

Presentation Design for Medical Educators: A Missing Piece of Faculty Development

Look for
highlighted areas
below

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"I am intrigued by the idea that we can improve people's learning by incorporating effective graphics into verbal material."

-Richard Mayer

"I never teach my pupils; I only attempt to provide the conditions in which they can learn."

-Albert Einstein

Objectives

1. Discuss presentation design as a means of creating a learning environment
2. Discuss 2 key educational principles affecting presentation design
3. List and practice the key basic software skills for effective presentation design
4. Apply design principles to "bad" slides to improve the educational impact for the learners

Introduction

Lectures have always been criticized as the least effective way for students to learn information. However, they remain the primary delivery method of information in medical education. Powerpoint and other presentation software has been criticized for their production of "slideuments," slides that contain so much text, they are like documents. Even with the introduction of disruptive technologies and ideas like the flipped classroom, we are still faced with the problem of creating lectures (in the form of podcasts or online modules). The truth is that methods like the lecture and software like Powerpoint are simply tools. We are the ones misusing these tools. When used effectively, well designed presentations can enhance short- and long-term retention and transfer.^{1,2} This workshop will discuss the key principles that enhance learning in presentation design and apply these principles to improve "bad" slides to improve educational impact.

2 Key Educational Principles

1. Streamline the message
 - a. Our brains can only process a limited amount of information at one time
 - b. Apply Richard Mayer's multimedia learning principles to enhance learning and streamline the message
 - Based on the dual channel processing cognitive theory of learning

2. Promote knowledge transfer
 - a. Focus on concepts attainment rather than facts
 - Give prototypical examples before abnormals
 - Understand the limits of memory
 - The “magic number” is 4, not 7
 - Repeat key points to enhance retention

Basic software skills

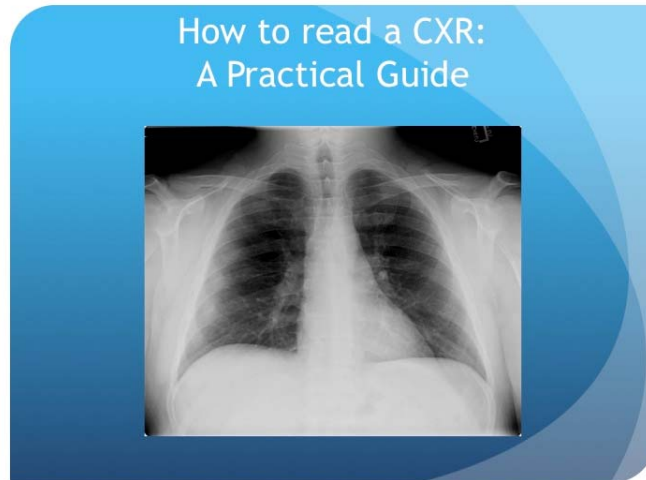
- Using and manipulating text and images
 - Basic animations
 - Using hyperlinks
1. Using and manipulating text and images:
 - a. Avoid the temptation to use the stock templates provided by Powerpoint or Keynote. They are designed to encourage creation of endless lists of bulleted texts, with increasingly small and hard to read subcategories. At best they are not effective; at worst they may actually mislead audiences
 - b. Stock templates often sequester large amounts of open space, limiting users to small areas to post text or graphics
 - c. Start with using high-quality images, from either free or paid royalty-free sites. Choose images that enhance your message, rather than distract from it. It is critical to use high-quality images to allow for image optimization without distortion.
 - d. Whenever possible, use the entire slide to post the image
 - i. One method is to go “Format Background” and select “Picture Fill”. Then choose “File” and pick the appropriate picture
 1. Be aware that this may alter the picture proportions and cause distortion
 - ii. Another method is to either copy and paste or drag the image onto a blank slide. You may then resize the image such that it fills the entire slide (you may even consider allowing a little “bleed-over” to ensure the entire slide is covered by the image).
 1. Make sure to resize by using the handles in the corner of the image to retain the same aspect ratio and prevent image distortion
 - e. Once the background image is in place, you may add text that summarizes your message directly on top of the image
 - i. Ideally find a clear area in the image to place your text box
 - ii. If you are unable to find a clear area in the image, you can place your text box, and then use the “Shape Fill” option to color the

background of the text box. Choose a color that complements the image, but provides enough contrast to highlight your text.

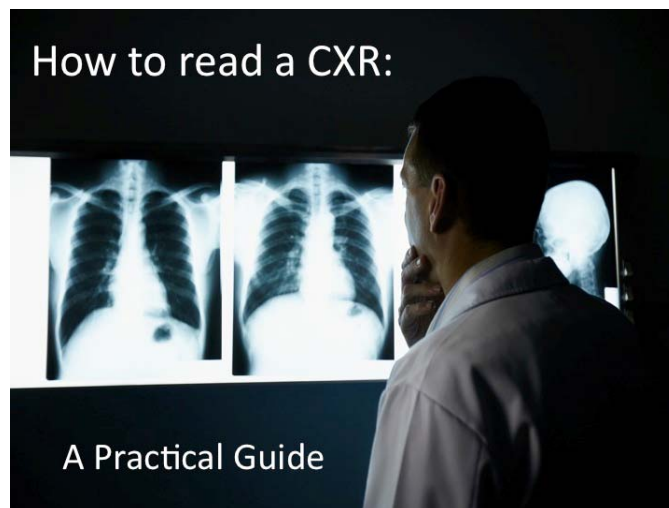
Increase impact and clarity - See these two examples (Before, After)

Examples of image and text manipulation:

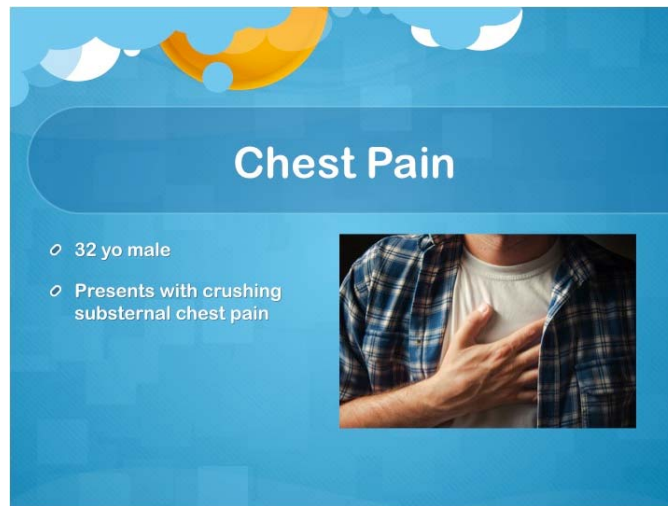
Here is an example of a classic powerpoint introduction slide:



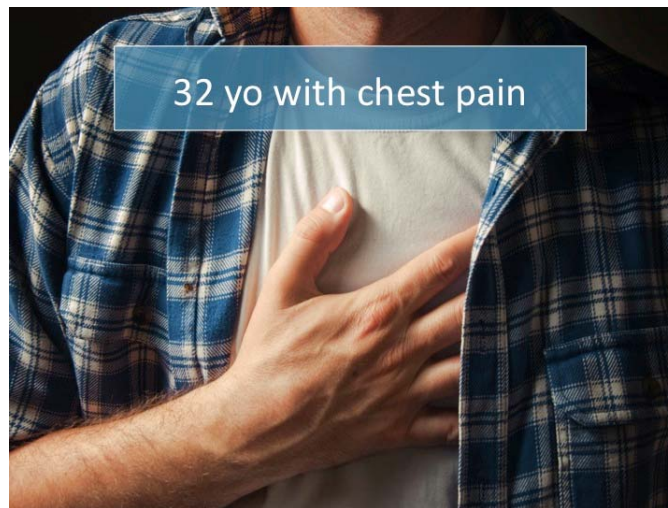
By using a high quality image as the background, it emphasizes the message of the lecture. Note how the text was applied on top of the image in areas of negative space.



Below is another example of a classic powerpoint slide using a stock template:



By using the image as the slide background, it creates a much more visually appealing slide, with more effective use of space. Placing the text in a box over the image conveys the same information as the conventional slide above in a more streamlined fashion. Using the “Shape Fill” tool allows the user to use a contrasting color to highlight the text:



2. Basic Animations: Caution!! Animation can be a very useful tool in regulating the pace at which information may be delivered in a didactic session. However, the strong temptation exists to insert fancy animation or transitions simply for the sake of the animation. This can clearly distract from the efficacy of the lecture.

a. Basic rules for animation:

- i. Stick to basic animations – fading in and out, etc. Avoid swooping, twirling animations, flashing colors, etc. These don't emphasize text, but rather distract.
- ii. **Use animation to control the delivery of content.** If you have a slide with a large amount of facts, the audience will begin reading the slide as soon as it appears on screen. They can read the text much faster than you can speak it, so they will not be paying attention to you. By using basic animation you can **introduce one concept or fact at a time,** and keep the audience focused on you as the presenter.
- iii. Using the resizing function can be a useful tool to highlight a small area of an image, text, etc. The speaker should never apologize for showing something that the audience can't see. If it's important, you should make it big enough to be seen from the back of the room. This also gets back to the caveat that in order to enlarge an image you need to start with a high resolution image.

Example of using animation:

Here is a classic example of a wrist x-ray demonstrating a subtle fracture. This finding would be very difficult to appreciate in a large room, particularly on this small, poorly edited image:



Here is the same image, but with the extraneous parts of the image cropped and the image enlarged using Powerpoint's editing functions. It is better, but the subtle fracture may still be difficult to appreciate:



By using the resizing animation tool, the relevant finding may be magnified, and now is easily visible to everyone in the audience. By animating in the magnified view, the speaker can quiz the audience with the cropped image, and then display the finding in great detail:

Adding cropped image focuses attention to a specific area



3. Using Hyperlinks: Hyperlinks are a valuable tool that allows presenters to present content in a non-linear fashion. A hyperlink in Powerpoint allows the presenter to link the current slide to multiple different options, including another slide in the presentation, another document, or even a URL. It also allows presenters to play video or audio clips, or open other programs. There are multiple ways of inserting hyperlinks, but one of the easiest ways are to use "Action Buttons."

- a. Go to the "Insert" tab. Action Buttons are often under the "Shapes" category. There are a number of different action buttons, which are simply small icons that when you click to insert them in the presentation will

prompt you to set the parameters of your hyperlink. Most are easily recognizable icons such as Forward, Reverse, Home, Sounds, etc:



b. Hyperlinks also give the audience the opportunity to guide the course of the presentation. A common example is the use of hyperlinks to create a “Jeopardy” style game, which is useful for some didactic situations. By clicking on a designated object, in this case the text box with the monetary amounts, the presenter can jump to a different point in the presentation and back to the “Home page.”

What's in A Name?	Down Under	Toxic Nater	I've Got Rhythm
\$100	\$100	\$100	\$100
\$200	\$200	\$200	\$200
\$300	\$300	\$300	\$300
\$400	\$400	\$400	\$400
\$500	\$500	\$500	\$500

Resources and references

- Visit the “references” folder on the wiki to find applicable articles
- Books
 - Multimedia Learning – Richard Mayer
 - Slide:ology and Resonate – Nancy Duarte
 - Presentation Zen and Presentation Zen Design – Garr Reynolds
 - The Back of the Napkin – Dan Roam
- **Stock image sites**
 - **Free Sites:**
 - Stock Free Images
 - Stock.xchng
 - morgueFile

- Freerange
- deviantART
- Pixel Perfect Digital
- Everystockphoto
- Paid Sites:
 - 123RF
 - Canstockphoto
 - Shutterstock
 - Istockphoto
 - Dreamstime
 - Fotolia
 - Thinkstock

For more on design ideas, article reviews, etc... visit my blog at:
www.presentationdesignformeded.wordpress.com

¹ Issa, et. al. "Applying Multimedia Design Principles Enhances Learning in Medical Education." *Medical Education*. 2011;45:818-26

² Issa, et. al. "Teaching for Understanding in Medical Classrooms Using Multimedia Design Principles." *Medical Education*. 2013;47:388-96