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Educator's Blueprint: A How-To Guide for Creating High-Quality Slides

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Abstract

Didactics are the primary modality in which educators disseminate knowledge. The accompanying slides are a critical element, which can enhance or distract from the corresponding presentation. This Educator's Blueprint provides 10 strategies for creating high-quality

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presentation slides. These strategies include: keeping the slides simple, ensuring consistency, making text easy to read, using images wisely, optimizing video integration, presenting data effectively, embedding active learning, avoiding long reference lists, ensuring cultural humility, and optimizing slide design via artificial intelligence. By incorporating these strategies, educators can enhance their slides and improve knowledge translation and retention for learners.

Introduction

Didactic presentations represent a common mode of knowledge dissemination across the continuum of medical training, from medical school through post-graduate and continuing professional development conferences.[1] Residents frequently deliver one or more didactic conference presentations as part of their training. Faculty are also typically required to give a certain percentage of didactics per year and may also be invited to give talks nationally. Therefore, it is important for novice and seasoned speakers alike to be skilled in this arena.

While content and delivery remain critical aspects of the presentation, slide design often receives little attention. However, slide design can have a significant impact on the quality of talk, either enhancing or detracting from it. Poorly designed slides can distract learners and hinder knowledge transfer by increasing cognitive load among learners and speakers alike.[2] Overly complex and text-heavy slides can cause learners to disengage. In contrast, a well-designed slide deck can direct learners' attention to amplify key elements to enhance retention and provide scaffolding for more complex concepts (Appendix).[3–5]

Therefore, educators have a need to better understand the key components of giving a high-quality didactic presentation. Building upon the existing literature, theoretical frameworks, and

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our combined experience as international speakers who have served as speaker coaches and given over 800 invited talks, we will emphasize key elements for creating an effective didactic presentation. As part of a series on enhancing didactic presentations, this Educator's Blueprint paper will focus on 10 practical strategies for creating more impactful didactic slides.

10 Strategies to Enhance Slide Design

1. Keep It Simple

Speakers often duplicate information shared verbally with content written on slides, resulting in a combined slide and document known as a "slideument".[6] While well-intentioned, this can create overly complex, text-heavy slides that distract from the speaker's message. Dual-channel theory suggests the audience processes written text and auditory information through separate channels.[7] Therefore, while small amounts of text can help to anchor concepts, larger amounts of text will force learners to choose a pathway, leading many to focus preferentially on reading the slide instead of listening. In order to avoid this, speakers should design simple slides that emphasize a single idea per slide item and include minimal text or extraneous information.[8] As a general rule, slides should have no more than 3-5 words in a given line, and use phrases in place of sentences to emphasize them as supplemental to the verbal discussion.[9] Presenters should also avoid complex slide or line-level transitions. These forms of animations can distract learners and negatively affect speaker timing.[3] If a speaker must use a transition, keep it short, simple (e.g., 'appear' or 'fly in' set at less than one second), and ensure its relevance and necessity.

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2. Consistency is Key

Presenters should use a consistent theme with appropriate and complementary colors. Selecting a template at the outset and applying it to all slides can facilitate visual consistency. By having a cohesive theme, this allows the learner to engage and follow the threads that are woven through the presentation. While Microsoft PowerPoint and Keynote offer internal slide decks, numerous external groups provide more robust and visually appealing slide options (https://www.canva.com/presentations/templates/, https://slidesgo.com/, https://slidesmania.com/free-templates/). Following template selection, choose a consistent and complementary color scheme.[10] Presenters can make use of several resources to identify complementary colors that best align with the colors in the slide background or template (https://coolors.co/, https://www.canva.com/colors/color-palette-generator/, https://color.adobe.com/). When selecting colors, ensure sufficient contrast to allow for easy differentiation of text from the surrounding background.[11] Presenters should also consider the visibility of color combinations for those with color vision deficiency and other visual impairments (https://venngage.com/blog/color-blind-friendly-palette/). In general, presenters should avoid combining red and green together. While color can emphasize key elements when used strategically, too much color can distract learners; therefore, presenters should avoid excess use of too many different colors in their slides.

3. Make Text Easy to Read

Begin by identifying anchoring elements within the slide (e.g., headings, subheadings, textboxes) and using overall layout or copy-paste options to ensure consistent alignment and format across slides. When selecting a font, choose a clean and easy-to-read font in the sans-serif category

(e.g., Arial, Calibri, Futura, Helvetica, Nova, Proxima).[11] Sans-serif fonts do not contain 'serifs' (i.e., extended lines or marks at the corners of the letters), allowing relatively sharp distinction between letters. Additionally, avoid rare or complex fonts that may appear differently on computers that do not support them. Presenters should use a large enough font size such that learners can read it easily from a distance. As a general guide, we recommend nothing smaller than 24-point in PowerPoint (or equivalent); however, if the presenter knows or has access to the venue in advance, we recommend trialing this by putting up the slide and reading it from the farthest seat in the room. Avoid using all capital letters as this can be harder to read, thus increasing extrinsic (unnecessary) cognitive load. Incorporate underlining or italics judiciously only to emphasize single elements or words not readily apparent. Often, this can be emphasized during the presentation by the speaker through their speech and body language instead of using italics. When choosing to use underlining or italics, one should consider whether simply listing the specific element in isolation may increase impact of the slide, rather than highlighting it within a phrase. Finally, avoid filling empty space around words; instead, use the blank space to emphasize and draw attention to the text.

4. Use Images Wisely

Deeper learning can occur when visual aids (e.g., images, graphics) complement textual and verbal information.[5] When choosing an image, consider how it melds with the theme and story that is woven through the presentation. Consistency and cohesiveness are important to help the audience connect to the content. Images should link the verbal portion of the talk to an experience, memory, or patient case. Images do not necessarily provide benefit if utilized simply to avoid a blank slide. Sometimes an empty, black-background slide without a picture can

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effectively focus audience attention and signal importance. Also, avoid overly complex images or figures, which can shift learners' attention towards the slide instead of the speaker. Select high-resolution images and ensure there are no copyright issues. While copyright issues can be complex and context dependent, searching for images licensed under Creative Commons is the simplest way to assure compliance.[12] **Figure 1** provides a list of websites which provide free, high-quality images. Speakers can also consider creating their own images or using artificial intelligence (AI) software to create tailored images. Icons and graphics can help illustrate points or anchor key points similar to infographics.[13]

5. Optimize Video Integration

When used appropriately, videos can enhance a presentation or create a cognitive break. Examples of this might include ultrasound videos to demonstrate dynamic findings or simulated or real patient stories (with permission) to humanize the case.[14] Ensure all videos are properly embedded and can play on other computers. Microsoft PowerPoint and other programs typically have a function to insert videos through their platform. Directly copying a video into the presentation may lead to playback issues - particularly when using a different computer. Also avoid using videos that require an active internet connection due to the possibility of slow connectivity or site access restrictions. When using ultrasound or other imaging videos, consider setting them to auto-play and loop either indefinitely or for a set time period. Many programs will not allow two videos to play simultaneously or may result in video lagging. Therefore, when playing two videos side-by-side, presenters should convert them to a GIF format so that they auto-play in an image-like format. Keep in mind that videos will cause learners to focus more on the screen, which may distract from the presenter's talk; therefore, this should generally be used sparingly and GIFs reserved only for when repeated views of imaging (e.g., ultrasound) are

needed. Additionally, presenters should either pause or narrate the findings while the video plays, rather than presenting separate or new information. This will reduce the overall cognitive load on learners and ensure the verbal content and imaging concepts align to enhance retention.[5] Prior to the presentation, speakers should go to the room early to ensure the video functions properly and volume of the audio is adequate. In case of technical issues with video playback, presenters should have a back-up slide with a screenshot of the video to discuss the key elements or be prepared to illustrate the example verbally.[15]

6. Present Research Data Effectively

A tendency to use charts and tables to present research findings in manuscripts has naturally extended to didactics. However, many of these elements can include extraneous information or require extensive explanations (usually reserved for the footnotes of a figure). Often, this leads to figures with small font sizes that can be hard to read. Rather than copying a figure or table into a slide presentation, speakers should create their own and tailor it to focus only on the key elements.[8,10] This could include either splitting up tables and figures across separate slides or graying out portions and presenting them sequentially to integrate them into the bigger picture. When possible, convert numerical percentages and quantitative data into visual representations. For qualitative research, consider playing a recorded audio file of the participant or a research assistant verbally stating the quote, rather than simply reading it off the screen.

7. Enhance Slides with Embedded Active Learning

Presenters can utilize a number of technological tools to increase audience engagement and enable active learning.[16] Examples of technology-enhanced audience response systems include Poll Everywhere, Slido, Plickers, Kahoot!, Mentimeter, and Quizizz. Additionally, real-time use

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of an editable whiteboard (e.g., Jamboard, Miro, Padlet) can allow learners to co-create information in real-time. Trial these tools in advance and have non-technical back-up options available in case of technical failure (e.g., raising hands, thumbs up/down, physical white boards). QR codes can also be used to provide attendees access to worksheets or role-playing scenarios on their own mobile devices.

8. Avoid long lists of references

Though learners benefit from accessing references to review source material, presenters should share references at the end to avoid distracting learners from the presentation. However, long lists of references can overwhelm learners, make it challenging to filter the most high-yield resources, and weaken the ending of the talk by diluting emphasis on key points. Instead, we recommend creating a handout with the key references and any other pertinent components of the talk and linking this via a QR code. If sharing slides digitally with the audience, you can add a reference slide after an empty black-background slide at the end of the presentation. This embeds information into the document without committing the speaker to showing the slide during the presentation.

9. Intentionally Incorporate Diversity and Inclusion and Ensure Cultural Humility

Studies have shown a white and male predominance among figures in both textbooks and publications.[17–19] When selecting images, presenters should depict a diverse population. Include a wide range of images for patients (e.g., demonstrating rashes among different skin tones), and ensure balance of depicted physicians across gender, race, ethnicity, and other demographics. Use person-first and inclusive language when describing patients. The Centers for Disease

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Control and Prevention provides a summary of preferred terms for various groups here: https://www.cdc.gov/healthcommunication/Preferred_Terms.html. When presenting a patient case, avoid including patient descriptors that are not necessary to the case or in a way that perpetuates stereotypes. Modern software, such as the Speaker Coach function in Microsoft PowerPoint, includes a specific feature that assesses for inclusive language.

10. Optimize slide design with AI

Several AI programs can create slides or refine slide design. Early in the slide design process, presenters can use AI software (e.g., ChatGPT) to organize the order and overall focus of slides. As the process continues, AI software can also create slides or specific elements (Figure 2). Microsoft PowerPoint also has a Designer program that will assist with the visual organization of images and text on slides. Additionally, AI software can help to create infographics or specific images (e.g., a woman doctor holding a child's hand). Finally, AI can provide feedback on slides, assessing for discordant elements, contrasting colors, or excess complexity.

Conclusion

In this manuscript, we described 10 strategies for creating high-quality didactic slides. While not exhaustive, these strategies facilitate the creation of more effective slides. Nonetheless, speakers must solicit feedback and continue to refine slides over time.

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Figure 1. List of Resources for Free Images

Burst (https://www.shopify.com/stock-photos)
Canva (https://www.canva.com/features/free-stock-photos/)
CreateHER Stock (https://createherstock.com/)
FOCA (https://focastock.com/)
Freepik (https://www.freepik.com/)
Freestocks.org (https://freestocks.org/)
Gratisography (https://gratisography.com/)
Life of Pix (https://www.lifeofpix.com/)
MorgueFile (https://morguefile.com/)
Negative Space (https://negativespace.co/)
Pexels (https://www.pexels.com/)
PICNOI (https://picnoi.com/)
Picography (https://picography.co/)
Pikwizard (https://pikwizard.com/)
Pixabay (https://pixabay.com/)
Pocstock (https://www.pocstock.com/)
SAEM AEUS SonoGallery (https://www.saem.org/about-saem/academies-interest-groups-affiliates2/aeus/resources/aeus-image-bank)
Skitterphoto (https://skitterphoto.com/)
StockSnap (https://stocksnap.io/)
StockVault (https://www.stockvault.net/)
Unsplash (https://unsplash.com/)

Figure 2. List of Artificial Intelligence Programs to Assist with Slide Design

Canva (https://www.canva.com/magic-design/)
ChatSlide (https://chatslide.ai/)
DrLambda (https://drlambda.ai/)
Microsoft Copilot (https://copilot.microsoft.com/)
Rollstack
SlideSpeak (https://slidespeak.co/)
Slides Wizard (https://slideswizard.io/)

Smallppt (https://smallppt.com/)
Tome (https://tome.app/)

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FOCA (https://focastock.com/)
Freepik (https://www.freepik.com/)
Freestocks.org (https://freestocks.org/)
Gratisography (https://gratisography.com/)
Life of Pix (https://www.lifeofpix.com/)
MorgueFile (https://morguefile.com/)
Negative Space (https://negativespace.co/)
Pexels (https://www.pexels.com/)
PICNOI (https://picnoi.com/)
Picography (https://picography.co/)
Pikwizard (https://pikwizard.com/)
Pixabay (https://pixabay.com/)
Pocstock (https://www.pocstock.com/)
SAEM AEUS SonoGallery (https://www.saem.org/about-saem/academies-interest-groups-affiliates2/aeus/resources/aeus-image-bank)
Skitterphoto (https://skitterphoto.com/)
StockSnap (https://stocksnap.io/)
StockVault (https://www.stockvault.net/)
Unsplash (https://unsplash.com/)

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SlideSpeak (https://slidespeak.co/)
Slides Wizard (https://slideswizard.io/)
Smallppt (https://smallppt.com/)
Tome (https://tome.app/)

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