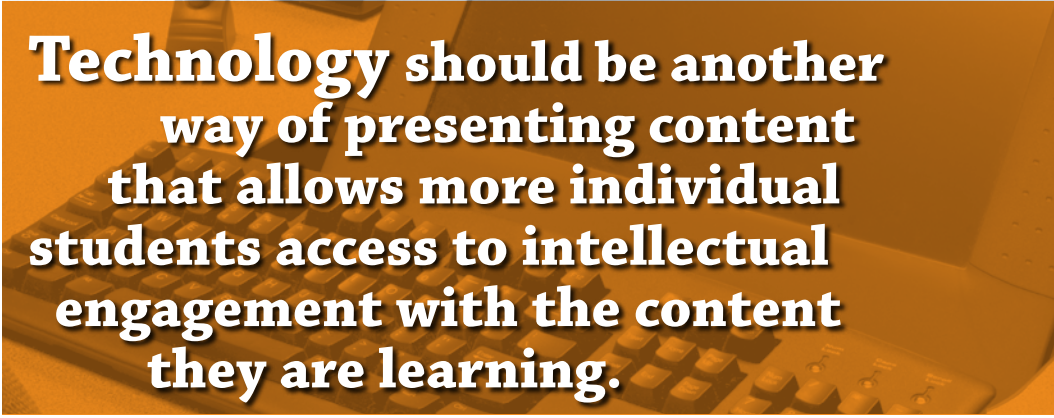
Focusing on the Wrong Thing

Technology in the Classroom

Despite the fact that the access to technology in schools has increased significantly, the ability of teachers to use technology in classroom instruction lags behind access (Sandholtz & Reilly, 2004). The National Center for Education Statistics (NCES; 2000) found in a national survey that 99% of full-time public school teachers reported having access to computers or the Internet somewhere in their schools, and 84% reported having at least one computer in their classrooms. However, only 20% of teachers reported feeling well prepared to integrate technology into their teaching (NCES).

To counteract this feeling of inadequacy, the standard answer is to increase emphasis on technical proficiency of teachers in computer

use (Sandholtz & Reilly, 2004). Technology standards developed by states, groups, and organizations typically focus on expertise with technology before integrating it with teaching and learning. As an example, the first guidelines for teacher preparation programs sponsored by the Association for Computing Machinery in 1983 proposed that all teacher-education students should be required to complete an existing course in computer science that included specific topics such as "What Computers Are and How They Work" and "An Introduction to Programming" (Willis & Mehlinger, 1996). The National Teaching, Learning, and Computing Survey data suggest that teachers' limited technical skills hinder classroom use of technology and that teachers who are more knowledgeable about computers use them in broader and more sophisticated ways with students (Becker, 2001).

For many teachers, hours of technology training are required by their school districts. In large measure, school districts focus on skills training in "show and tell" software such as Word, PowerPoint, Publisher, and Inspiration (Burns, 2003). Software such as PowerPoint is wizard-driven and conceptually simple to master. Burns (2005) points out that most teachers can master the basics of PowerPoint (and even some more advanced features such as transitions and animations, hot buttons, and hyperlinks) in as little as 2 hours. Burns (2005) reports that more conceptually complex software such as spreadsheets and databases are used far less often. As few as 12% of the 300 teachers surveyed in her study reported using spreadsheets at all, and then mostly in mathematics and for creating graphs. When math teachers were removed from the sample, only

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approximately 2% of teachers used spreadsheets in their instruction.

Technology and Curriculum

This focus on skills training in the bells and whistles of conceptually simple software for teachers results in the concentration on the creation of an academic product: presenting a lesson in PowerPoint, for example. The result is the separation of technology and the curriculum. The focus is on using technology. The curriculum is the adjunct. This creates the illusion that the software is more important than it really is (Burns, 2005). Secondly, by focusing training on the skills and advanced skills in using the software, a misconception is created that the software is more complex than it really is. Sandholtz, Ringstaff, and Dwyer (1997) found that teachers are often concerned about the technology itself and that they are unable to focus on using technology in instruction. Furthermore, the responsibility for planning instructional programs and materials has been separated from those who deliver that instruction (Kerr, 1991). For most teachers, using technology is merely a different way of presenting instruction someone else designed.

In a classroom, the focus should always be on instructional process. The use of new technology should be based on its contribution to the

outcomes of education (Bhaerman & Selden, 1970; Clark, 2002). Technology should be another way of presenting content that allows more individual students access to intellectual engagement with the content they are learning.

In the pages of the *District Administration* online journal, two opposing viewpoints appeared recently: "PowerPoint frequently undermines effective communication. Monotonous lectures at the overhead are quickly being replaced by the even more mind-numbing PowerPoint-based instruction" (Stager, 2004, p. 71). If one subscribes to Stager's viewpoint, one has to agree that using PowerPoint often reduces creativity by constrained use of "canned" templates and clipart, and merely presenting information on a PowerPoint presentation reduces the development of creative storytelling and persuasive oral communication skills.

On the other hand, "Technology is neither the savior nor the nemesis of good teaching; like chalkboards, photocopies, and lectures, it is another tool. What is ineffective or worse in the hands of one practitioner can be brilliant and spot-on in the hands of another" (Jones, 2004, p. 9). The question is not how much teachers use technology, but how effectively they use technology to achieve the objectives of education (Bhaerman & Selden, 1970).

The Integration of Technology

The Apple Classrooms of Tomorrow (ACOT) project indicates that teachers move through a five-stage process of instructional evolution as they work to integrate technology into their classroom instruction (Sandholtz et al., 1997). These five stages are: entry, adoption, adaptation, appropriation, and invention. This model suggests that teachers first focus on strengthening existing instructional methods and then gradually replace entry-level technology use with more dynamic learning experiences for students. The first level, entry, where teachers learn the basics of using technology, is a critical point in determining teachers' later use of technology in the classroom. If they find technical and classroom management issues too intimidating, they often decide not to use technology, but rather continue with their traditional practices. Even teachers who leave professional development programs with specific plans for using technology in their classroom will abandon or alter these plans when they encounter technical constraints coupled with inadequate support (Sandholtz, 2001). Mandinach and Cline (1994) found in their technology acceptance studies that teachers are vulnerable to two risks at this initial stage: either they simply give up and reject technology, or they relegate it to a minor and insignificant role in instruction. What allows teachers to continue using technology are qualities like the match of technology and associated software with the curriculum, the match to a particular teacher's teaching style, ease of use and ease of learning combined with appropriate models for use, time to learn new materials and applications, administrative support, and ready access to top-quality software and materials (Kerr, 1991). A teacher who finds this match will be able to adopt the technology, adapt it to suit his or her style and curriculum, appropriate all the various shortcuts and tricks that comes with experience, and finally start inventing new applications and uses of the technology.

Focusing on the Right Thing

Teachers' Educational Philosophy and Technology

Bhaerman and Selden (1970) pose a set of five questions that frames teachers' approaches to instruction and the use of technology: (1) Is knowledge something that can be transmitted from one human being to another, or is knowledge the result of one's unique and personal experiences? (2) Is the goal of teaching the mastery of factual information by means of demonstrations and recitations or is teaching a process of arousing personal response in the learner? (3) Is the learner conceived as a sensory receiver to be manipulated or is he or she an active and experiencing person? (4) Is the teacher conceived as a demonstrator and mental disciplinarian or is she provocateur and instigator of activity—mental, emotional, and social? (5) Is the educational process primarily one of absorption or one of self-discovery? The first alternative in each question might indicate a propensity to emphasize technology as an end in itself and a tendency to stress the teacher-dominant role of giver of knowledge. If teachers believe learning is the process of accumulating information and isolated skills, the teacher's primary responsibility is to transfer his or her knowledge directly to the students. Then the most important teaching tasks are these:

- organizing and structuring the learning material in the most appropriate sequence,
- explaining concepts clearly and unambiguously,
- using examples and illustrations that can be understood by students, and
- modeling appropriate application of desired skills (Nolan & Francis, 1992, pp. 45–46).

The slide show method of presentation, in fact, seems almost perfectly suited to accommodate the traditional view of learning and teaching. Nystrand (1992) refers to this instruction style as "monologic" in that "the participation structure in these classrooms is one-sided and completely dominated by the teacher. . . . Student participation is mainly procedural" (p. 4). A PowerPoint presentation is by definition teacher-dominated and linear in structure (Matheson, Abt-Perkins, & Snedden, 2002).

Teaching Appropriate to Gifted Students

A teacher who leans towards the second alternative in each question will be prone to emphasize the student-dominant role of investigator, the teacher role as facilitator of learning, and technology as a means to an end. This philosophical approach to teaching is in line with the teaching of Dewey, Bruner, Montessori, and Vygotsky (Cuban, 1993), as well as proponents of gifted education such as Renzulli and Reis (1985), VanTassel-Baska (2005), and Tomlinson (2005). A primary goal of effective curriculum (what students learn) and instruction (how they learn) is that students should increase in their levels of expertise in what they learn (content), how they use what they learn (skills), and what they do with what they learn (applica-

tion; National Research Council, 2000). Gifted students need to explore subjects in depth and with increasing complexity (Kaplan, 2005). A synthesis of the characteristics of effective curriculum and instruction taken from general education and gifted education literature indicate that there are specific, recognizable trends in modern curriculum design. Good curriculum focuses on essential facts, concepts, skills, attitudes, and values in the topic, subject, and discipline (Brand, 1998; Kaplan, 2004; Tomlinson, 2005). Good instructional practice provides opportunity for students to understand how these concepts, principles, and skills work to make meaning and be useful (Erickson, 2002; Wiggins & McTighe, 1998). It focuses on the "genius" of the topic: what is unique about the topic, why it is worthy of the time, and how it gives value to lives (Levy, 1996). Effective curriculum has a product focus. It requires students to transfer, apply, and extend learning to solve problems, address issues, and create meaningful and useful products (National Research Council; Tomlinson). It has skills and habits, planned practice and application to ensure comfort, and competence with skills and work habits needed to turn knowing into doing (Levy). Effective curriculum and instruction changes the profile of students by helping them understand their intellectual identity as students (setting goals), intellectual poverty (visiting unfamiliar people, places, and things), intellectual defensiveness (defending their need to know and defending their positions), and intellectual autonomy (juggling compliance and autonomy, responsibility, and cooperation; Kaplan, 2004).

The teacher's role is to choose the appropriate instructional methodology for ensuring student engagement, both affective and cognitive. Affective engagement is the motivation and enjoyment of intellectual pursuits (Tomlinson, 2005). Cognitive engagement consists of understanding the content, methodology, and skills of the discipline and topic under study; being able to refine, elaborate, connect, and dissect this content; making meaning and new knowledge (Kaplan, 2004); and being independent learners and thinkers. Selecting the appropriate instructional strategy for ensuring student engagement, both affective and cognitive, is an important task. The decision to use presentation software such as PowerPoint should be well thought out, and should match the material and the teacher's style preferences.

Teachers Focus on the Right Thing

In an evaluation of technology study by Kerr (1991), teachers using technology were asked how to initiate other teachers into a technology-rich environment. Their responses focused more on changes in teaching style and approach than on specific training in either hardware or software. Their responses included: start slowly; reflect on your practice—read and think about what you are doing and how you can do it better; develop a plan first and then seek the technology to carry the plan forward; look at your activities differently; group students differently—try to provide more small group activities than whole group activities; and try for more independence in student work—more open-ended, wide ranging assignments.

Features That Make PowerPoint a Potentially Effective Tool

Multimodal Nature

PowerPoint is wizard-driven and conceptually easy to use. In its simplest application, it could be a lecture with pictures. Use it as a multimodal presentation to accom-
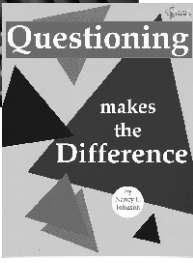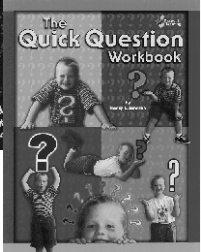
modate multiple intelligences or as an advanced organizer to present content to students. Student comprehension can be increased through visual learning, so PowerPoint can be effectively used, for example, to create graphical comparisons of ideas presented in class (Matheson et al., 2002).

Flexibility

PowerPoint presentations are easy to change and adapt to varying situations because of the design and layout templates. Use this feature to adapt presentations quickly to different grades and ability levels.

Enhancibility

By adding appropriate clipart, animation, transitions, and timing, a PowerPoint presentation can be enhanced to raise student interest. Use it to draw attention to and keep attention on important ideas.

Independence

The ability to set up a show to run independently increases its utility. Use it in interest centers and as individual tutoring and assessment instruments.

Interactive Nature

The use of action buttons (moving back and forth between slides) increases the interactive nature of PowerPoint presentations. Use this feature to go back or forward to specific information when reviewing or answering questions.

Multimedia

By using hyperlinks, teachers can add media files—pictures, music, video, and Internet sites—to create a multimedia presentation. Use mul-

timedia presentations to incorporate primary documents, film footage, sound clips of actual speeches, and appropriate Web sites. A hyperlinked presentation also presents opportunity for student-driven interaction with the presentation. Instead of creating a long 50-slide presentation, think of creating a series of short 2–5 slide presentations around a central topic that can be linked by means of action buttons and hyperlinks. Each small presentation covers a specific related topic. Any object in a PowerPoint show, whether text, graphic, or symbol, can be given an action setting. Action settings can be programmed so that a mouse click on the appropriate object will either run a program, activate a sound or video file, or most importantly, the link to another page in the PowerPoint presentation or to an external Web page. By hyperlinking pages in the presentation to one another, the presentation becomes an interactive web rather than a linear sequence of slides (Matheson et al., 2002). More information on how to create a hyperlinked presentation and a template for a hyperlinked presentation can be downloaded from http://www.cit.cornell.edu/atc/materials/FLEX/hyperpresent.

Publishing Tool

PowerPoint can be used to publish information on CD-ROM or on Web pages. Use it to set up class Web sites, Web-based tutorials, or student and teacher portfolios. More information about publishing with PowerPoint can be found at http://www.cew.wisc.edu/accessibility/tutorials/pptpublish.htm. This includes a Web accessibility wizard plug-in to help transfer a PowerPoint presentation into a Web-publishable format.

Features That Make PowerPoint a Potentially Lethal Tool

1. PowerPoint is wizard-driven and conceptually easy to use. The danger is that teachers may simply dump quantities of information on a series of slides without thinking through what to present and how to present it.

2. The bells and whistles (clipart, animation, transitions, and timing) could be so beguiling that teachers overuse these features and merely distract students with visual overload that has no connection to the information presented. According to Murphy (2004), elaborate, busy PowerPoint presentations result in lower achievement on test scores.

3. Design and layout templates may inhibit teacher creativity and suggest using only bullet points, albeit with a truly expansive range of designs and layouts. This abbreviated way of presenting content results in what Tufte (2003) calls "foreshortening of evidence and thought" (p. 4). Using the typical PowerPoint layout suggests to students that this hierarchical single-path structure is the model for organizing every type of content. It also breaks up the narrative and the data into slides and small fragments. It leads to rapid sequencing of shallow information, rather than a deep interaction with rich material (Tufte).

4. Printing out handouts that are smaller versions of the slides may give students the impression that only information given in the slides is important. Consider carefully what the purpose of the handout is. Is it to give an advanced organizer? Should

Table 1
Grid for Choosing Appropriate Media

		Lesson Components					
		Standards addressed	Unit objectives addressed	Lesson content objectives	Lesson skills objectives	Depth and complexity objectives	Product objectives
Media Format	Text (book, article, etc.)						
	Graphic (art, graphic organizers, etc.)						
	PowerPoint						
	Animation (print or film/video)						
	Audio						
	Film/Video						
	Speaker						
	Drama						

Note. Grid adapted from Reiser and Gagné (1983).

students elaborate on the information given in the handout? Would it be more effective to use a graphic organizer, an article, a primary document, or other content in the handout?

5. Teachers may rely on the PowerPoint presentation to engage students with content. The PowerPoint presentation is a small part of the whole instructional package. A research study by 3M suggests that presenters with visual aids are 43% more effective than those without, but how the presenter looks and speaks accounts for the majority of the audience's opinion of the presentation (Farwell, 2005).

Using PowerPoint Effectively

The use of PowerPoint should be thought through very carefully—as carefully as any other instructional strategy. Before creating a PowerPoint presentation, plan what is to be accomplished. This will include decisions regarding topic, learning goals, specific learning objectives, and logical flow of the content material (Holzl, 1997). Is this to be an introduction to new material; a review; a way to create depth, complexity, and enrichment of core material; or a tutorial for individual students or small groups who need extra interaction with material while other students proceed with various tasks? For each of these purposes, PowerPoint can be used in a different way.

Planning the Presentation

One way to ensure that the choice of PowerPoint as an instructional strategy is the best possible choice is to use a media planning grid, such as the one suggested by Reiser and Gagné (1983). A modified grid to fit enriched curriculum planning is represented in Table 1. This grid can be adapted to suit any instructional situation and set of objectives.

There are two ways of planning the content before designing the slides. The first, and most widely used method, is to open PowerPoint and go to the outline view. The Outline view is accessed by clicking on the Outline tab in the side bar (see Figure 1). The second way to plan a presentation aids in creative use of PowerPoint presentations. Plan the presentation by using a storyboard similar to those used in planning videos and movies. A storyboard is both abstract and physical. It is abstract in that it represents the creator's thinking, imagination, and creativity. It is physical in that it is a visual representation of that thinking, planning, imagination, and creativity (Bajaj, 2004). A storyboard helps to plan visually and allows concept mapping for nonlinear structure
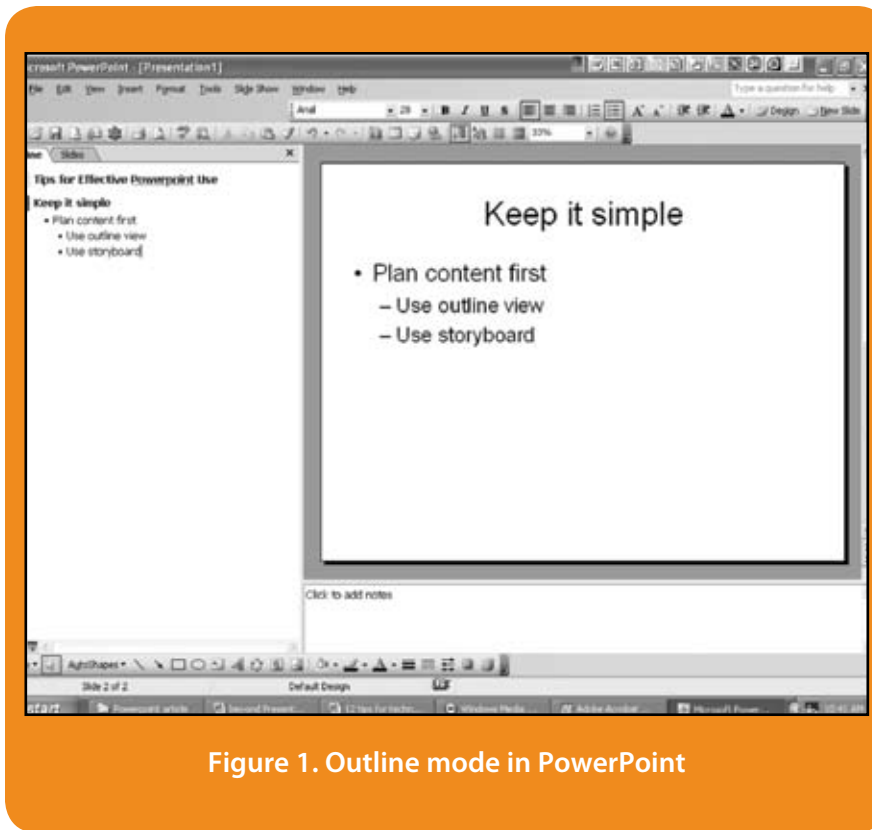
Figure 1. Outline mode in PowerPoint

slides around to adjust temporal sequencing. It allows users to brainstorm, put ideas on paper or screen, add new ideas, adapt ideas, or even scrap ideas. It allows creativity and imagination free rein. A storyboard is an intermediate stage of conceptualization and visualization and needs never be completed. Once the storyboard indicates the direction of the presentation, the PowerPoint presentation can be put together.

Possible Applications of PowerPoint

- *Advanced organizer.* Use a Power Point presentation to give the big-picture overview of the unit of study to follow.
- *Review tool.* Use a PowerPoint presentation as a summary of the unit of study just completed. Use it to ask organizing questions for students to

in organizing content. A paper storyboard graphic organizer such as the one available from the ProTeacher Web site (http://www.proteacher. com) and sticky notes on a sheet of butcher paper are excellent methods. Another possibility is a digital storyboard program such as Springboard™ (see Figure 2), a shareware program available for free download from Six Mile Creek Systems (http://6sys. com). This free version has a watermark on the template, has printing and exporting limitations, and expires 4 months after download. Springboard also allows registration for a fee that removes the limitations and gives unrestricted use. Whichever format is used, a storyboard has similar elements: It is a way of planning text, images, and sound, and of playing with sequencing. A storyboard allows users to scribble notes, make simple drawings as placeholders for images and sound files, and move
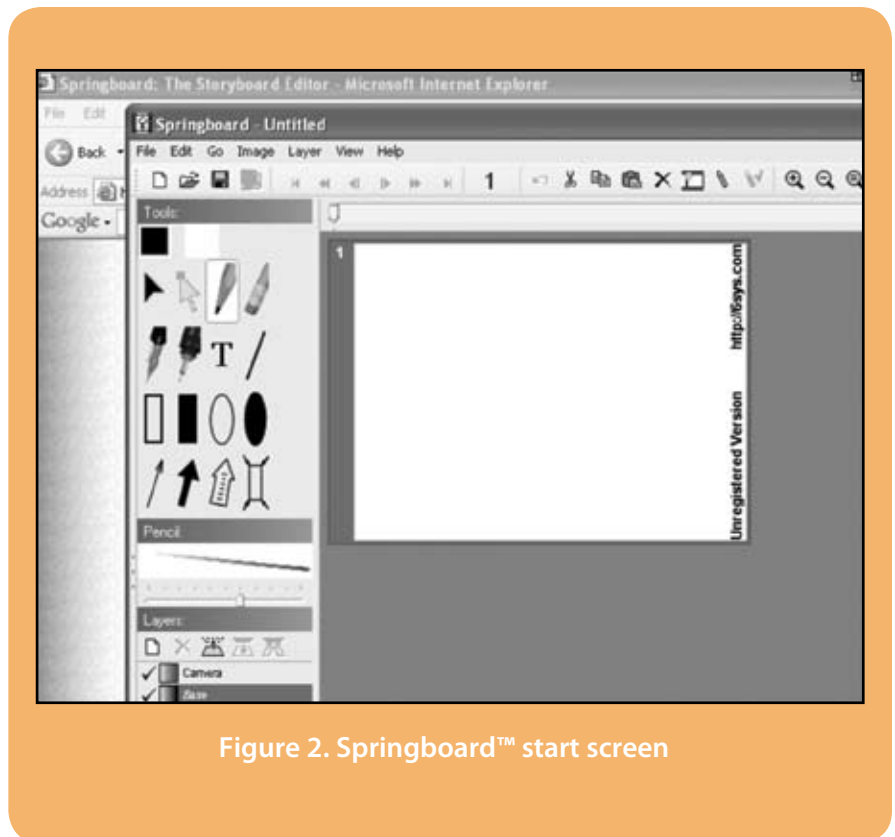

Figure 2. Springboard™ start screen

consider as they study for the test, or as they plan their products to show what they have learned.

- *Introduction to new content.* Use a PowerPoint multimedia presentation (or a series of presentations) to expose students to new information and to create links with prior knowledge.
- *Enrichment tool.* Use PowerPoint multimedia presentations to suggest connections across time, place, and culture to create links with classical art, literature, and music; to open students' minds to the possibilities of more details; and further study in depth.
- *Learning center.* Use a PowerPoint presentation as part of a learning or interest center. Use action buttons to link between slides and give students choices of which parts of the presentation to access. For example, one slide can give a student the choice between studying armaments in the Civil War or the Underground Railroad. The student can click on either choice, and that click leads the student into a series of slides on the topic of choice. For an online tutorial on using action buttons, go to "Advanced PowerPoint: Creating Action Buttons" by Sarah Tucker at http://www.washburn.edu/cas/history/stucker/PPTactionbuttons.html, or "Using Action Buttons to Create Interactive Power-Point Shows" by Greg Ashman at http://www.soita.esu.k12.oh.us/Resources/tips/mspp.html. A basic tutorial on using PowerPoint is available at "Using PowerPoint" at http://www.rsc-sw-scotland.ac.uk/project_pages/cardonald/Using%20PowerPoint/index.htm. Learning centers with access to the Internet can include hyperlinks to take students to appropriate Web sites that can take them on virtual field trips or present extension activities.
- *Assessment tool.* By using action buttons and hyperlinks, an interactive assessment tool can be made available to students for use as they complete specified parts of the unit. The simplest assessment to use in this way is a multiple-choice quiz. Depending on whether students choose the correct option, they can be congratulated, or the correct answer can be given, with an explanation or a link to the original text or information, and a choice to answer the question again. In this way, the assessment can be used as a tutorial at the same time. Different assessment formats are also possible. A student can be asked to complete a diagram or give short response answers to questions. Setting up the PowerPoint presentation initially for this use is time consuming, but so is every other form of assessment. Once it has been created, modifying it is simple.
- *Step-by-step manual.* In skills training, having a training tool that allows students to progress through the training at their own pace, with hands-on practice and with rich visual components, can be an effective tool and a timesaver for teachers. A training manual may function like a tutor that allows a student to learn at his own pace and gives him confidence for further learning (Thirlway, 1994). Weiss (1991) recommends a modular document that consists of small units of text because such a manual is easy both to develop and to read. PowerPoint's action buttons and hyperlinks make it easy to import graphics, pictures, graphs and charts, sound files, and demonstration video clips to create a highly visual hands-on learning experience.
- *Self-service tutorial.* For students who need extra help to master content and skills, or students who wish to explore a topic further, teachers can create self-service tutorials in PowerPoint. Each concept may be covered in a separate presentation and hyperlinked. Students can access the sections they need when they need them.

Design Considerations for Effective Presentations

Text

- Limit the number of lines per screen. If possible, use no more than five lines of text.
- Provide ample white space to separate text blocks to enhance reading.
- Use a mix of upper and lower case letters. Do not use upper case letters only.
- Remember that people read text on a computer screen about 28% slower than printed text.
- Keep sentences short.

Font

- Use sans serif fonts such as Arial, Tahoma, and Verdana. They are easier to read onscreen than serif fonts such as Courier and Times New Roman.
- Use no more than two or three different fonts and font sizes on one slide.
- Use at least 28-point type.

Color

- Use between three and six colors per screen.

- Highlight important information with bright colors.
- Use color to separate concepts.
- Avoid using only color distinctions. Combine colors with fonts and text sizes to delineate between concepts.

Design Issues

- *Unity and harmony*. Make the visual image coherent and harmonious.
- *Cohesion*. The whole should dominate the parts. Use organizing slides to keep content organized.
- *Focal point*. Use color and font sizes to keep attention focused. Use arrows, animation, labels, narration, bordering, and underlining to focus attention. Limit these attention grabbers to approximately 10% of the slide content.
- *Balance*. Use a vertical and horizontal axis to anchor visual design elements. Use symmetry or asymmetry.

Presentation Issues

- Practice your presentation until you are comfortable and perfect in delivery.
- Practice with the technology in the room where the presentation will take place.
- Remember, technology can fail. Have a backup plan if the computer or projector does not work properly. Have your presentation file backed up.
- Do not read word for word from slides. Use slides to anchor narrative.
- Prepare an appropriate handout.

These tips and more are available at the following Web sites:

- http://www.computertips.com/ Microsoftoffice/MsPowerPoint/ aheader.htm
- http://www.ellenfinkelstein.com/ PowerPoint_tip.html
- http://www.hesston.edu/ academic/lrc/fits/POWERPNT/ PPTMAIN.HTM

Conclusion

PowerPoint presentations can be a very effective way of involving all the senses and attention of gifted students. Teachers can master the basic principles of effective PowerPoint presentations and more advanced features of the software program while they also plan absorbing and varied learning opportunities for their gifted students by following suggestions presented above. **GCT**

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