

Graphics in Technical Communication

Theory and Background

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Reasons for Using Graphics

<i>Increase ...</i>	<i>Clarify...</i>	<i>Adapt to different...</i>
□ Comprehension	□ Processes	□ Learning styles
□ Readability	□ Procedures	□ Audience reading levels
□ Visual appeal	□ Concepts	□ Technical abilities
□ Ease of use	□ Structures	□ Knowledge levels

We know that...

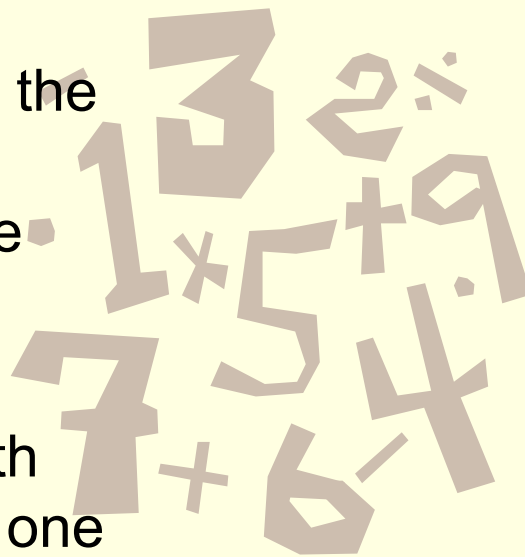
- Using an illustration, graphic, photograph, or other graphic element (such as a font, bullet, number, or icon) increases comprehension and helps the reader to retain the information we give them.
- Why?

Graphics and Memory

- In *Human Factors for Technical Communicators*, Marlana Coe said the following about using graphics in technical communications:
 - “...image memory is one of our most robust image stores. We can retrieve pictures and picture-evoking words more easily than we can retrieve non-picture-evoking words. A graphic plus a label is the most potent storage and retrieval cue we have. The maxim that ‘A picture is worth a thousand words’ is especially applicable to technical communication. Graphics should either enhance or replace words.”
- What can you relate to this idea? Do you have memories that are primarily image-based?

About Short-Term Memory

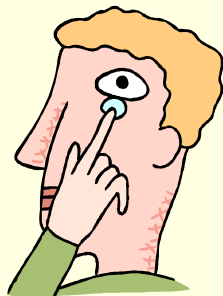
- Holds a limited amount of information.
- Seven items are the most we can remember at one time.
- Displacement occurs: the eighth item pushes out one other item.
- Keep in short term memory in mind when creating procedures (steps), tables, and illustrations.
- “Chunk” information to no more than seven items, steps, processes, etc.



Increased Comprehension

- Learning styles affect understanding.
 - Auditory learners (*I hear.*)
 - Visual learners (*I see.*)
 - Kinesthetic learners (*I do.*)

Most people have combinations of these traits.



Auditory Learners: Specifics

- Auditory Learning "I HEAR." Auditory Learners learn best through hearing, using their ears and their voices as the primary way to learn.
 - Remember what they hear
 - Remember by talking aloud and through verbal repetition
 - Can remember verbal instructions without recording them
 - Need to talk through a concept that is not immediately understood
 - Verbally express excitement about learning
 - Enjoy class discussions and talking with others
 - Are easily detracted by sound but also find silence distracting
 - Find it difficult to work quietly for extended periods of time
 - Enjoy musical activities



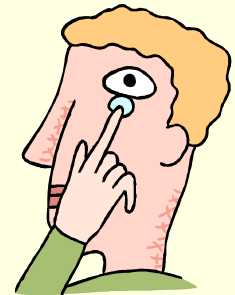
Kinesthetic Learners: Specifics

- Kinesthetic Learning "I DO." Kinesthetic learners learn best through touch, using their hands as the primary way to learn. These learners:
 - Become physically involved in the subject being studied
 - Enjoy acting out situations
 - Enjoy making a product or completing a project
 - Prefer building and physically handling learning materials
 - Remember and understand through doing something
 - Take study notes to keep busy but often do not need them
 - Enjoy using computers
 - Physically express enthusiasm by getting active and excited
 - Find it difficult to sit still for extended periods of time



Visual Learners

- Visual Learning "I see": Visual learners learn best through seeing, using their eyes as the primary way to learn. These learners:
 - Need to see words written down
 - Enjoy seeing pictures of what is being described
 - Prefer timelines to remember historical events
 - Prefer written instructions for assignments
 - Observe all the physical elements in a classroom
 - Carefully organize their learning materials
 - Want photographs and illustrations with printed content
 - Remember and understand by using diagrams, charts and maps
 - Appreciate presentations using overhead cells or handouts
 - Study materials by reading over notes and organizing it outline form.



Visual-spatial Learners

- Linda K. Silverman, Ph.D., and Jeffrey N. Freed, M.A.T. say the following about visual-spatial learners:
 - Visual-spatial learners [learn] “...holistically rather than in a step-by-step fashion. Visual imagery plays an important role in the ... learning process. Because the individual is processing primarily in pictures rather than words, ideas are interconnected (imagine a web).”

Source: Strategies for the Visual-spatial Learner,
<http://www.dyslexia.com/library/silver1.htm>

Visual-spatial learners, *continued*

- Additionally, Dr. Silverman states that:
 - “Concepts are quickly comprehended when they are presented within a context and related to other concepts. Once spatial learners create a mental picture of a concept and see how the information fits with what they already know, their learning is permanent.”
 - “In adulthood, these individuals excel in fields dependent upon their spatial abilities: art, architecture, **physics, aeronautics, pure mathematical research, engineering, computer programming,** and photography.”

Text and Graphics Combination

■ Advantages

- Out of 46 studies* “...in all but one [study] learning was better with text and illustrations than with text alone. Further, in 81% of these...the differences...were significant. People...with poor reading skills...**performed 44% better with text and illustrations than with text only.**”
- Schriver also states that those with **good** readings skills **performed 24% better** with instructions that combined text and illustrations.

Note: *Users who need to read instructions or use help files of any kind online exhibit up to a 40% reduction in reading speed and comprehension (with text) because of the screen resolution and shape! This is a good reason to include some graphics in online materials.*

* Study by Levie and Lentz, 1982; taken from the book *Dynamics of Document Design*, Karen A. Schriver, 1997.

Learning Styles



TIPS!

- Take advantage of as many characteristics of each group as possible when you create documentation.
- Know your own style.
- Use your style this as one tool to gain understanding about your readers.
- Discover cultural, environmental, educational, and other background issues, as well as learning styles, when creating documentation for your audience.

Investigate Learning Styles

- If you want to know your own learning style, check out these references:
 - How to Learn <http://www.howtolearn.com/>
 - Keirsey Temperament Sorter
<http://www.advisorteam.com/user/ktsintro.asp>

Quick Notes about Color

- Color as a graphic element:
 - It's "free" emphasis in online materials.
 - Can be very costly for printed documents.
- In *Human Factors for Technical Communicators*, Marla Coe says:
 - "Although users expect color in online documentation, they do not necessarily expect it in hardcopy information, even if it has uses in hardcopy."

Color Guidelines

- Use color redundantly. That is, if a reader note is in blue, ALWAYS make the reader notes blue.
- Don't use red-green or blue-yellow color combinations, for two reasons:
 - Red and green can't be seen by some people with color-vision deficiencies.
 - Red-green and blue-yellow combinations are “vibratory” colors. They appear to jump around or wiggle when they are in close proximity. Some people will see a halo around the color edges.
- Limit the colors you use. Never use more than six colors; two or three is better.

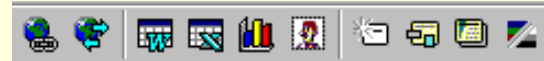
Color Tips

- Use color to enhance content.
- Make sure there is adequate contrast between background and foreground objects.
- Use color in a meaningful way--be sparing, and choose neutral color schemes that are unified.
- Be aware of cultural associations for color.

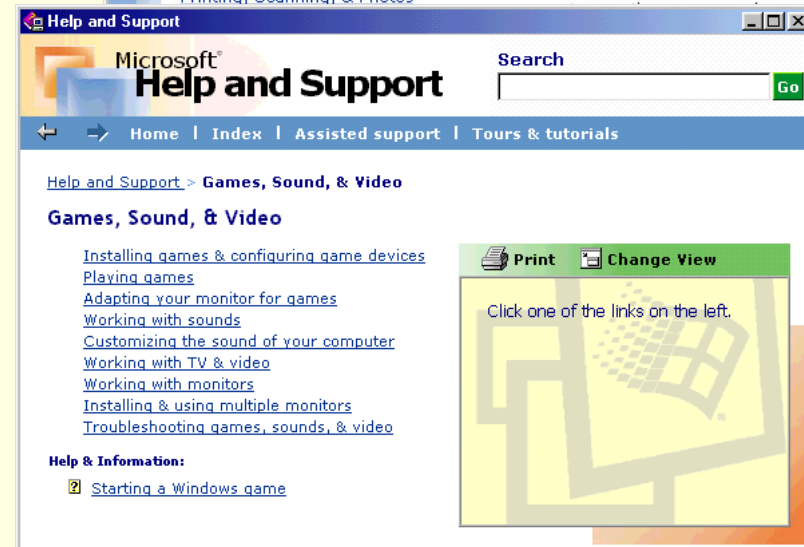
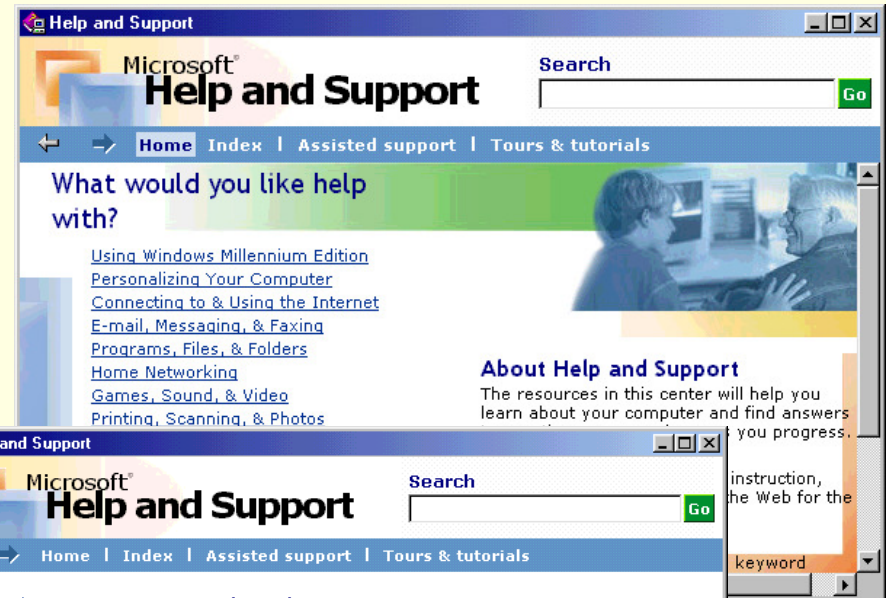
And some rules...

- The most visible background color is white, with a black or navy foreground (text)
- Whatever color you use, be certain that you have at least a 60% to 80% difference between the background and the foreground. Anything less will not be readable.

More Guidelines



- Color in icons, hyperlinks and illustrations can:
 - enhance recall
 - add dimension
 - focus the reader's attention
 - speed up visual searches and information recognition



Color and Icons: Examples

- All icons have a common color scheme, but are distinctly different visually.

The image shows a screenshot of a web page with several annotations. On the left, a box labeled "Icons" has three arrows pointing to question mark icons in a list of links under the heading "Playing games". The links are: "Using Dial-Up Networking to connect to a computer or network", "Understanding browser terminology in Navigator & Internet Explorer", and "Instantly communicating with MSN Messenger Service". Below this, under "Troubleshooting:", is "Improving game controller performance while playing games". Under "Tours & Tutorials:", are "Take the Playing Games tour" and "Take the Home Networking Tour". On the right, a separate window or sidebar is shown with a green bar at the top containing "Print" and "Change View" buttons. A box labeled "Hypergraphics (clickable)" has an arrow pointing to this green bar. Below the bar, there is a "Notes" section with a list of bullet points.

Icons

Hypergraphics (clickable)

Playing games

- Using Dial-Up Networking to connect to a computer or network
- Understanding browser terminology in Navigator & Internet Explorer
- Instantly communicating with MSN Messenger Service

Troubleshooting:

- Improving game controller performance while playing games

Tours & Tutorials:

- Take the Playing Games tour
- Take the Home Networking Tour

Print **Change View**

wizard will help you set up the service.

Notes

- If you are using an Internet service provider (ISP) to connect to the Internet, your ISP may have renamed the MSN Messenger Service.
- For more information about how to use MSN Messenger Service, click the **Help** menu in MSN Messenger Service.

Bibliography

- *Strategies for the Visual-spatial Learner*, <http://www.dyslexia.com/library/silver1.htm>. Linda K. Silverman, Ph.D., and Jeffrey N. Freed, M.A.T. From Issue No. 4, Winter 1996, The Dyslexic Reader.
- Visual illusions <http://www.sandlotscience.com>; *Can You Believe Your Eyes?*; J. Richard Block and Harold Yuker, American press, 1992.
- * Study by Levie and Lentz, 1982; taken from the book *Dynamics of Document Design*, Karen A. Schriver, 1997.
- *Dynamics of Document Design*; Schriver, Karen A.; John Wiley & Sons, Publishers, 1997.
- *Human Factors for Technical Communicators*; Coe, Marlana; 1996.