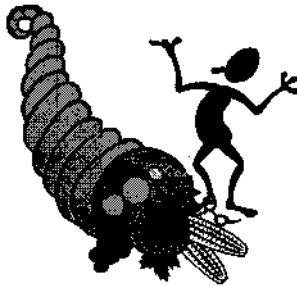


An introduction to presentation tools and instructional design



High Tech Center Training Unit

- 9:00 - 9:15 Introductions
- 9:15 - 9:45 Slide show
- 9:45 - 10:00 Discussion
- 10:00 - 10:30 Introduction to Powerpoint
- 10:30 - 10:45 Break
- 10:45 - 12:00 Design/build presentation
- 12:00 - 1:00 Lunch
- 1:00 - 3:30 Design/build presentation
- 3:30 - 4:00 Demonstrate presentations

Good instructional design is the purposeful identification, preparation, delivery and evaluation of effective materials and strategies for teaching and learning. In relationship to presentation tools, this means:

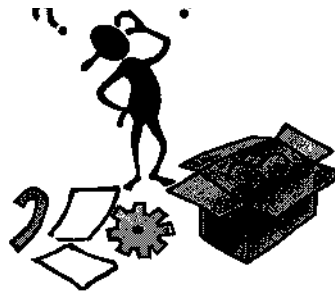


- There is a clear instructional purpose for the presentation's content and style
- The needs and capabilities of the targeted learning audience have been taken into account
- The content of the presentation fits the learners' needs.

The purpose of designing a slide presentation is to assist the instructor in communicating ideas, facts or concepts.



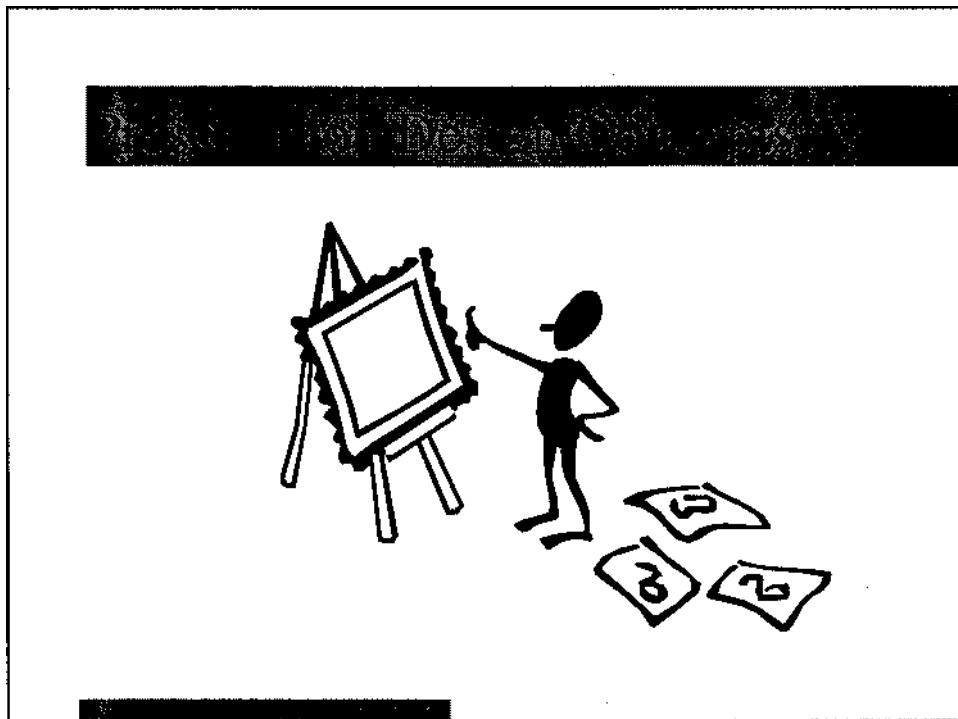
The challenge is to package complex information in bite-sized, easy to understand pieces.



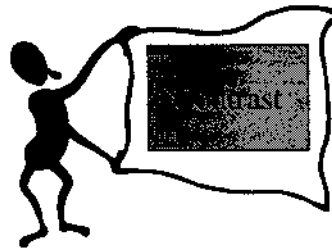
- Most importantly, the slide show must not distract the audience from the message.
- Poor color choices, cluttered visuals, and lack of readability can all sabotage the instructors message

- What is the learning gap?
- Who is the audience?
- Is this the best approach?
- Is closing the gap important to the audience?
- Are you the subject matter expert?
- What materials will be needed?
- How will the content be modularized?

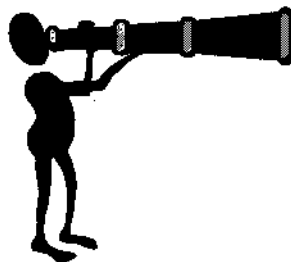
- What are the steps to subject mastery?
- What learning styles will be accommodated?
- Will you need additional clipart, photos, audio, QuickTime or other multimedia?
- How durable is the presentation?
- Access for blind/low vision?
- Will you provide web access, handouts?



We recommend dark color backgrounds with light color type and graphics. Dark colors are perceived as moving away from us and light colors are perceived as coming toward us. You want your text to "jump out" at the viewer.



Dark color backgrounds make the transitions between slides easier on the audience. Light color slides make your audience squint each time the slides advance, and will distract them from your presentation as their eyes adjust.



Don't mix red and blue or red and green.

These colors "fight" when they are superimposed on top of each other, and will distract your audience. For example, red type on a blue background will appear to "squirm" and be hard to read.

Example of red Text

Don't use red for your background color.

Studies have shown that prolonged exposure to red light makes people edgy and restless. The audience will attribute their discomfort to the speaker and the message. Obviously, this is not a good thing.



Contrast is key to readability.

Primary colors work better than pastels. Be sure that your text color is much brighter than the color it is sitting on.

Example text in various colors

Example text in various colors

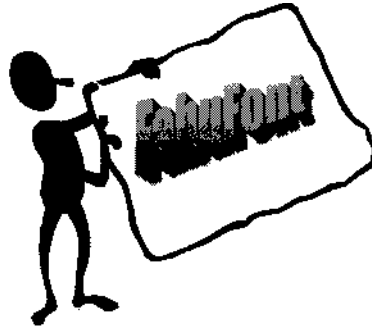
Too much text on a page will cause your audience to lose interest in either the speaker or the slide content.

The rule of thumb is 7&7. Seven lines of text on a slide with seven words per line.



Font: Use

Familiar fonts are best. Don't "over-design" by using some hard to read or exotic font.



Font: Use

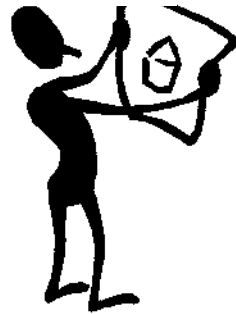
Don't mix too many fonts on a **slide**. **One font is fine**, and **two or three should be more than enough**. The eyes "**shift gear**" each time you read a **different font**. **TOO MUCH "SHIFTING" WILL DISTRACT THE AUDIENCE.**



Font: Use

- Keep it horizontal.
- Keep it simple.
- Limit each slide to one main idea.
- Use several slides to communicate a lengthy idea.
- Keep text size large on graphs.
- Use thicker line widths for slides of drawings and graphs than you would for the paper.

General rule: if you can read it at arms length; your audience can read it when projected.



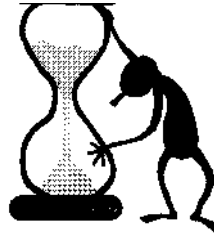
- Repeat main ideas; emphasize 3 or 4 key points.
- Slides should be created for the presentation, not adapted from lecture notes.
- Use action verbs and concise statements.
- Summarize points with key words

Seeing key words, photos or illustrations will greatly improve the listener's understanding.



Limit the amount of time each slide is on the screen.


Use enough slides to provide a visual change every 20-30 seconds. Even a minute of narration with one slide can seem long to your audience unless there is a complex visual to analyze



Using Presentation Tools

- What is the instructional purpose of using digital media?
- What are the needs and capabilities of the students?
- Does the content of the presentation fit the student's needs?

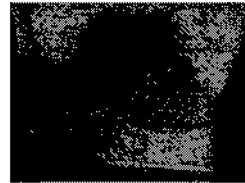
- Access to digital effects (video, animation, sound) provides the ability to address multiple learning styles
- Digital presentations are similar to television, a familiar environment for most students
- Ability to rapidly modify content
- Interactive linkages with World Wide Web




Used appropriately, digital effects can strengthen the learning experience of visual and auditory learners.

They can draw attention

And add emphasis



- 
- Give the presentation "depth"
 - Provide opportunities for discussion
 - Provide opportunities for exploration
 - Keep the content current
 - Employ text and/or graphical objects



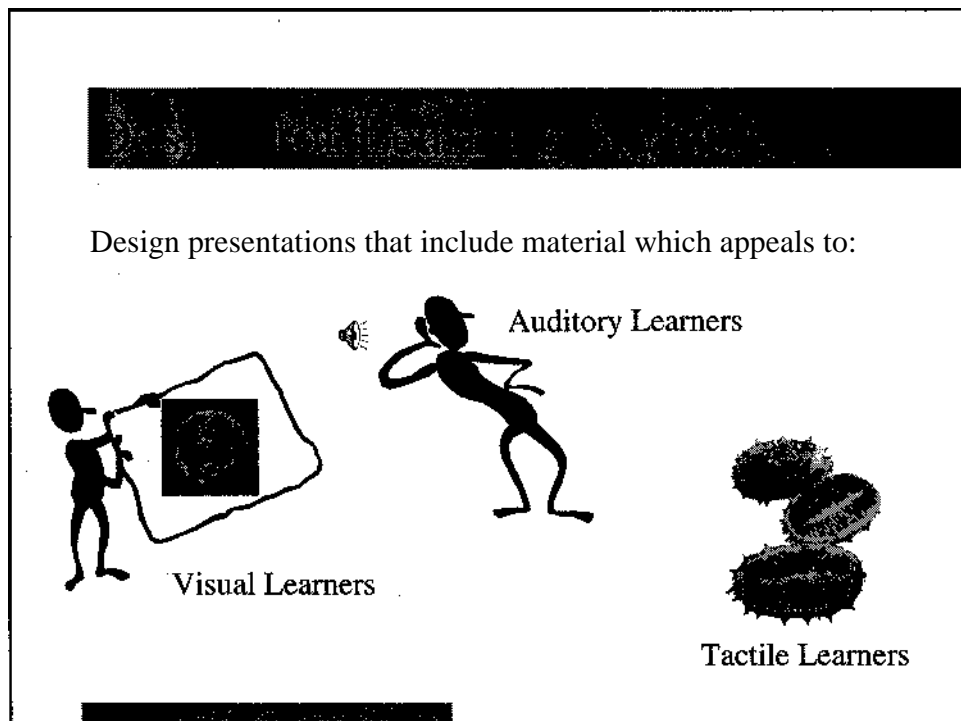
Writing Styles
The Job Interview

In hospital nurseries, some babies sleep, some stare at their reflections, some suck their fists, some listen while others yell to be picked up.

These babies are beginning to prefer one of their senses to learn by: vision, hearing, sight or touch. They are developing different learning styles.

Learning styles develop into preferences that remain with us as adults. Would you rather see a presentation that looks good, or hear one that sounds fine?

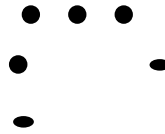
Watch your students. Do they like looking at pictures (visual) or listening to a speaker (auditory)?. Do they like pattern games (visual), or do they like moving around objects (kinesthetic)? Can they learn by looking (visual), or do they need to get their hands on things (tactile)?



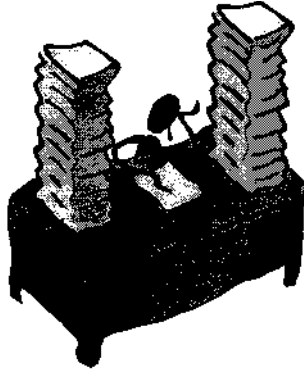
What is the learning gap?



What are the steps to closing the learning gap?



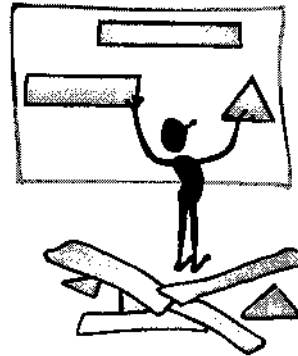
What content/materials will be needed?



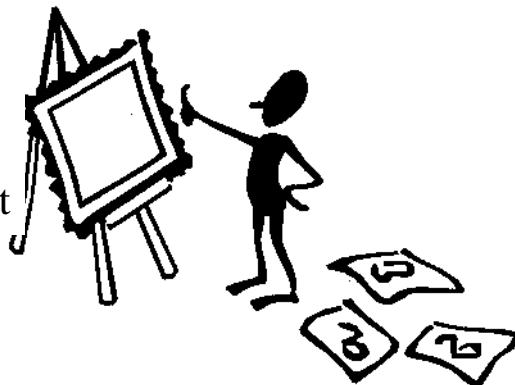
Are presentation tools
the appropriate
instructional format?



Design slides which support presentation content.



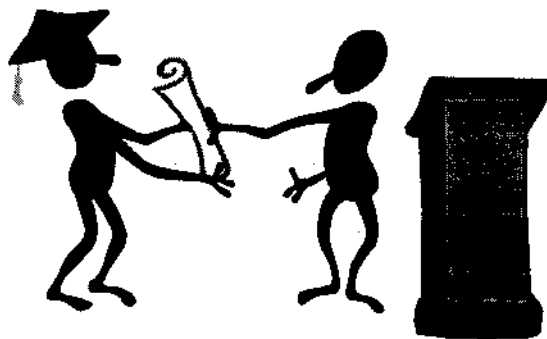
Keep graphics and text uncluttered.
Emphasize contrast



Where appropriate, use multimedia to support a range of learning styles



Redesign as needed for student success.



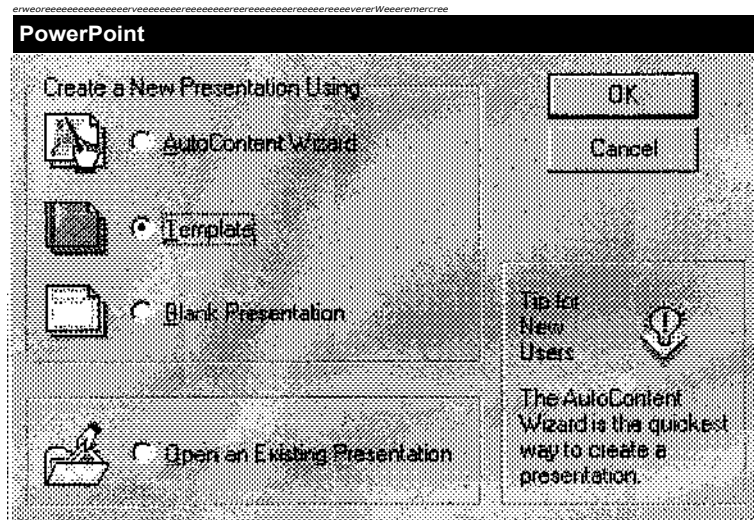
Windows 95 PowerPoint 7.0: Introduction

- What is PowerPoint?
- Starting PowerPoint
- Creating a New Presentation
- Creating Slides
- Adding Text to Slides
- Adding Slide Objects
- Working in Different Views
- Changing the Slide
- Making the Presentation Yoni eed
- Running a C n-Screen Show
- Saving Your Presentation
- Opening a Presentation
- Printing
- Gettin^g Help

What is PowerPoint?

PowerPoint is a tool you can use to communicate your ideas effectively through visual aids that look professionally designed yet are easy to make. With PowerPoint, you can create slides for your presentation in the output you require: black and white overheads, color overheads, 35mm slides or on-screen electronic slide shows. In addition, you can prepare speaker's notes, print an outline, and print audience hand-outs. All these components in one file make up a **PowerPoint** presentation.

Starting PowerPoint



To launch PowerPoint, click the **Start** button on the Windows 95 taskbar, select **Programs**, **Microsoft Office** and then click **Microsoft PowerPoint**. You might also find the PowerPoint icon on your MS Office Toolbar. If you get the **Tip of the Day** dialog box, read the hint and

click **OK**. The **PowerPoint** startup dialog box appears. To begin working with PowerPoint, you will need either to open an existing presentation or create a new presentation using one of three available options.

Creating a New Presentation

Whether your presentation will be in the form of an electronic slide show, 35 mm slides, overheads or just paper print-outs, the process of creating a **PowerPoint** presentation is basically the same. You can start with a *template*, a *design template* or a *blank presentation*. To get to these three basic forms, there are three options.

AutoContent Wizard

The **AutoContent Wizard** is a series of dialog boxes that gets you started with creating a new presentation using a template. You'll start by answering questions about your presentation and end up with the ready-made slides. To activate this on-line guide from the **PowerPoint** startup dialog box, select **AutoContent Wizard** and click **OK**. If **PowerPoint** is already running, select New from the **File** menu. On the **New Presentation** dialog box, click the **Presentations** tab, click the icon for **AutoContent Wizard** and click **OK**. To bypass the wizard, click instead the icon for the template you want and you'll get the slides directly.

Blank Presentation

The blank presentation template is a design template that uses the default formatting and design. It is useful if you want to decide on another design template after working on the presentation content or if you want to create your own custom formatting and design from scratch.

To create a new presentation based on the blank presentation template, select **Blank Presentation** from the **PowerPoint** startup dialog box and click **OK**. With **PowerPoint** already running, you can (1) select New from the File menu, click the **General** tab on the **New Presentation** dialog box, click the **Blank Presentation** icon and click **OK** or (2) click the New button on the Standard toolbar. The **New Slide** dialog box appears.

Template

This is advised for first-time and new PowerPoint users (don't listen to PowerPoint's suggestion for the AutoContent Wizard). After a few presentations on your own, you more than likely will always choose this option so as to have complete control over your presentation. A design template is a presentation that does not contain any slides but includes formatting and design. It is useful for giving your presentations a professional and consistent appearance. You can start to make a presentation by selecting a design template or you can apply a design template to an existing presentation without changing its contents.

Once you have chosen the 'template' option, you have 5 more options in a **New Presentation** dialog box.

- **General:** Gives one the option to begin with a blank template,
- **Presentation Designs:** Gives PowerPoint97 templates from which to work,
- **Presentations:** A presentation template is a presentation that contains slides with a

suggested outline, as well as formatting and design. It is useful if you need assistance with content and organization for certain categories of presentations such as: Training; Selling a Product, Service, or an Idea; Communicating Bad News. When you make a new presentation using a template, you'll get a set of ready-made slides. You replace what's on the slides with your ideas, and insert additional slides as necessary.

- **Web Pages:** Allows one to add web presentations and documents from your local or network computer,
- **Office 95 Templates:** Contains your favorite PowerPoint templates from Office 95.

It is hoped that by the end of our class (or the end of this document), you will feel most comfortable choosing the second option, "Presentation Designs," and getting down to business.

Creating Slides

When you create a new presentation using a template (including the Blank Presentation template), you start with the first slide and then continue to build the presentation by inserting new slides.

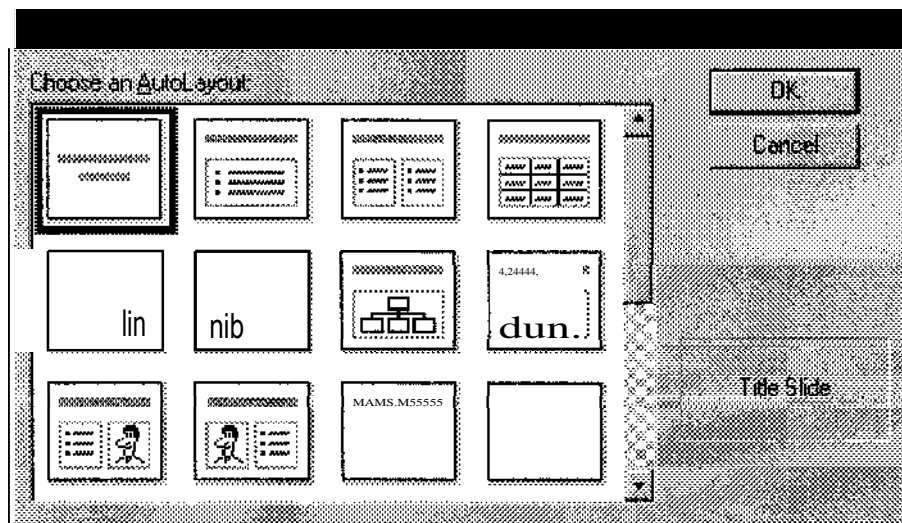
Inserting New Slides

To add a new slide after the current slide in Slide View:

- choose New Slide from the Insert menu, or
- click the Insert New Slide button on the Standard toolbar

This brings up the **New Slide** dialog box.

AutoLayouts



On the **New Slide** dialog box **PowerPoint** gives you a set of available slide layouts, called *AutoLayouts*, to choose from. An *AutoLayout* contains *placeholders* for titles, text and objects such as clip art, graphs or tables that you may want to put on a slide. You are not limited only by these options. As you will see later in this handout, anything can be added to any slide. To create a slide, click an *AutoLayout* icon that matches the layout of the slide you want to make;

the name of the selected AutoLayout appears in the lower right side of the dialog box. Then click **OK** and the new slide appears on the screen.

Adding Text to Slides

Using Text Placeholders

You can insert text on slides by selecting an AutoLayout with text placeholders. Text placeholders are formatted for titles or bulleted lists. The text formatting, which includes the font, alignment and bullets, depends on the design template you selected.

To add text to a slide in Slide View, simply click on a text placeholder. The directions on the placeholder will disappear, leaving an empty text box with a flashing insertion point. Begin typing. Text automatically wraps as you reach the right border of the placeholder. When you're done, click anywhere else on the slide. To edit text, move the mouse pointer over the text (note that it becomes an I-beam), click and edit.

When making a bulleted list, you automatically create the next bulleted item every time you press Enter. To create sublevels, click the **Demote (Indent more)** button on the Formatting toolbar. To move up a level, click **Promote (Indent less)**. Your bulleted list can have up to five levels.

Using the Text Tool

You can use the Text Tool on the Drawing toolbar to add text outside of text placeholders. In Slide View, click the Text Tool and move the mouse pointer to the point on the slide where you want to insert text. Click to make a label/caption or drag to make a text box that will wrap the words. Then begin typing and, when you're done, click anywhere else on the slide.

Adding Slide Objects

You can incorporate elements, such as graphics and even sound and video, into your slides in one of two ways:

- Select an AutoLayout containing a placeholder for an object. Some placeholders are for specific objects such as clip art, graphs, tables, organizational charts or media clips while other placeholders are for all types of objects.
- Select the desired object (**Clip Art, Picture, Movie, Sound, Microsoft Graph, Microsoft Word Table, Object**) from the **Insert** menu. Clicking on **Object...** from the **Insert** menu brings up the **Insert Object** dialog box which lists **all** the different types of objects that can be embedded in **PowerPoint** slides.

You create embedded objects using another application while you are working in PowerPoint. (This requires that you have the application installed on your machine.) The object's application menu and toolbars appear on the screen and may temporarily replace the PowerPoint menu and toolbars. When you're finished, click anywhere else on the slide to return to PowerPoint.

To edit embedded objects you created, double-click on the object. Again, the object's application menu and toolbars appear. Make the changes and, when you're done, click anywhere else on the slide.

Tables

To insert a Microsoft Word table on a slide:

- double-click on a Table placeholder,
- click on the Word Table Button shown here, or
- under the Insert menu, choose Picture, then Word Table

and specify the number of rows and columns you want. If you click on the **Insert Microsoft Word Table** button on the Standard toolbar, drag on the cells to select the number of rows and columns.

The table appears along with Word's application menu and toolbars. Type the table contents and, when you're finished, click anywhere else on the slide. To edit the table, double-click on it and edit the table using Word tools and menus.

Clip Art



You can put graphic images from Microsoft ClipArt Gallery on your slides. To add clip art to a slide:

- double-click on a Clip Art placeholder,
- under the Insert menu, choose Picture, then Clip Art
- click the **Insert Clip Art** button on the Standard toolbar shown here.

ClipArt Gallery opens. You can limit your search by choosing a category. Select the picture you want and click **Insert**. ClipArt Gallery closes and the image you selected appears on the slide.

If you want to change the clip art on a slide, double-click on it and ClipArt Gallery opens. Select a different picture and click Insert.

Pictures


You can put scanned images or art created from other programs on your **PowerPoint** slides. Select **Picture** from the **Insert** menu, choose **From Scanner** and use the MS Office photo editor after opening the file from your computer.



WordArt Object

You can add text with special effects in your slides using Microsoft WordArt. There are at least three ways to put word art in your PowerPoint presentation: You can select **Insert/Picture/Word Art** from the menu, choose **Object** from the **Insert** menu, or double-click on an **Object** placeholder. In the **Insert Object** dialog box, select **Create New** and choose the latest version of **Microsoft WordArt** from the **Object Type** list. The WordArt dialog box and menus appear. Type the text and click on **Update Display**. Choose the special effects you want from the WordArt toolbar. When you're done, click anywhere else on the slide.

Working in Different Views

You can switch between five views of your presentation, each view gives you a  different way of looking at and working with your presentation. To toggle between views, choose the desired view format from the View menu or click the appropriate button to the left of the horizontal scrollbar (shown here to the left). From left to right, the views are **Slide View, Outline View, Slide Sorter View, Notes Pages View and Slide Show View.**

Slide View

In Slide View, you can add graphics to your slides as well as type, edit and format text. **PowerPoint** displays the Formatting and Drawing toolbars in addition to the Standard toolbar. The presentation appears on the screen one slide at a time. The left side of the Status bar displays the page number of the current slide. To move to other slides, drag the elevator on the vertical scrollbar or click the **Previous Slide** or **Next Slide** button below the scrollbar.

Outline View

Working in Outline View is a good way to organize and develop the content of your presentation. To insert text, click where you want to add text and type. Bullet and their editing is very easy in this view. Creating sub-levels along with promoting and demoting text can be done here as well. You can also print a copy of your outline. In this view, you see only the title and body text of each slide. The Drawing toolbar closes and the Outlining toolbar opens. This works much like the Microsoft Word Outlining toolbar.

Slide Sorter View

In Slide Sorter View, you can efficiently perform tasks such as reordering slides and adding builds, transitions, and slide timings for electronic presentations. You cannot work on text and visual elements of individual slides in this view. **PowerPoint** displays miniature versions of each slide. In addition to the Standard toolbar, **PowerPoint** displays the Slide Sorter toolbar.

Notes Pages View

In Notes Pages View, you can create pages that you can print and use as a guide during your presentation. Each page contains an image of the corresponding slide and a placeholder for your notes.

Slide Show View

You use Slide Show view to deliver your presentation as an on-screen presentation.

to look at each slide full-screen. Click the mouse button to advance to the next slide. If you've reached the last slide or press the **Esc** key on the keyboard, you return to the previous view.

Changing the Slide Layout

In Slide View, you can change the arrangement of objects on a slide, move and resize placeholders or replace the current layout with a different AutoLayout.

Moving and Resizing Objects

To move or resize an object, first click on the object to select it. Eight handles appear around the object. Click and drag a handle to change the size and/or shape of the object. Click and drag anywhere else on the object to move it.

To resize an object by an exact scale while maintaining its proportions, select the object and then choose **Scale** from the **Draw** menu. Enter the scale on the **Scale** dialog box and click on **OK**.

Moving and Resizing Placeholders

To move or resize a placeholder, select the placeholder and click on its dashed border. 01
You will get a fuzzy outline around the border with eight resize handles. Click and drag a resize handle to change the size and/or shape of the placeholder. Click and drag anywhere else on the fuzzy outline to move it.

Changing the AutoLayout

To restore a slide's layout after you've made changes to it or to change the AutoLayout without deleting any text or object you've already put on it, select **Slide Layout** from the **Format** menu or click the **Slide Layout** button on the Status bar. Select the AutoLayout from the **Slide Layout** dialog box and click **Reapply**.

Making the Presentation You Need

Slide Setup

Unless you created the presentation using the AutoContent Wizard and specified otherwise, slides are by default set up for an on-screen show. To change this, select **Page Setup** from the File menu. On the Slide Setup dialog box, select the output you want from the **Slides Sized for** drop down list. You can also change slide orientation from landscape to portrait, and the physical size of your print outs.

Arranging the Template

To change the presentation's design template, select **Apply Design** from the **Format** menu or click the **Apply Design Template** button on the Standard toolbar. In the **Apply Design Template** dialog box, select the design template and click Apply. On a typical installation of PowerPoint, the design templates are in the Presentation Designs folder in C:\MSOffice\Templates. You can also use your own design templates or even an existing

Vertical line on the left side of the page.

Faint, illegible text or markings in the bottom right corner.

PowerPoint presentation.

Black & White Slides

To display the presentation in black and white, select **Black and White** from the View menu or click the **B&W** View button on the Standard toolbar. In Slide View, you'll see the current slide in black and white and a color slide miniature on a small **Color View** window. The **B&W** View button toggles between the black and white and color views. To hide the **Color View** window, select **Slide Miniature** from the View menu.

Deleting a Slide

To delete a slide in Slide View, select **Delete Slide** from the **Edit** menu. In Slide Sorter View, select a slide and hit the delete key from your keyboard.

Reordering Slides

To move a slide, select the slide in Slide Sorter View and click the Cut button on the Standard toolbar. This copies the slide to the Clipboard. Then click on the position where you want to insert the slide (note the flashing insertion point) and click the **Paste** button. You can also change the order of your slides in Slide Sorter View by clicking on a slide and dragging it to the position where you want it to appear.

Delivering an On-Screen Show

To deliver your presentation as an on-screen electronic slide show, open the presentation in PowerPoint, select **Slide Show** from the View menu. By choosing **Setup Show** from the **Slide Show** menu you can choose which slides you want to show during the presentation.

During the Presentation



To move to the next slide, click the mouse button or press N on the keyboard. To get a menu of available slide show commands, click the right mouse button or this icon that appears on the lower left side of the screen.

- To go directly to a particular slide, select **Go To, Slide Navigator** from the menu. On the **Slide Navigator** dialog box, select the slide and click **Go To**.
- To annotate a slide during a show, select **Pen** from the menu and the mouse pointer toggles to a pen. Click and drag to write or draw on the slide. To return to advancing the slides, switch back to the arrow by selecting **Arrow** from the menu.

You can deliver an on-screen show on a computer that doesn't have **PowerPoint** installed using the **PowerPoint** Viewer, freeware that you can distribute with your presentation. You can create disks that contain the presentation and **PowerPoint** Viewer. Select **Pack and Go** from the **File** menu and the **Pack and Go Wizard** guides you through the process.

Slide Timings

When delivering an electronic slide show, you have the option of manually advancing the slides or using slide timings. In Slide Sorter view, click the **Rehearse Timings** button on

the Slide Sorter toolbar and rehearse the delivery of your presentation. The Rehearsal window that stays on the screen during the slide show keeps track of the time elapsed since a slide appeared on screen. At the end of the slide show, **PowerPoint** gives you the total time of the presentation and the option to record the slide timings. If you record the slide timings, they will appear in Slide Sorter View. To manually revise the timing set for a particular slide, select it in Slide Sorter View and click the **Slide Transition** button on the Slide Sorter toolbar. Then enter a number in the Advance Automatically after box. To use the slide timings during a slide show, choose **Use Slide Timings** on the Slide Show dialog box.

Transitions

Transitions are special audiovisual effects that occur when moving from slide to slide during an electronic presentation. To add a transition to a selected slide in Slide Sorter View, click the **Slide Transition** button on the Slide Sorter toolbar. From the Transition dialog box, you can choose the effect and speed of the transition and a sound to accompany the visual effect. A transition icon appears below the slide miniature of a slide with transition. You can preview the transition on the miniature by clicking on the icon. If you want the same transition on all your slides, choose **Select All** from the **Edit** menu and then add the transition.

Builds

You create a **build** slide if you want to show paragraphs on a bulleted list one at a time during a slide show. To build the body text of a selected slide, choose an option that appears when you select **Preset Animation** from the **Slide Show** menu. If you select an option other than Off, during a slide show the list will appear by first level paragraphs with every mouse click using the particular effect. For more options, use the drop down menu on the slide sorter toolbar labeled **Text Preset Animation**. On the Animation Settings dialog box, pick a build option, a visual and audio effect, and the text color after a build step. In Slide Sorter View, a build icon appears below the slide miniature of a slide with build but you cannot preview it. For more options, do the following:

- View your slide in slide view
- Right click on your slide
- Choose custom animation

Saving Your Presentation

To save your presentation, choose Save As from the **File** menu. In the **File Save** dialog box, type the name you wish to give your presentation in the **File name** edit box, select the folder where you want it saved from the **Save in** drop down list, and click **Save**. If you're going to open the presentation in another computer and want to make sure that text displays properly, click the **Embed TrueType** check box.

Opening a Presentation

To begin working with **PowerPoint** by opening an existing presentation, select **Open an Existing Presentation** from the **PowerPoint** startup dialog box and click **OK**. If **PowerPoint** is already running, choose **Open** from the **File** menu or click the **Open** button on the Standard toolbar. From the **File Open** dialog box, select the folder where the file is located in the **Look**

in drop down list, select the file from the **Name** box, and click **Open**.

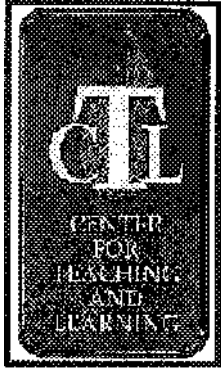
You can open several presentations at a time. To switch between open presentations, select the file name from the **Window** menu.

Printing

To print, choose **Print** from the **File** menu. In the **Print** dialog box, select from the **PowerPoint** drop down list the output you want (slides, handouts, notes pages or outline) and click **OK**. If you're printing a color presentation on a black and white printer, click the **Black & White** check box to print the Black and White View of the presentation. If your slides are sized differently from the paper you're printing on (for example, 35mm or on-screen), click the **Scale to Fit Paper** check box to make the slide image fill the page.

Getting Help

To access on-line help, select **Microsoft PowerPoint Help Topics** from the **Help** menu. You can type in a help request in our won words using the **Answer Wizard** as well. And ' don't be afraid of the paper clip, star, Einstein look-a-like, or whatever may pop up as your assistant. To access any of these options, click on the help button on the standard toolbar. It's picture is shown here to the left.



CTL Learning Styles Site

Using Learning Styles to Adapt Technology for Higher Education

Terry O'Connor
Indiana State University

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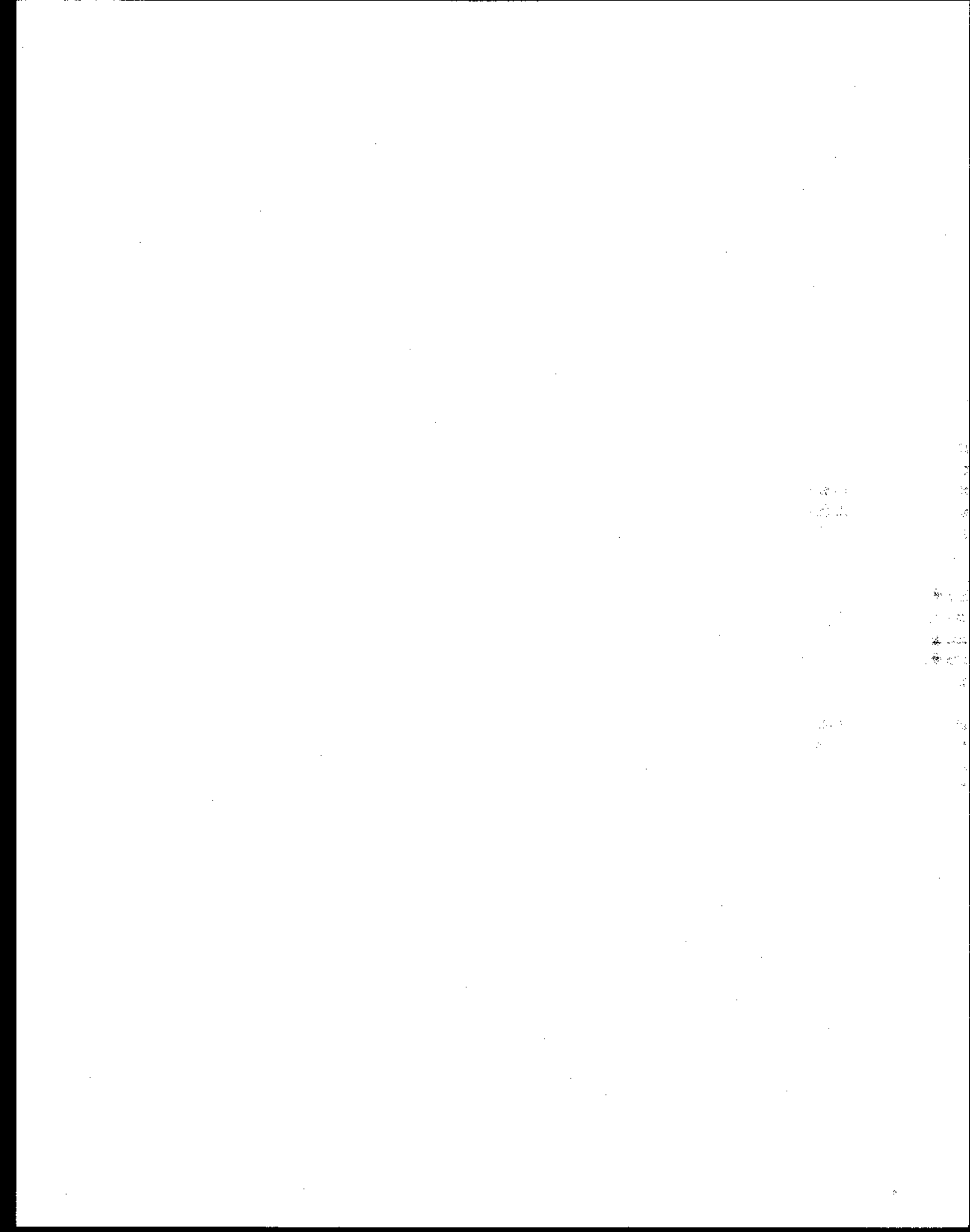
Having a Personal Point of View

Many of the mechanisms by which people learn are still unknown to us. How is it, for example, that a relatively brief talk can change the cognitive and/or emotional orientation of another enough to alter behavior? What happens that prevents this change? We don't quite know. There are complex physiological, psychological, & social processes involved.

Learning styles research is drawn out of studies about the psychological, social, and physiological dimensions of the educational process. It has yet to be precisely (or singularly) defined. Still, the scholarly literature provides a range of working models that can help us deal with some of the mysterious terrain between teacher & learner.

To understand learning style models, begin with one of the fundamental insights of 20th Century psychology: people rely on personally constructed filters to orient their relationships toward the world. These filters are responsive to a variety of factors: age, experience, internal psychodynamics, maturity, cognition, physiology, biochemistry, and so on. Since no one is capable of switching endlessly between all of these filters, it seems obvious that each individual has a unique approach he or she uses to perceive, understand, and plan his or her interactions. Information theory, for example, explains that the world is information rich and therefore people are selective in the information they perceive (& believe). Our personal way of selecting can be described as our style. In a very real sense, we create our own personal point of view.

At the same time, since the same limits are common to all humans, there are ranges within which we can characterize ways of responding to the world. Some people may tend to respond to auditory information more sensitively than to other kinds (say, iconic). The aim of learning style research is to find clusters of people who use similar patterns for perceiving and interpreting situations. Based on this information, we



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Learning Styles in Higher Education

When we look at our subject areas, we realize that different scholars approach our academic fields differently. It is this difference that make them complex and rich. Scholarship is stronger when it includes intuitive, subjective moments plus creative times plus careful data collection plus systematic analysis as well as reflective evaluation and well-written presentations. Of course, we will be better in some of these abilities and will have colleagues who are better at others. Our work (and our field) will be stronger when we devise ways to bring these multiple orientations to bear on the phenomena we study. The scholarly side of the academy clearly profits when it recognizes multiple points of view.

Compare this rich community to the typical classroom. Here most teachers tend to rely almost exclusively on sequential, verbal presentations, combined with private reading & writing activities. While we may expect the student to think in complex ways before completing a project, in fact they are often exposed to only a narrow approach to our subject matter. The loss of opportunities to engage in our subjects from a variety of orientations becomes an obvious flaw to those who recognize the inevitability of diverse points of view in the world. Even worse, we can trace lack of motivation, resistance, misperceptions, failure, and uninspired intellectual work to the fact that many students cannot learn well within the limited orientation provided them in the classroom.

Underlying learning style research is the belief, verified by some studies, that students learn best when they can address knowledge in ways that they trust. If their orientation to the world draws theory from concrete experience, then they will learn best through doing rather than reflecting. If their personal style is oriented around abstraction, then their best learning will be abstract. In fact, an individual may not ultimately confirm knowledge until they have handled it in modalities they strongly trust.

Auditory learners will learn well in lecture settings; private learners will gain knowledge from quiet reading. However, these are only two out of a broad array of preferences found among intellectually capable people. When learning experiences are limited to these modes, students who rely on other styles are bound to be less successful. Limited classrooms are likely to inhibit one or more clusters of students whose preferred styles are not given the opportunity to be used (a problem that may be wrongly attributed to lower ability or motivation).

Faculty can engage students in more rich learning opportunities by increasing the range of styles through which students can engage in studying academic fields. Technology provides new capabilities to reconstruct learning environments around specific learning styles. Below is an outline of some possibilities that emerge when using learning style models to develop technological applications to university classrooms.

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Types of Learning Styles

Because of the variety of models used to characterize Learning Styles, Curry's categorization of the research about human learning differences is useful. She categorizes these studies into three levels that, looked at as examinations of different layers of an "onion," can explain our current understanding of human

variations. More recently, this onion has been divided into the four levels described below.

Instructional & Environmental Preferences are those that describe the outermost layers of the onion, the most observable traits. Dunn & Dunn, for example, identify 5 dimensions that mark various preferences:

1. Environmental preferences regarding sound, light, temperature, & class design;
2. Emotional preferences addressing motivation, persistence, responsibility & structure;
3. Sociological preferences for private, pair, peer, team, adult or varied learning relations;
4. Psychological preference related to perception, intake, time, & mobility; and
5. Psychological preferences based on analytic mode, hemisphericity, & action.

While the latter category overlaps with subsequent layers in the onion, each of these preferences can be mapped through tests, observations, and productivity studies that illustrate how different approaches to the same subject or task can result in very similar gains.

Social Interaction Models consider ways in which actors in specific social contexts will adopt certain strategies. William Perry's well-known model showed how college students developed through different intellectual maturation levels as they went through college. Mary Belenky illustrated how women preferred different strategies than those recognized and rewarded in typical universities. More recently Marcia Baxter Magolda has described how epistemological strategies used by students varies by gender and by maturity and is responsive to the teaching context the student finds him/herself in.

Information Processing Models describe the middle layer in the onion, and are an effort to understand the processes by which information is obtained, sorted, stored, & utilized. Probably the most recognized idea about information processing is the right brain/left brain discussion. More complex approach is Kolb's approach to experiential learning which has become a much used model. He maps out four quadrants and shows how they can serve as stages of wholistic learning (individual styles are seen as particular strengths in the process). Howard Gardner's Theory of Multiple Intelligences is another popular model for educators.

Personality Models describe the innermost layer of the onion, the level at which our deepest personality traits shape the orientations we take toward the world. The popular Myers- Briggs Type Indicators categorizes people as extroverts/introverts, sensing/intuition, thinking/feeling, and judging/perceiving. How individuals rate along these scales indicates tendencies in their attitudes toward engaging the world. This model anchors our preferences in our very make-up. For educators, the question is not simply one of trainable skills or attitudes but recognizing that people who have fundamentally different instincts are in the classroom. They are unlikely (or unable) to be successful when limited to activities that are not compatible with the attitudes they bring into the learning situation.

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Using Learning Styles to Teach

Learning styles research has given educators new directions for making changes in their classrooms. The single most widespread change has been to open classrooms to more than one approach to intellectual work. Different social groupings, alternative activities, more complex projects have all been introduced as efforts to create opportunities for students to use their various strengths in dealing with course material.

Despite the wide range of models, the concept of learning styles has gained growing attention from educators because it provides a stable-enough characterization to plan pedagogical strategies. These

strategies appear more responsive to students needs. They seem to provide better learning opportunities. They give fresh direction to alternative teaching. And, especially, they describe middle-level models for progressive educators engaged in student-centered, experiential philosophical positions. Below are listed some general conclusions for teachers that seem to cut across the various models:

- Students will learn better when using preferences in which they're successful
- Students will be better learners when they can expand their preferences
- When teaching accommodates various preferences, more students will be successful.
- Teachers can construct activities that include specific (& multiple) learning preferences
- This can be done by adding alternatives or, completing learning cycles that incorporate all styles or, by utilizing wholistic, complex tasks.

One consequence of studying learning styles is the recognition that teachers also have their own approaches to the classroom. While these may have become habitual and while the teacher may define the classroom according to their (not student) preferences, teachers have to acknowledge that their styles will not necessarily suit clusters of students in their classroom. As teachers attempt to modify their classrooms, they need to begin by exploring their own styles. Dunn & Dunn offer a teaching style inventory and suggest steps teachers might take to make classrooms more responsive to multiple student learning styles. Tony Grasha nicely integrates his teaching style and his learning style models around a faculty development plan. Three levels of instructional strategies that follow offer some overall suggestions of how the curricular plans can be effectively modified through responding to learning styles.

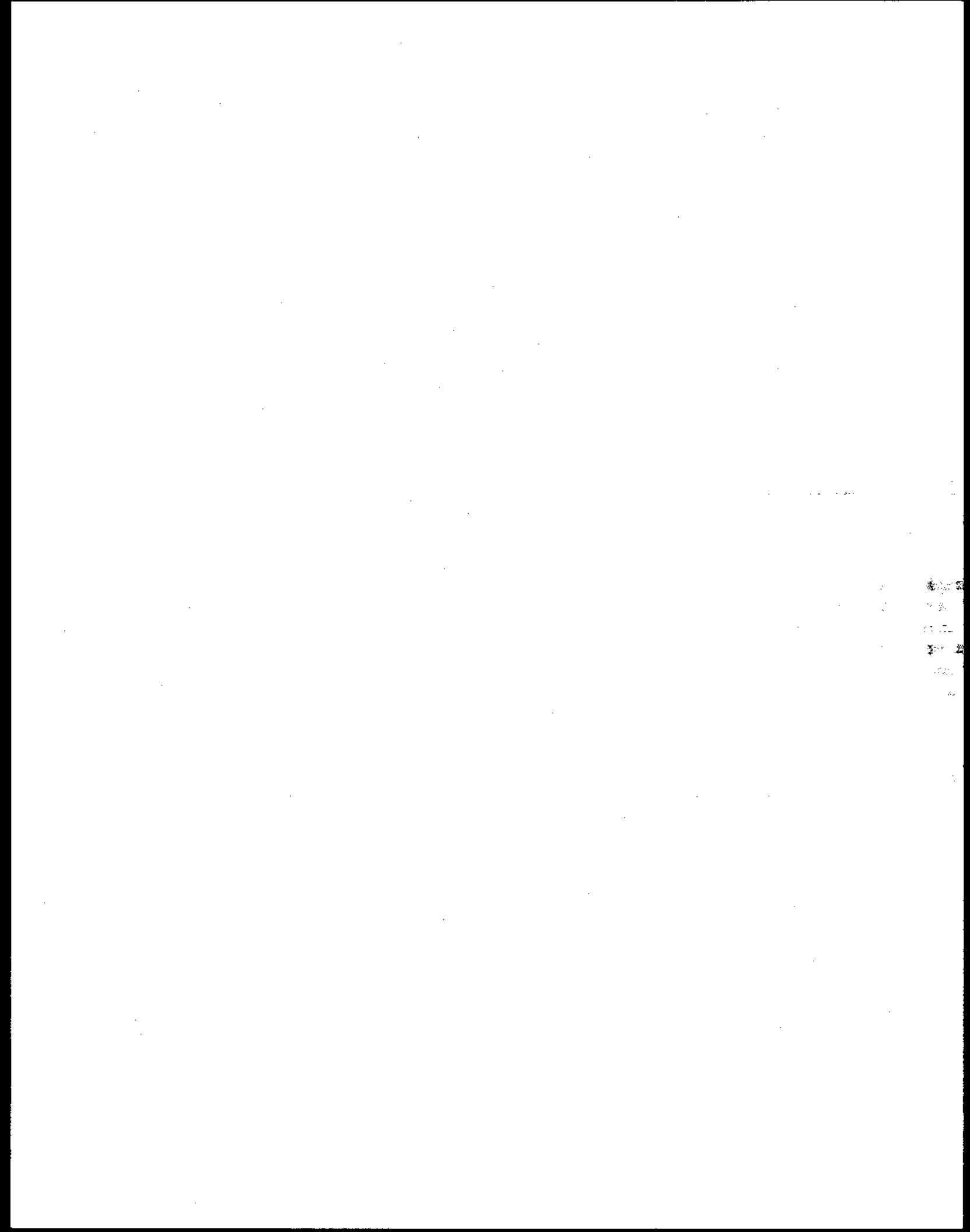
Adding Alternatives

One general strategy that an educator can use to create increased opportunities for students to use different styles is to offer additional alternative activities that supplement or replace traditional ones. Having a student write a poem about or act out a scenario allows students who respond well to global learning styles to utilize their sensitive, holistic abilities. Creating hands-on materials that can be used outside the lecture hall give active experimenters the chance to confirm abstractions. Learning Centers allow teachers to mix and match various modalities. Lectures that alternate between various styles re-engage students every few minutes.

The add-on approach encourages teachers to think of multiple ways to approach the subject and to find ways to create modules that allow different students to find the one most appropriate. Dunn and Dunn suggest multisensory packets comprised of a range of activities that give students a set of options that include something for the different learning styles. Extra attention should be given to key concepts or conceptual bottlenecks (those ideas upon which many other ideas depend but where students traditionally get stuck) rather than whole classrooms.

Learning Cycles

The teacher who wants to not only offer additional opportunities but also wants to challenge students to develop their learning skills in other learning style preferences can design a systematic set of activities that utilize all learning styles before completing an assignment. Dunn and Dunn develop Contract Activity Packages where activities are arranged to include at least some skills from each of their major learning style. A model like Kolb's can be taken as a set of iterative stages that must all be addressed to provide comprehensive learning of a subject. A student will be expected to be strong in one quadrant but need assistance in others. The 4MAT model begins by organizing the curriculum around central concepts that can be addressed from each of the four learning style quadrants and serves to integrate a variety of experiences.



This systematic, program-oriented approach asks the teacher to go beyond content. He or she needs to organize the course around a model of learning styles that recommends different types of learning activities at each stage of the learning process. Course material becomes organized around themes or problems with the emphasis on how students develop skills using the content. This model allows each student to contribute using his or her preferred style while experiencing other styles.

Complex Activities

A third approach to creating multiple learning styles in a course is to organize activities around complex projects. Such projects inevitably demand that students approach a topic with multiple skills. They accept that there are many starting points and a number of acceptable avenues for successfully completing the activity. When the teacher provides adequately broad terms for the work (terms that permit various social and emotional needs, for example) students can use the approach that best suits them to accomplish the task. Project-based learning, especially when connected to community-service initiatives, provide a typical semester-long, complex activity for students to bring their different preferences together into a cooperative effort.

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Applying Computing Technologies

It is a truism in media that people first tend to use new technology the same way they used to using older technology. In this context, the tendency is to use computing technology to deliver the same kinds of instruction & testing that are currently offered in the traditional college classroom. We assume that the same time patterns, the same content-centeredness, the same student-relations, and the same tasks (repeating known-answers) should be electronically replicated. Eventually, applications of computing technology will challenge these assumptions and free us from the need to stay trapped in older college paradigms.

When the opportunities offered by new advances in electronic information processing technologies are combined with the new view of the learning process provided by learning style research, the promise to revolutionize the teaching paradigms found in the academy begins to gain some direction. To explore some of the possibilities, we can consider some of the following applications of popular computing programs in ways that are friendly to students' learning styles.

Adding Alternatives

Computerized instruction can provide a rich array of experiences for students outside the classroom (or in a learning center). It can be used to supplement traditional instruction or as an alternate approach to a unit.

The easiest way to provide expanded opportunities through computers is to find basic software programs that offer encyclopedic collections, drills, or demonstrations. Student can check these programs out or use them in a learning center. While these programs may not be available for certain subject or may be designed for earlier grade levels, they provide chances for students to refresh background knowledge when they are readily available.

Presentation software, like Powerpoint, can readily add visuals to script and engage both right &

left brained thinkers during a lecture. These same presentations may provide stand-alone tutorials for students who want to go through the material in a self-paced way. By making the conceptual material available in this way, a teacher may be able to use classroom time for small group discussion. These programs can be made available through 'viewer' programs and can even be made available through the World Wide Web.

Electronic mail can extend discussions beyond the classroom. For students who learn through social exchanges, teachers can arrange for listservers or hypermail accounts where students may safely ask questions and share ideas. A ready spot for correcting mistakes or confusion, these connections also provide an asynchronous gathering place for cooperative learning activities (joint scavenger hunts for additional course material, for example).

For active experiment type learners, data-base programs offers the capacity to conduct tests that immediately illustrate various scenarios. In a similar way, simulation games (such as Sim-City) can be used for concrete learners as hands-on sites

Finally, programmed instruction offers learners who need structure but prefer self- instruction to group work an opportunity to engage material successfully. While typically we might consider a comprehensive software package like Director to construct such a unit, it is possible to use the hypertext links in either a wordprocessing package (for short units) or a World Wide Web site to organize less sophisticated programs. Another simple set of software programs to use for branching programs (with some creative adaptations are needed to hide murder and mayhem) can be found in adventure game construction programs where adventure "rooms" become re-organized as instructional steps.

While there is some concern about the time required to develop supplementary materials, faculty should seriously consider way to get assistance when significant portions of a class are manifesting learning difficulties. In other circumstances, students in a course can develop such materials as a way to demonstrate mastery of the materials (this in itself generates alternative approaches). With necessary editing (and appropriate credit) these materials can be made available to future students.

Learning Cycles

Computers can be used to organize activities so that students experience the various stages of learning.

Simulations provide excellent opportunities for teachers to create settings where students are led through critical thinking stages. When programs require problem-solving (as many games do) teachers can encourage students to try to use different "cognitive stages." This may be especially relevant if students can work on the program in teams.

Guided Instruction allows for students to submit pieces of a project step at a time, allowing for a rich feedback interaction between students and the instructor. A program like Textra Connect or LotusNotes allows draft essays to be submitted & returned. Additionally, they allow the instructor to post assignments at an appropriate rate (while allowing student to dictate their own pace (within broad limits).

For classes using cooperative groups, teachers can see that distribution lists or bulletin boards or other software (such as Textra Connect) provide ready sites for discussions. By monitoring these groups, the instructor can introduce timely prompts to redirect the conversation. Posing problems

that challenge the status quo, suggesting additional information or alternative positions, the teacher help students use each of the learning stages while working together.

Complex Projects

Computers allow greater connectivity and also better production capabilities. These gains allow teachers the opportunity to create learning challenges that are sufficiently complex to engage a full range of learning styles.

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Because electronic communication is readily available, the chance for students to work with others has been greatly extended. Not only can faculty expect students to find classmates who can share ideas about a project, they can also contact scholars throughout the world. It is possible to visit sites or join groups where advanced scholars share ideas. A student could be expected to post his or her thoughts to one of these individuals or groups and receive advice, support, and suggestions from colleagues. It is not uncommon to encounter requests from graduate students beginning a project, collecting information, or asking for feedback. Connected to projects like this, electronic communication becomes a powerful way to attempt projects that are subject to complex responses.

Because productivity software allows for ease in constructing well-finished products, teachers can set "real-world" expectations for student products that link the activity to settings outside the university. Writers who produce a brochure as a public service can use technology as a tool to demonstrate the benefits of thoughtfully studying a subject.

Surfing the Net is only the beginning of awareness for students engaged in a complex project. Analyzing what is available and constructing additions and alternatives, designing editorialized centers adds more intellectual skills than simple resource gathering (which in itself is a powerful, but not complete, learning stage). As websites become more interactive, students can design ongoing research (where visitors participate in responding) or informational sites. They can provide public services and moral and intellectual counters to less lofty sites.

Conclusion

These examples illustrate how learning style scholarship can help us rethink our approach to the classroom. The increased capacities provided by information technologies greatly enhances the faculty members ability to develop educational settings that broaden the chances for more students to succeed.

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