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Chapter 4:

One Computer as a Presentation Tool

from:

Great Teaching in the One-Computer Classroom™

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One Computer as a Presentation Tool

Despite the popularity of theories about student-directed learning, there are times when it's okay for a teacher to get up in front of the class and teach. I realize some people might label me a reactionary, back-to-basics frontal teacher for this, but I'll take that chance.

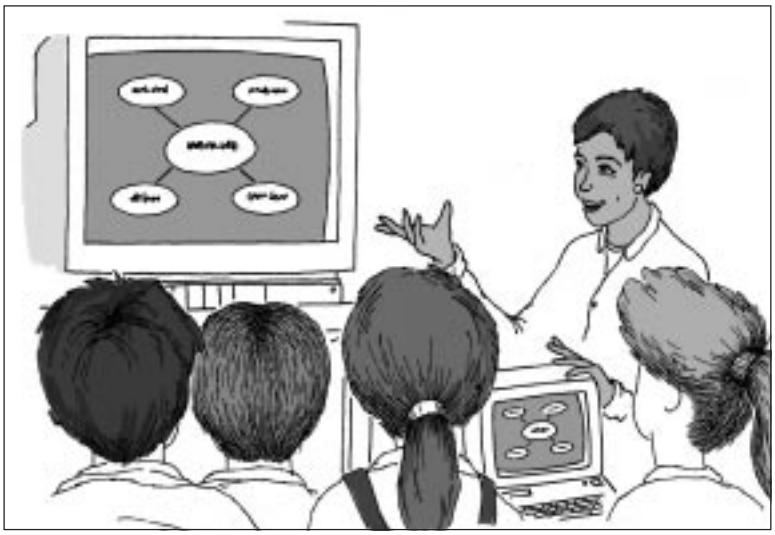
Frontal teaching, the kind of teaching where the teacher stands in front of the class and serves as the source of content, has its time and place. When I first started teaching, I didn't think so, but when I encountered students lacking so many basic skills and rules of behavior so late in life, I didn't feel I had time to wait for them to discover the information on their own.

Frontal teaching isn't the way you want to teach all the time, but often it is the best way to convey information to a group of people. I recall attending a workshop on cooperative learning at a conference several years ago. The presenters stood before us presenting research findings that proved that students learn better when they learn in groups. At the end of the workshop I approached the presenters and asked, "If cooperative learning is so powerful, why did you use a lecture here." "We had a lot of information to cover in a short amount of time," was the response. Funny, that's exactly the situation I had as a teacher: lots of information to cover in a short amount of time. Under those circumstances, direct instruction becomes a pretty efficient pedagogy. The computer can enhance direct instruction in a number of ways.

Turning the Computer into a Presentation Device

Leaf through the pages of an airline magazine or another journal directed toward businesspeople and you will likely find numerous ads for devices that enable you to project the contents of your computer screen for a larger audience to view. The computer, as we saw in the previous chapter, allows you to create nifty stuff, manipulate data, make graphs, and illustrate ideas. Those creations, however, are wasted unless they are shared. One method of sharing is to print out the creations and reproduce them on paper, or to print them on acetate and display them with an overhead projector. A second method of sharing involves going right from the computer to the big screen. Bypassing the printer has several advantages, a fact which has been discovered by businesspeople.

Bypassing the printer has several advantages, a fact which has been discovered by businesspeople.



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Connecting your computer to some sort of large-screen display can help turn these dreams into reality.

That's why the market for presentation devices exists. This market continues to evolve and change rapidly, which will continue to make new, better, and cheaper options available to you.

One advantage of bypassing the printer is that you can edit your work at any time without having to print and reprint your presentation on paper or transparencies. A second advantage is that you can display colors beautifully and with ease. High quality color printing remains relatively expensive, and you may find a school projection system more affordable than a good color printer. In addition, with the right kind of software, you can add fancy transitions and effects to your computer presentation. A little color and dazzle go a long way in holding your audience's attention.

A third advantage of computer presentations in the classroom comes when you want to change the information you are presenting. The graphs you display from the computer, for example, don't have to be static images. You can actually use the graphing program during your presentation and change the information as you talk. This enables you to explain not just the end results but how you got them as well. The power is in your hands… assuming you have the right equipment.

There are four main options available to you:

- scan converters
- TV/computer monitor combinations
- LCD palettes
- projection systems

Here is a summary of each.

Scan Converter

The least expensive and most portable option for enlarging your computer display is likely an external scan converter. This device, which typically costs between $200 and $300, connects your computer to a large TV monitor and translates the video signal from the computer into a type of signal acceptable to a television. You'll need to supply the monitor yourself, but you're bound to find one attached to a VCR if nowhere else.

Usually an external scan converter is a small box with plugs for "video in" and "video out." One cable runs from the computer to the scan converter box. Another cable runs from the box to the television. Once you know how

to hook up the cables, it's easy to move the scan converter from computer to computer. Internal scan converters are also available: You can buy both TV monitors and computers that come with a scan converter installed.

The quality of the display will vary with the quality of the scan converter as well as the quality of the monitor. If possible, test various models with your particular setup before purchasing any for your school. Check especially how text looks on the TV monitor; that's usually where you'll see problems.

TV/Computer Monitor Combination

If you don't want to buy a TV monitor, you might want to purchase a computer that has a large TV monitor instead of a computer monitor. You skip the process of hooking your computer to a TV monitor, because your television is your computer monitor! The monitor functions as a normal TV: you can watch cable as well as connect a VCR or a videodisc player. Once again, check quality before making any purchases.

LCD Palette

LCD stands for liquid crystal display, which is a rapidly evolving technology. To use an LCD palette, you run one cable from the video connector on your computer to the LCD palette, and another cable from the palette to the computer monitor. The palette then sits on top of an overhead projector. Whatever appears on the computer monitor also appears on the palette, and the overhead projects that image onto a big screen (or a white wall). It can be a nice setup, but the image quality varies greatly with the quality of the LCD palette and the overhead projector. In addition, you often have to turn down the lights to get a clear picture, and a darkened room full of students can have its own negative consequences. Alternatively, you could buy an LCD projector. This device is simply a combination of an LCD palette and an overhead projector. The advantage is that the bulb in this kind of projector is better — it sounds simple, but you'll notice a difference in brightness and image quality. Keep checking for the latest information on these products, as the technology is still developing.

Alternatively, you could buy an LCD projector. This device is simply a combination of an LCD palette and an overhead projector.

Projection System

Top-of-the-line projection systems, which accept video and audio output from your computer and project both of them, are available but costly. While prices for these systems have been dropping, you can still spend several thousand dollars for a good one. Projection systems are particularly suited to very large groups, so they might be overkill for your classroom. No matter which option you choose, look before you buy. Then weigh the costs against the expected benefits. What's right for one classroom may not be the best solution for yours.

Linear Presentations

Once you've got your presentation hardware arranged, you can begin to think about what kind of presentations you want to do with it. For convenience, I'd like to split the types of presentations into two categories: linear and nonlinear presentations. Whether it's a movie, a slide show, or a lecture, a linear presentation always follows the same path. A nonlinear presentation doesn't have to follow the same path. In a nonlinear presentation you can change your mind mid-sentence and pursue a different path or line of thinking. Many of my presentations as a teacher were nonlinear, but not because I planned them that way! On the contrary, I had typically planned what I expected to be an incredibly clarifying explanation only to look out at a sea of blank faces. Quickly I'd shift gears and try explaining it in a new way, always looking for the words and examples that would connect with my students.

Before we take a closer look at linear presentations, I'd like to make an important point: Whether a presentation is linear or nonlinear, it can be interactive. Just because you are following a linear path of explanation doesn't mean you can't ask questions of your students to make sure they are getting it, and it doesn't mean they can't ask clarifying questions of you. Those student-teacher interactions can be the richest and most valuable parts of a presentation. Indeed, in the last couple of years I've found the phrase "interactive lecture" sprinkled liberally through the literature on current classroom practice. Frontal teaching doesn't have to be a one-way conversation. Try to keep this in mind as you read the rest of this chapter.

Slide Shows

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I use both ClarisWorks and Microsoft PowerPoint to construct and present slide shows for keynotes and for classes I teach. Both programs are easy to use and allow me to get color displays without a color printer.

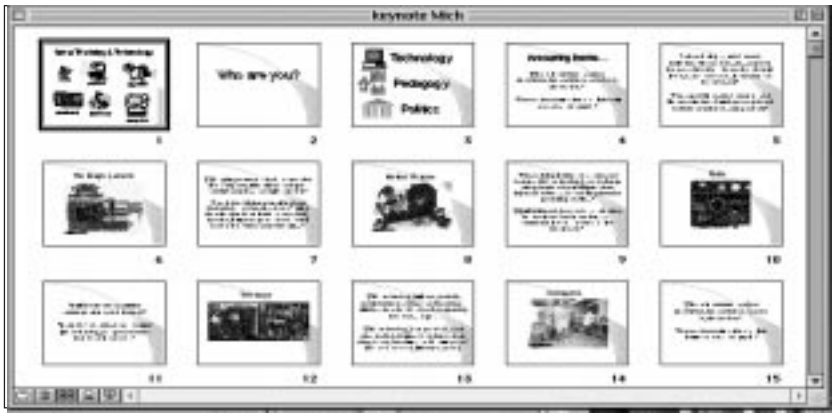
The slide show is a classic method of linear presentation, but the computer has given it a new twist. I use both *ClarisWorks* and *Microsoft PowerPoint* to construct and present slide shows for keynotes and for classes I teach. Both programs are easy to use and allow me to get color displays without a color printer. Plus I don't have to fuss with getting slides developed.

With *ClarisWorks* I construct my presentation through the word processor. Each page of the document is a "slide." I format the text and cut and paste graphics to make each page clear, concise, and attractive. I can even attach QuickTime movies or audio clips to a page. When I have completed the pages, I switch to the program's slide show mode. In this mode I can pick a border, adjust the background color, reorganize the order of the pages, and determine how the slide show should advance.

PowerPoint, a program dedicated to making presentations, has all the features of *ClarisWorks* and more, including page layout templates for different kinds of slides. You can add fun transitions from slide to slide, and it's especially

easy to add multimedia elements. You can also attach elements from other programs, for example a *KidPix* drawing or an *Excel* graph. Change the data in your *Excel* file and the updated graph will automatically appear in your presentation.

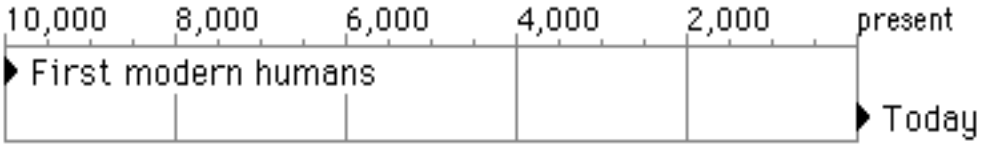
Another nice feature is the Slide Sorter View. This nice overview of the slides makes it easy to reorder and edit a presentation.



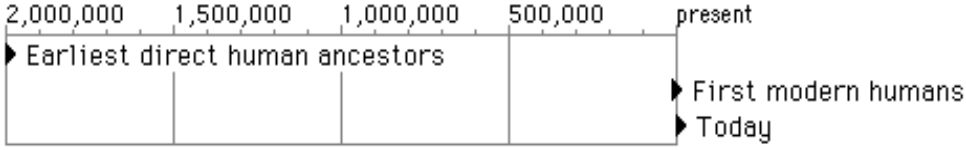
This nice overview of the slides makes it easy to reorder and edit a presentation.

Content-Specific Presentation Tools

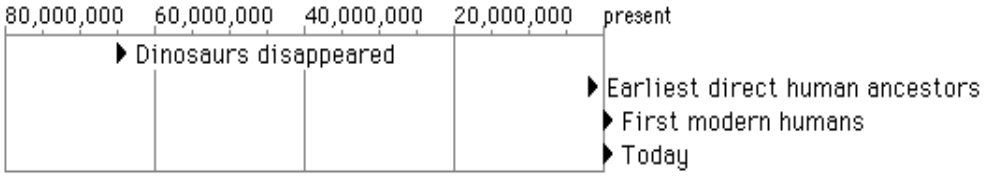
You can also build fixed presentations with more content-specific software. For instance, you can create a sequence of steps with some of the tools that I discussed in the previous chapter, such as *TimeLiner* or *The Graph Club,* and walk through that sequence with your class. Here's an example. Let's say you want to demonstrate, with dramatic flair, the relative brevity of human existence on Earth. I used to use the clock metaphor, which went something like this: If the age of Earth is 24 hours on a clock, the amount of time that human beings have been around is one minute. I'm not certain that the proportions are correct in this analogy, but it's the one that was popular when I taught ancient history and anthropology. I'd say it, the students would nod, and neither one of us had a clear picture of what it meant, except that the relative difference seemed to be a lot. *TimeLiner* can give you a more visual, concrete, and accurate depiction of this difference. You start with a blank geological time line displayed for the class to see. Click to add a new event. When the program asks when, type "today." Then add the event of the earliest modern human being, which would be around 10,000 years ago based on current evidence. The students will see a gap appear.



Now add the existence of modern humans' direct ancestors 2 million years ago. Tell your students to watch as the relative size of the 10,000 years of human existence changes.



Next indicate the dinosaurs' disappearance from Earth, which is supposed to have happened 65 million years ago.



This kind of linear presentation can be at your fingertips as the power of the computer and the software that runs inside it become increasingly familiar and comfortable.

By the time you get to the theoretical date of the earliest life on the planet, the period of all of human existence has become barely a dot on the time line.

You will have made a very powerful point.

Although in a presentation like this you do a lot more than press the "go to the next slide" button, every step is entirely predictable. You set out to illustrate a concept to your students, and you follow a very predictable path to get there. This kind of linear presentation can be at your fingertips as the power of the computer and the software that runs inside it become increasingly familiar and comfortable.

Before you take the leap to bringing dynamic software tools into the classroom, however, let me offer a word of advice: Make sure you know the software well. Teaching with a tool is like singing while playing a musical instrument. If you have to stop one while doing the other, the power of the performance is severely diminished. Not only that, your relationship with the audience is compromised. I've seen this happen in the classroom with such a mundane tool as the chalkboard. In fact, some of the inner-city teachers I met during my practice teaching had learned how never to turn their backs on their students and still write legibly with chalk. It was an impressive bit of contortion — one that they felt was necessary in order to maintain control of their classrooms. Turning their backs on their students could, in some instances, mean real physical danger, nevermind losing students' attention. I meet teachers who prefer the overhead projector to the chalkboard for the very reason that they can write while facing the class. In fact this was one of the key features touted by the innovators who introduced the overhead to schools in the 1960s.

As a new teacher, I felt angry and disappointed that teachers felt so concerned about managing their classrooms. If they couldn't turn their backs on their students, I concluded they must be bad teachers. A good teacher, I assumed, would have gotten his or her students so excited about learning that discipline wouldn't be an issue. But it didn't take me long to realize how difficult teach-

ing can be. I grew to appreciate the value of eye contact and personal presence for my students. Any classroom technology that made it more difficult for me to establish a relationship with my students and maintain a safe, well-managed classroom posed unwanted risks. Make sure you are familiar enough with the software you choose that it enhances, rather than hinders, the relationships you seek to create in your classroom.

Nonlinear Presentations

Once you gain that comfort level with the technology, you might consider using it in a less structured and predictable manner. Instead of you determining the step-by-step path you'll follow in a presentation, you can allow students to pick the direction. As I mentioned earlier, I often found myself shifting strategies midstream as input from students gave me a clearer idea of what they did and did not understand. With a slide show, options for changing your mind are severely limited once you begin the presentation. Other software, however, gives you the flexibility to deviate from the single, set linear path.

One very popular, general nonlinear presentation tool is *Hyperstudio.* Like *PowerPoint* and the slide show feature in *ClarisWorks,* this tool allows you to piece together text, images, movies, and sounds representing any content you like. Instead of pages or slides, *Hyperstudio* stores content on "cards." Each card can have buttons connecting it to other cards. In a linear presentation, each card would connect only to the cards that preceded and followed it. In a nonlinear presentation a card might have several connections — called links — representing the different paths you might choose to follow. In a nonlinear presentation, you build in optional explanations and alternative anecdotes just in case you need them. That means you must anticipate where students might have trouble; you must know ahead of time what metaphor you might choose should the one you're currently following not click. That knowledge of alternatives and anticipation of trouble grows with experience.

In a nonlinear presentation a card might have several connections — called links — representing the different paths you might choose to follow.

I know, for example, that some students (and many adults) have a tough time comprehending the concept of gravity. After all, an invisible force so weak its presence is barely perceptible in the objects around us, yet so strong it can hold a solar system together and our bodies to the planet, can be confusing. To explain it, a main presentation path might contain images of rockets, falling objects, and weight varying from planet to planet. Since we see the effects of gravity mainly on a planetary level, describing it from a planetary point of view makes sense. But planets are awfully big, and such an explanation could leave students with the misconception that only planets have gravity. In fact, all objects with mass have gravity. You just need a whole lot of mass to see gravity's effects. So, anticipating possible confusion, you might attach a button to each card in your main *Hyperstudio* presentation that allows you to deviate from the path to pursue an alternative approach. For example you might

describe Henry Cavendish's 1798 experiment which showed that a heavy metal ball exerted a small gravitational effect on a smaller object dangling near it from a string. It's a great historical anecdote that can be told with drama and tension. Toss in some images of the experiment and a picture of Cavendish himself, and you have a nice alternative path. Over time, as you learn more about how your students come to understanding and as you learn more about the subject area, you can attach additional anecdotes. Logging the content into this nonlinear authoring tool helps capture accumulated wisdom.

Inspiration allows you to throw ideas up on the screen and then arrange and rearrange them later. You can solicit from students, prod them to supply facts and opinions, without worrying if the order of presentation is perfect.

Alternatively, rather than trying to anticipate confusion in a presentation, you might consider following a more Socratic method. Instead of a presentation that *tells to* students, you have a presentation that *elicits from* them. Who can tell me one reason why the North and South got into the Civil War? How many of you think this bar graph shows that a greater number of people believe in aliens than this circle graph? How can the formula for calculating the area of a right triangle also work for this non-right triangle? Do you think that Tuck and the others in *Tuck Everlasting* would be happy living forever? We are constantly asking questions to which we already know the answers or that we know will lead to a certain idea. We just want the students to be the ones carrying us along. Sometimes a direct factual question can get the ball rolling; sometimes a more open-ended question is needed. In any case, some computer tools can help you record and illuminate these student-fed presentations as they happen.

One of these tools is called *Inspiration.* I know a number of teachers who use it to map ideas and relationships dynamically in the classroom, and they love it because *Inspiration* allows them to throw ideas up on the screen and then arrange and rearrange them later. You can solicit from students, prod them to supply facts and opinions, without worrying if the order of presentation is perfect. The chalkboard is a marvelous tool for capturing thoughts, but it's tough to erase and rewrite to get the proper organization. A quick look at a literature example (which is included with the education version of *Inspiration*) will highlight the power of this program.

Suppose your class has just read *Fantastic Mr. Fox* by Roald Dahl. A straightforward outline summary of the story might look something like this.

Fantastic Mr. Fox

by Roald Dahl

I. Setting

A. The farms of Boggis, Bunce and Bean

B. A hole under a tree

II. Characterization

A. Mr. Fox

1. Good to his family

2. Smart

3. Wily

B. Boggis, Bunce and Bean

1. Nasty, dirty men

2. Angry

3. Mean

III. Conflict

A. Boggis, Bunce and Bean want to kill the foxes for stealing.

B. The foxes are trapped in a hole and are starving.

IV. Themes

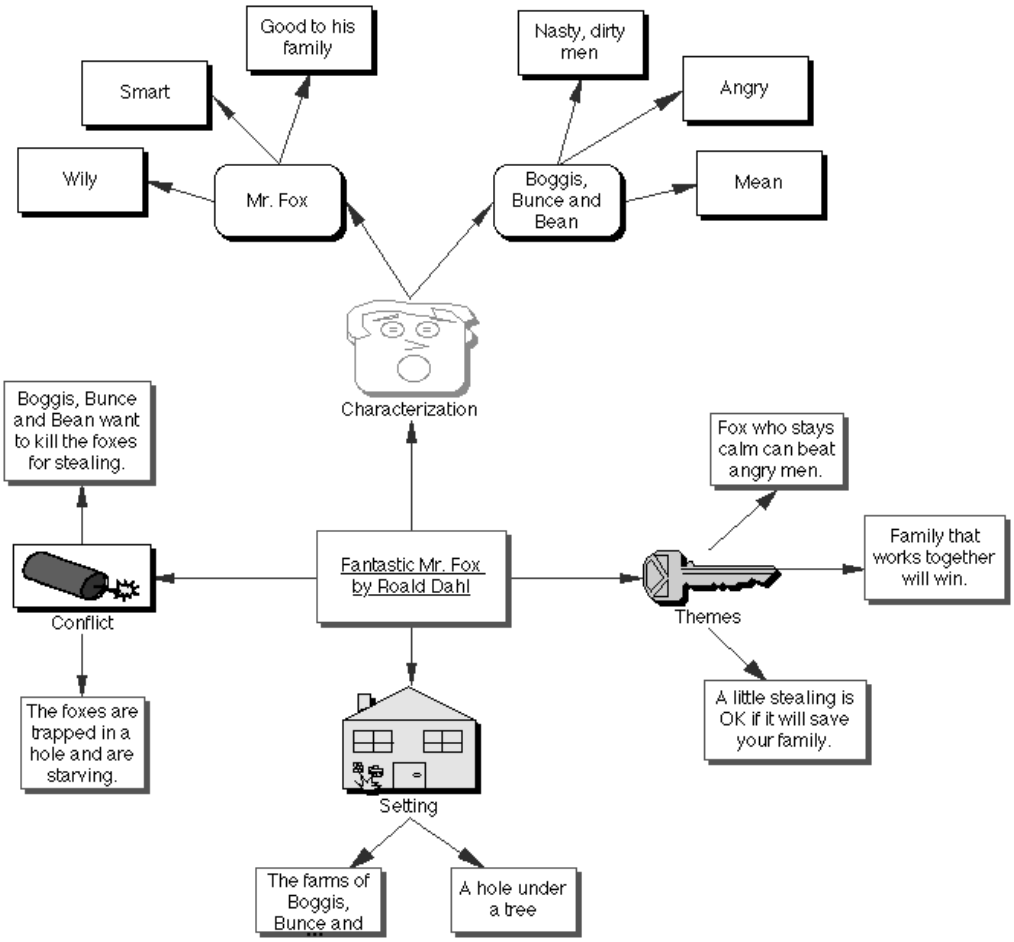
A. Fox who stays calm can outsmart angry men.

B. Family that works together will succeed.

C. A little stealing is OK if it will save your family.

Let students brainstorm while you collect their thoughts in the program. After the ideas are scattered over the screen, you can begin to connect them.

But you want your students to supply the contents of the summary rather than you. So you ask for input. You question, prompt, and reward. The student's input, though, doesn't necessarily flow linearly. Some ideas are offered out of order. With a program like *Inspiration* (or with the outline tool in *ClarisWorks*), you can insert ideas where they belong as they are presented. *Inspiration,* though, offers more. You can start with very little order to the ideas. Let students brainstorm while you collect their thoughts in the program. Then, after the ideas are scattered over the screen, you can begin to connect them. The same outline above takes on a very different look when viewed as a diagram (see next page).



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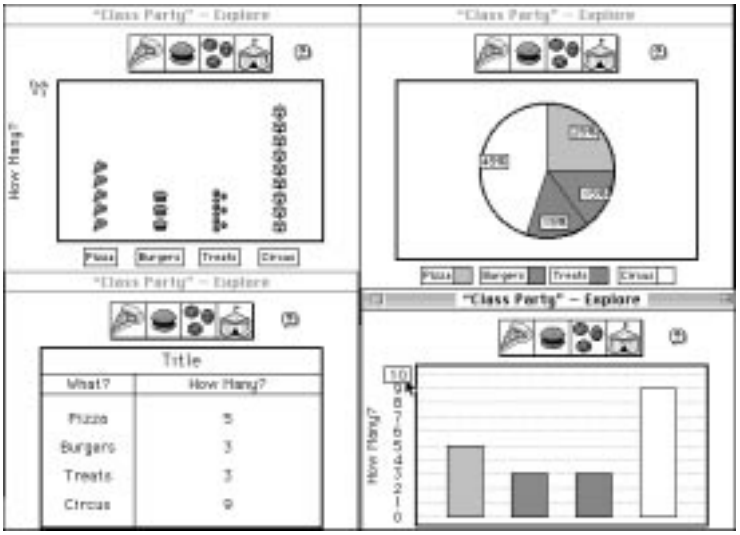
Remember my three tips about technology integration back in chapter 2. Don't expect to be able to use the technology unless you have access to it. And once you have access, be patient and have a purpose.

Try switching back and forth between graphical and more traditional outline views on your chalkboard.

Initially, a program like *Inspiration* can appear intimidating. It is…at first. But so were word processors, and now most of us can't imagine writing without one. Take your time. Remember my three tips about technology integration back in chapter 2. Don't expect to be able to use the technology unless you have access to it. And once you have access, be patient and have a purpose. To minimize the risk, try *Inspiration* with a lesson about which you already feel very confident. If things don't go well, you can likely still pull it off. Remember, too, that the technology is supposed to help you, and it will. Don't fight it; enjoy both the challenge and the resulting reward.

Let me offer a couple of quick examples in math before I close out this chapter. I highlight math in particular because it's a highly visual discipline and one in which the chalkboard can be limiting. Just drawing round circles and straight lines can be a struggle for those of us less adept with chalk. The computer, though, can draw exactly what we want each and every time. And it can dynamically change those drawings based on what we tell it to do.

Remember the nice graphs produced by *ClarisWorks, Microsoft Excel,* and *The Graph Club*? Well, you can create those graphs dynamically in class with your students' input. One of the many nice features in *The Graph Club* is the ability to make changes in one graph format and simultaneously see the results in other formats. For example, let's say your first grade class is planning an end-of-the-year party. Asking for suggestions yields four reasonable choices: a pizza party, a hamburger party, a bring-your-own-treats party, or a trip to the circus. You take a vote, and as you add the raw numbers to one graph, the data is displayed in three other formats simultaneously.



Based on the bar and pie graphs, the circus looks like an overwhelming favorite, yet the difference between the circus and the pizza party is only four votes. What happens if we throw out burgers and treats and let those six students vote for the remaining two choices? It's easy to find out. Just click the top of the hamburger and treats bars and drag them down to zero. The other three graphs will change accordingly. Now add the results of the new vote by clicking and dragging the bars in the bar graph or the wedges in the circle graph. You could also type the numbers into the table. No matter how you make the changes, the results will be displayed in all the graphs.

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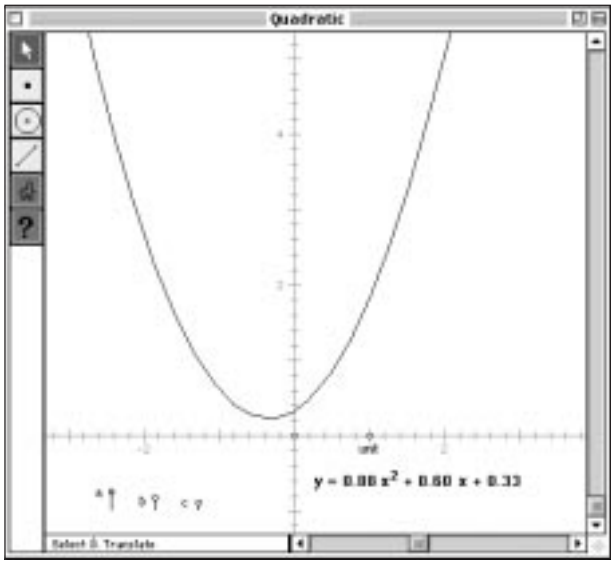
What happens if we throw out burgers and treats and let those six students vote for the remaining two choices?

With the help of the computer, your students can witness dynamic change in context. They can decide how to celebrate the end of the year while getting a lesson on graphic representation of numbers. Graphs that show relative differences can mislead if you don't know the numbers behind the pictures. It seems very simple, but try doing it on a traditional chalkboard. That's a lot of erasing and redrawing.

A second nifty math presentation tool for older students is called *Geometer's Sketchpad*. This very powerful tool, and others like it, enable you to construct dynamic representations of all kinds of math concepts that you can then explore with your class. Here's a screen from the program illustrating how the software can help you explore quadratic equations with your students.



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This very powerful tool, and others like it, enable you to construct dynamic representations of all kinds of math concepts that you can then explore with your class.

Note the short vertical lines labeled **a, b,** and **c** in the bottom left corner of the picture. Click and drag the circle at the top of any of the lines, and the value of that constant in the equation will change. So too will the graph that the equation represents. What happens when the value of **a** is increased? In which direction will the graph move as the value of **c** is decreased? Tools such as *Geometer's Sketchpad* empower you to explore "what ifs" with your students

and then see the consequences immediately. They're very powerful, but they do carry a bit of a learning curve.

For any tool, make sure that the support materials are truly helpful. If you have Internet access, check the Web site of the product's publisher. Often you will find connections to teachers who have already mastered the software and are anxious to share what they've learned. You don't need to be a lonely pioneer. It's quite alright to let others blaze trails for you.

Software tools can present information in colorful and lively formats, display and change content dynamically in both linear or nonlinear fashions, and help you have rich, interactive discussions about any subject with your students.

Dazzling and Interactive Presentations

I hope you have seen that the computer can help you with your presentations, whether your method is direct instruction or engaging students in a dynamic exchange. Software tools can present information in colorful and lively formats, display and change content dynamically in both linear or nonlinear fashions, and help you have rich, interactive discussions about any subject with your students. With practice, these powerful tools can provide marvelous accompaniment to your performances. And you can even get the audience to sing along with you.