

Delivering a Lecture: Visuals

Preparing and Planning a Lecture

Best Practices for Teaching and Learning

Well, that was fun. Now, let's return to other aspects of delivering your lecture.

Part of your delivery will involve either writing on the blackboard or using PowerPoint slides. When considering either the blackboard or PowerPoint slides, it is important to keep a few principles in mind.

When we use the blackboard, we tend to write key points and draw figures and diagrams. Because most instructors do not plan what they will write on the blackboard, most of the content, organization happens during the actual delivery. Leading to mistakes and making the lecture difficult to follow. Therefore, when using the blackboard, you should keep in mind the accuracy and visual organization of content.

PowerPoint has become a popular tool for instruction. Instructors use PowerPoint because it allows them to convey both written and visual information easily.

However, these same aspects can make PowerPoint slides into an ineffective communication tool for teaching. The tendency is to put everything you need to say and refer to during your lecture in your PowerPoint slides. Therefore, when using PowerPoint slides, you should keep things simple. Remember, less is more.

When using the blackboard, make sure to write clearly. Studies have shown that students write approximately 90% of the material written on the board versus approximately 60% of what is said. Therefore, make sure your handwriting is legible.

Pause regularly during your lecture to write down key items as you speak. This gives the students time to write down important information, as well as time to process what is being said. Remember that students probably do not know the information being presented, and that they are likely to be seeing it for the first time. Providing time to write and think about the information being presented is key.

When drawing figures, make sure you label everything clearly, including the x and y-axis in figures. And corresponding units of measurement. When you write a formula for the first time, make sure to define and label all of the variables within the formula.

This also applies for important terms. Write them down and define their meaning so the students can refer back to them throughout and after the lecture.

When using the blackboard, make sure to space your content throughout. Organize your content so that related materials appear in the same location within the blackboard. Use lines to divide sections within your lecture.

If you have access to more than one board, you might want to use one of these boards for information you would like your students to refer to throughout the lecture, such as the goals, the learning objectives, the outline, the key terms, formulas, and concepts defined.

Effective blackboard technique requires planning. Consider using a notecard or a small piece of paper to represent a single blackboard. Plan and write everything you would write beforehand, utilizing a new notecard, a piece of paper each time you need to erase and use a clean blackboard.

When using PowerPoint, the temptation is to write as much as possible on the slide. Here's an example that illustrates this point. What is wrong with this PowerPoint slide? There's too much text. It is difficult for students to follow what you're saying. They're actually trying to read the long sentences in your slides at the same time. This results in cognitive overload, confusion, and loss of students' attention.

Remember, we're not good at holding more than seven items or abstractions in working memory. Therefore, keeping texts to a minimum and simplifying diagrams is key. Instead of using full sentences, use a few words to highlight each of the key points. When possible, use images rather than text. To illustrate a point, you're articulating verbally with an image is more effective than just having text on a slide.

Here's an example of what we mean. On the left is a diagram illustrating the different cognitive levels of Bloom's Taxonomy. On the right, it's a different way to represent the same content with lots of text. The image on the left is much easier for a student to understand. And does not lead to cognitive overload.

We recommend that you try to use a blackboard as much as possible for texts and figures. And use images in PowerPoint mostly for things that are hard to draw or illustrate.

This line illustrates how using both lots of text and images on a slide creates lots of noise and detracts from your message. This slide also illustrates the importance of using high quality images in your PowerPoint presentation. Using low resolution images that you cannot properly see is ineffective. Using high resolution quality images that you can see clearly is more effective than using low resolution images.

Instead, try to use the highest possible resolution of the image you want to use. And scale the image in PowerPoint. If you're not able to find a high enough resolution image, consider a different image. Or if possible, draw it yourself on the blackboard or in PowerPoint.

Last, consider the colors, number of colors, fonts, and the use of animation carefully. Try to minimize noise so that your presentation does not detract from the material you are conveying.

When considering colors, optimize contrast. For example, a dark font on a dark background leads to a text that is not readable. Consider there are a lot of people, especially men, cannot tell the difference between green and red. And keep in mind that bright colors, like yellow, are good for dark backgrounds, but are hard to read in light backgrounds.

Make sure to use animations sparingly and only to illustrate processes relevant to your key points. Unnecessary visuals can detract from your message.

The same goes for the number of different fonts. Use one or two different fonts. Keep it simple. And don't give your students a reason to not hear what you're saying.

In this section, we've discussed how to prepare an effective lecture. This involves using backward design for defining our goals and learning objectives, considering ways to grab students' attention, and retaining it through the use of attention-getters and through the division of the lecture into small sections that are separated by small group activities, and various formats to consider when structuring the content.

We also discussed and demonstrated effective modes of communication. In particular, we highlighted intonation, movement, and pacing as ways to engage and emphasize key content. We also practiced some exercises used by professional actors to reduce anxiety and increase performance. Lastly, we covered how to use blackboard and PowerPoint slides during teaching to emphasize clarity, accuracy, and simplicity as the key elements in these instructional modes.

I would like to end the session by asking you to reflect on the following question. How can you incorporate what we have learned today to improve aspects of lecture preparation and delivering in your own teaching?