Designing Effective Slides

A Study Guide
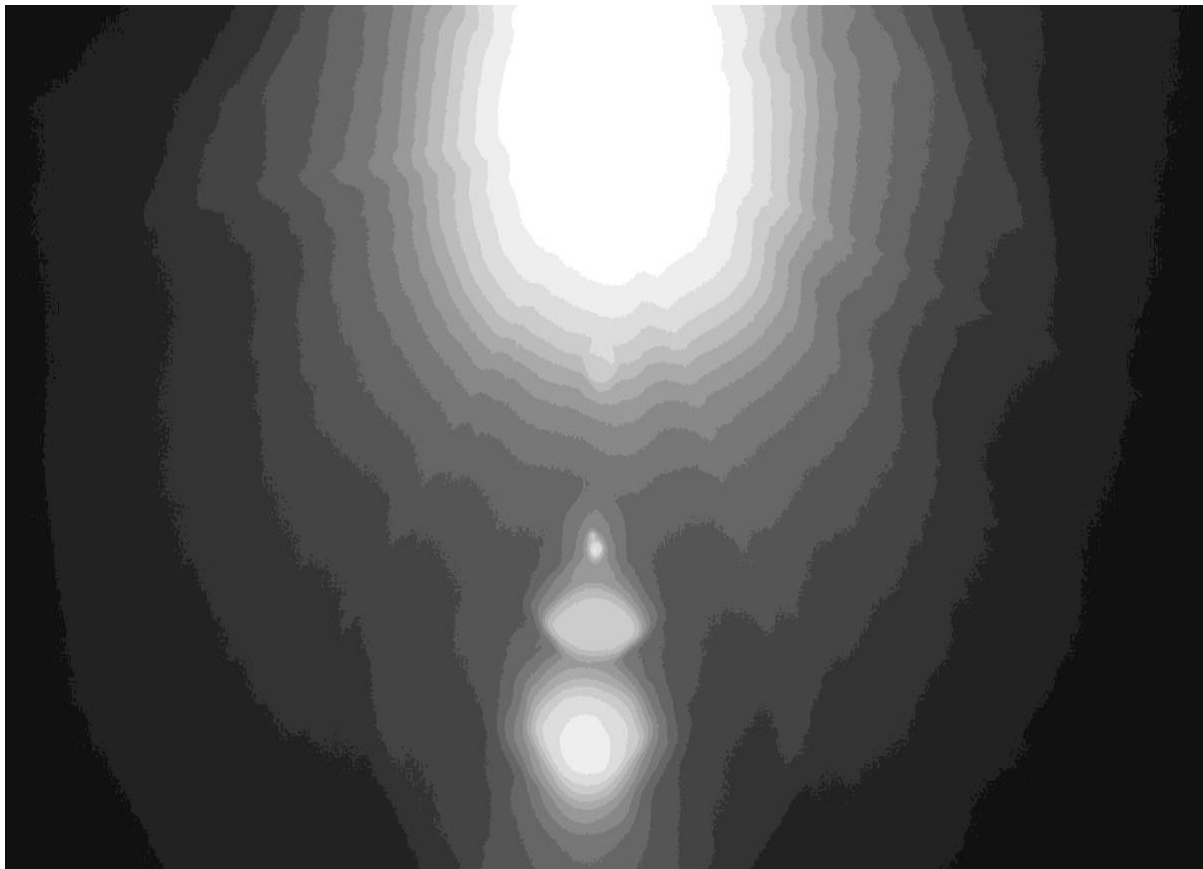
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INTRODUCTION

Projected images have been around for centuries. One of the earliest records of their use is from a work of the early 15th century, *Bellicorum instrumentorum liber cum figuris* by Johannes de Fontana. In that book, there is an illustration of a figure holding a lantern with what appears to be a small cut out image of a demon. This image is then projected on to a much larger screen. This simple light and stencil may or may not have been the first 'slide projector', but probably the first true magic lanterns were developed around the time of the development of lenses in the 17th century.

Throughout that period and well into the 19th century, these projectors became increasingly sophisticated, as did the slides that accompanied them. Hand-painted, coloured images with complex animations could be shown, and it was only the advent of true moving images in the form of film, introduced by the Lumière brothers in Paris in the late 19th century, which led to a decline in interest in these essentially static images.

Slides, or more correctly glass lantern slides, continued to be used, especially for educational purposes, until the introduction of the 35mm slide in the 1950s. These small, plastic transparencies were the mainstay of the slide world until the advent of PowerPoint in 1987. This presentation software package was originally designed for the Macintosh but was bought and developed by Microsoft who launched it in 1990.

Throughout the 1990s, many other software packages for slide design were introduced and as they began to dominate, there was a steady decline in the use of 35mm slides.

In the past, most academic presenters would have had to outsource the production of their slides to a graphics department, i.e. to a group of people who were trained in art and design and who knew what they were doing. Now, with the introduction of desktop software, presenters could make their own slides—for good or for bad—and the real problems started. Those problems are still very much with us today.

Today, there is a wide range of software options for producing presentations. By far the commonest in routine practice is Microsoft PowerPoint. Mac users will also be familiar with Apple Keynotes, which is very similar and is now available for iPad. In addition, there are Prezi, Sliderocket, Corel Presentations and many more. It's not my intention to go through these various packages in detail, nor do I want to critique them or give recommendations for the following reason. When it comes to slide design, I don't think it matters what package you use as long as you use one you like and with which you are familiar. What matters much more are the rules you apply when you use the software. All these software packages allow you to create excellent slides, but they also allow you to make truly terrible ones with almost equal ease. You, in other words, are the most important component of the software and the decisions you make in terms of design will make a much greater impact on the final product than any difference in the software. I have never seen anyone, who made poor slides, make better ones by changing the software package they used. The elements of good design are in the designer, not the tools.
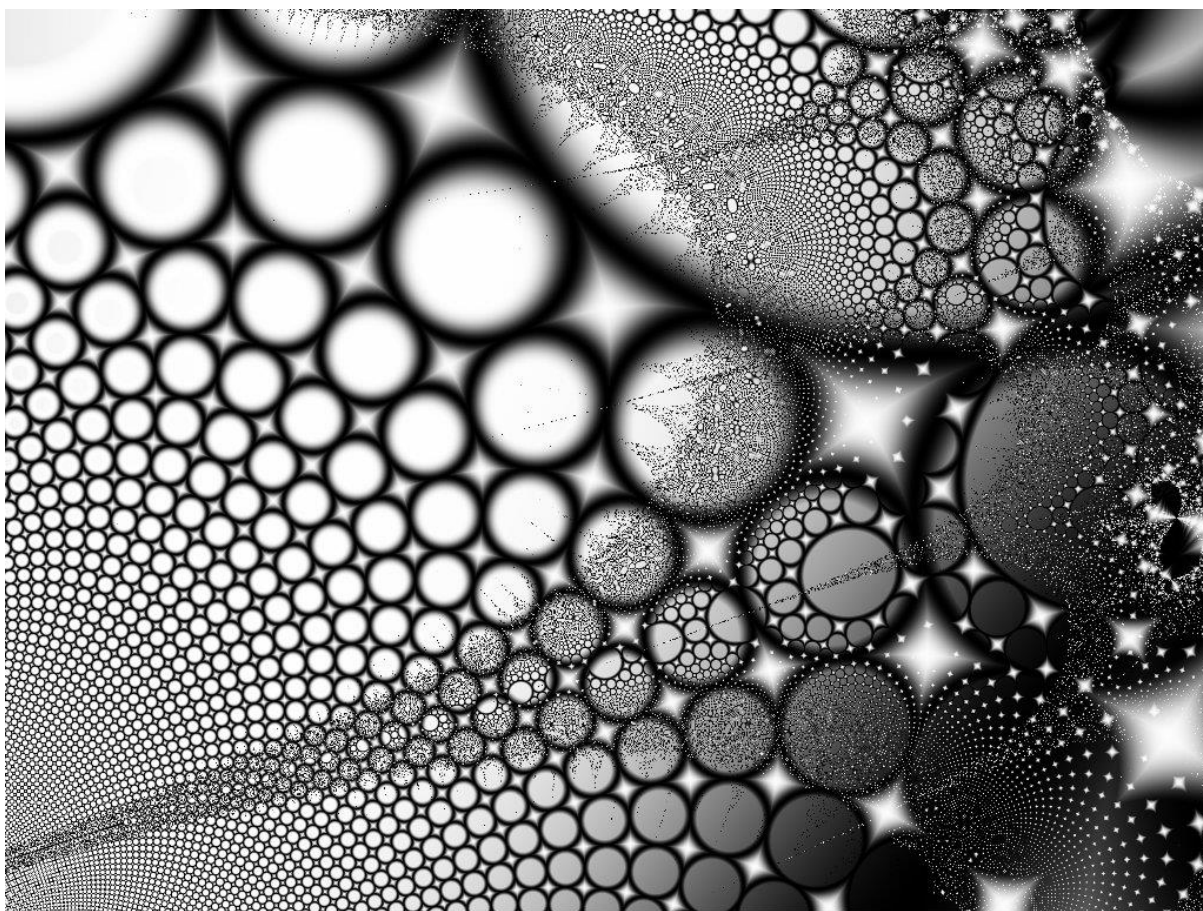
WHAT ARE SLIDES FOR?

Most speakers will use visual aids to enhance, illustrate and signpost their presentations, and the most commonly used visual aid is the slide.

University lectures, conference presentations, business pitches, classroom talks— these are just some of the many examples of presentations that may be supported by a slide show. Speakers use slides for different purposes. For some presenters, their slides are their script. The slides will be heavily laden with text, and they will be read word for word from the lectern. For others, their slides will be a series of prompts and cues, helping them through the presentation with a series of gentle reminders. And, for other presenters, their slides will not be for them at all, but for their audience. The latter group of presenters are using their slides most appropriately. Slides should be used as visual aids for the audience, not necessarily for the speaker. However, to be a visual aid the slide must be visual and must be helpful. To be 'visual' it must be clear, easily comprehended and, well, quite simply visible. To be an 'aid' it must help the audience to understand what the speaker is saying. The latter may be achieved by using slides to illustrate a point, to clarify a complexity or to carry forward an argument.

The principles of good slide design are not complicated with simplicity as the overriding consideration. Despite this, most presenters in academia are either not aware of them, or do not feel they apply to them. I suspect it is the latter. The application of these principles generally results in simpler, cleaner, less cluttered slides, but many presenters apparently see simplicity as something undesirable, preferring to present more rather than less, in case their talks will be deemed simplistic and therefore insubstantial. In this respect the approach of the renowned German/American architect Ludwig Mies van der Rohe is appropriate— 'Less is more,' he counselled, and he was right.

Some think simplicity will betray them, leading the chairperson, the other speakers and the audience to conclude that their work itself is simple, and therefore lightweight, just because they are explaining it in a simple fashion. In fact, simplicity is appreciated by audiences the world over. Indeed, it was Leonardo da Vinci who said: 'Simplicity is the ultimate sophistication' although admittedly he did say it backwards and written in code. If you prefer your inspiration a little less esoteric and a little more up to date, Coco Chanel said, 'Simplicity is the keynote of all true elegance. Or, in other words, when it comes to slides, think: *little black dress.*

Clear, concise messages unadorned by the complexity that is possible through modern technologies, delivered in a simple unassuming style will usually win the day. As you gain experience and confidence, you will develop your own style, but this should never be at the expense of the simplicity with which you began. Great presenters have style, but they also have clarity and above all, simplicity. Never mistake simplicity for lack of content or depth.

Thus, keeping it simple is a highly desirable approach, and one that your audience will welcome. In the following sections, I will outline the basic rules of slide design, which I have repackaged into a simple five-step process. You can remember this approach using the acronym, SWIPE. This stands for Style, Words, Images, Palette and Extras.

Before we elaborate on this it is worth acknowledging the subjective nature of this topic. For every pointer I offer, there will be a presenter somewhere, who either disagrees with me or who thinks that my point is simply irrelevant.

I would argue, however, that these rules are not about artistic niceties, but about whether your audience can see your slides, read them and assimilate your points quickly. Unless they can do this, your presentation will not be enhanced by your slides and may even be destroyed by them.

If, on the other hand, you do follow these pointers you will produce slides that are clear, simple and that go a long way to enriching your presentation rather than diminishing it.

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'S' IS FOR STYLE

The first thing you have to do when designing slides is to decide on their overall look, their format or, as I have termed it, their style. This includes choosing a background, deciding on the use of headers or other devices that will appear on every slide (such as your institution's logo), as well as the font or fonts used throughout.

Different presenters like different things—it would be boring if we were all the same—but within a lecture it is a bad idea to try out every background and slide style in your library. Thus, the first rule, when it comes to styling slides, is consistency. Pick a style and stick with it throughout the presentation. Moreover, I would suggest that your style should be consistent between presentations as well as within them. This way your slides will be interchangeable between your lectures. When we're asked to give a new presentation most of us will recycle some material and therefore some slides from past talks. If your own slides are stylistically consistent, it will be much easier to mix and match when making up the new talk.

The second rule in slide styling is simplicity. The array of different styles available as templates within the various software packages is bewildering. On top of that you have the ability to custom design your own, so the possibilities are literally endless. Where do you begin? Again, I would counsel a simple approach. Look at other presenters' slides and decide what you like and what you think works well.

Several examples using templates available from Microsoft PowerPoint are shown in figure 1. In my opinion, all these have problems although I, like you, prefer some more than others.

Fig. 1. Examples of style templates for slides.

(a)
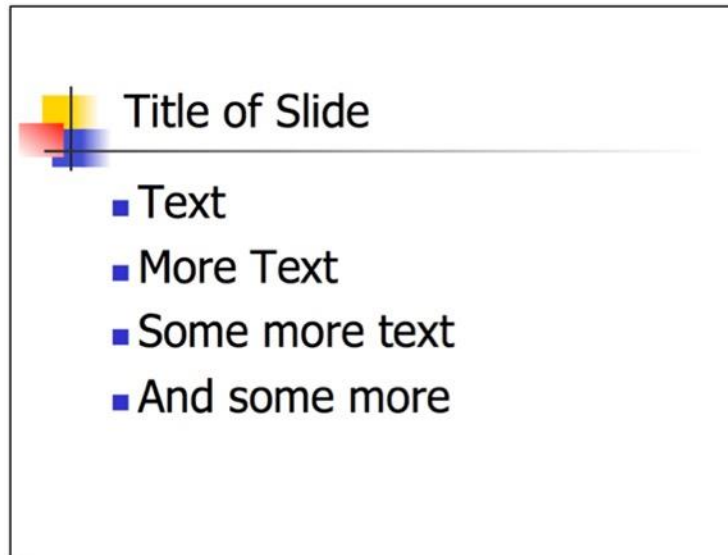
(b)

(c)

(d)

Example (a) has clear simple text, but on a white background. Many presenters, prefer light text on a dark background as they believe it is easier to read and creates an illusion of depth in the slide. Other presenters, myself included, prefer light backgrounds with darker text and images. One of my reasons for this preference is that the slides being generally lighter often add much needed illumination to a very dark lecture room. This template example also has a simple and colourful little logo that will be interesting for the first couple of slides, but by slide 37 may well have lost its appeal.

Example (b) has light text (white or yellow) on a darker pink background, but again this slide has a graphic element—in this case, what looks like a firework—in the top right quadrant. Even if it's relevant to your talk, just like the little logo in example (a) it will become grating if it is present on every slide.

Example (c) has a background graphic of autumn leaves, which I feel adds unnecessary complexity to the slide and inevitably detracts from the texts and images. The font used is Times New Roman, which is often thought to be more difficult to read on screen compared to Arial for example, even though it is easier to read in printed text. Also, the colour scheme here is an odd brown and yellow combination, which to my eyes says "dull".

Example (d) is one I have seen used more than once, but my main concern here is why would you allocate a quarter of your precious slide space to a meaningless graphic that is again going to become very boring after a few slides.

One concern with all these examples, and indeed with many pre-set templates, is the inclusion of fixed design elements that will appear on every slide. These are frequently gratuitous images or graphics that have no purpose other than to provide decoration. There really isn't enough space on any slide to include anything that doesn't need to be there.

These are just four templates selected from hundreds. Of course, you can create and work to your own template, which can be anything you choose. Commonly this will be a plain simple monochromatic background with a simple header device and a simple uniform font. As noted above, I personally do not like meaningless graphics such as swirls or leaves or snippets of Mondrian's Art in the corners as I feel it detracts from the content of the slides and very quickly becomes tedious.

The use of graduated backgrounds, where the colour is darkest at the top or bottom of the slide and gradually lightens as you move down or up the slide, can work well, but, again, it is a subtle complication that you don't really need, so think carefully before you include it. Also, if the gradation is extreme—for example, going from black at the top of the slide through every shade of grey to white at the bottom—what colour should your contrasting text be? The same problem arises for those who opt for a rainbow effect of background colour, and this is a complexity that is best avoided.

Some presenters are fond of using background photographs, which may or may not have anything to do with the content of the slide. I have seen holiday photographs used depicting beautiful beaches, underwater coral reefs, or exotic temples; I have seen snapshots of the presenter's children and even, on one memorable occasion, their pet. An example is shown in figure 2. In this, and all the other occasions I have mentioned, the use of a background photograph is usually very distracting and is best avoided.

Fig. 2. Using a background photograph can be distracting.
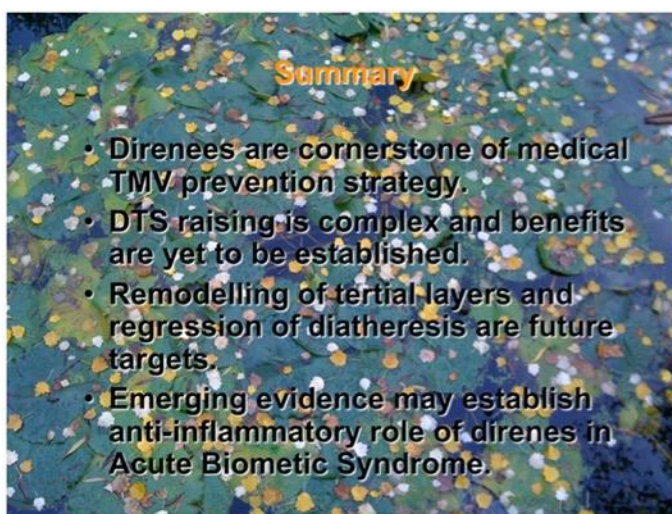
You may be obliged to have your institution's logo on the slide and indeed may be tied in to a corporate style overall. In many instances, it seems that the people who prescribe these slide styles have no graphic design credentials and may never even have given a presentation. As such the corporate or institutional style may be very awkward. That said, you will often have to go along with it, but where possible keep these additional elements to a minimum especially when they include text. A University crest is one thing, but do you also need the full name of the college on every slide, along with its motto in Latin or even its mission statement? Also, while you have to comply rigidly to your institution's style guide for your title slide, might you use your own, simpler, less-cluttered approach for the content slides?

When it comes to choosing type face and fonts the criteria are simple: the text must be clearly visible and easy to read. Type faces roughly fall into two categories: so-called *serif* fonts and *sans-serif* fonts. Serif fonts have little twiddley bits on the letters and the most common example is Times Roman. Sans-serif fonts on the other hand are cleaner shapes without additional flicks and examples of these are Arial, Verdana and Gill Sans MT. So, which should you use on your slides? People tend to read serif fonts slightly faster and more efficiently when they are reading text on paper. That's probably why most newspapers and magazines use serif fonts. However, when you ask people to read text projected on a screen, they tend to favour sans-serif fonts. For that reason, I always use sans-serif fonts in my slides. Whether this distinction holds when the text is not projected but displayed, say on a plasma screen, is debatable. Given that you often don't know what media will be used until you show up to give your talk, its best to assume they will be projected and go for the simpler type faces.

Again, as with backgrounds, consistency is important and the same font should be used throughout, although the size and/or colour may vary for emphasis and effect.

When it comes to size, a useful guide is never to use a font size smaller than about 24.

Overall, your aim should be to keep the style of the slide simple and allow its contents—the words and pictures you will add—to speak clearly for themselves, unmuffled by excessive design elements, muted colour schemes and difficult to read fonts.

'W' IS FOR WORDS

The most widely perpetrated slide crime is overuse of text. Virtually every guide written on the preparation of slides emphasizes that there should be a strict limit to the number of lines of text on a slide. Depending on the guide, this is usually between 5 and 7.   In addition, a good rule of thumb is that each line should only have 5-7 words.

This is very constraining, especially if you are using your slides effectively as notes that you plan to read to your audience. Well, first of all, this should not be the purpose of your slides: they are there to help emphasise and illustrate the points that you are making, not as your script. Most of the words in a lecture should be spoken, Those that are on the slides are simply signposts or key words to underscore your arguments. Second, if your slides contain virtually all the text you plan to say, they will be impossibly dense and completely dysfunctional as visual aids, being neither visible nor helpful.

The text on your slides should be clear, simple and short. The use of full sentences is rarely required unless you are showing a quotation, and bulleted points are always preferable to prose. The use of bullet points rather than sentences or paragraphs of text forces you to be concise and to focus on only including the key words and phrases on your slide that you need to make your point. As you are designing and editing your slides, always ask yourself the question, "Can I say this in fewer words?'

When it comes to checking the number of lines on your slide, remember to include any header or title line you are using, as well as any footer or reference line—these lines are still on the slide and your audience has to look at them and read them.

Often speakers like to include slide numbers and possibly the date of preparation on their slides. I would strongly advise you to resist this. These figures will appear in the corner of the slide and are nothing but a distraction. Some slide making programs will automatically default to this format. If this is the case, you should take the two minutes needed to remove these features so that your slides are cleaner and less cluttered. Why would you want a date on your slides—on every slide? Vintage wines, yes: slides, no. It only means that if you ever want to use the slides again, they will immediately be out of date. Similarly, what is the purpose of a slide number? Perhaps if you have twenty slides and you are so nervous giving your presentation that you are unable to orientate yourself, it might be comforting to know you are half way through when slide number ten appears. But really, you should not have to rely on such an approach. All you have done is included extra, unnecessary information and text on a slide. Also, if you choose to use the same slides again, perhaps mixing them with others and slide numbers are fixed elements, your numbering strategy will be blown. As always, you should only include text and images on a slide that are absolutely necessary. There is no space for anything that is less than essential. And remember, slide numbers and dates will contribute to that precious line and word account.

In academic circles, most slides will carry some form of referencing. Unfortunately, more often than not these references are unreadable, even by the speaker, as the font size used is so small. It seems obvious to state that there should be no text on your slide that cannot be read, but every day I see slides being used that contain miniscule reference lines at the bottom. If you need references, make them readable and keep them as short and simple as possible. Occasionally several references are used—I have counted up to ten on one slide. Again, it may be stating the obvious, but don't try to pack too much information into too small a space. If the content of your slide requires ten references to back it up, you are probably asking too much of that slide.

When counting lines of text on a slide or words in a line you may ask: do the rules I have just outlined apply if you decide to build the text on your slide—line by line or section by section? In some ways using 'builds' like this is akin to showing a series of related slides rather than showing a single slide. In this respect, the rules may be relaxed a little. However, the ultimate slide, when fully built should not be so overwhelming that it becomes confused or difficult to read. Overall, I would suggest trying to adhere to the 5-7 lines of text with 5-7 words per line rule as closely as possible, even if you plan to build slides.

Lastly, some lecturers like to use upper rather than lower case lettering. This is presumably done for emphasis, as capitalized words appear to shout from the page or screen. What you need to be aware of, if you do this, is that people read capitalized text significantly more slowly than lower case text, and this is especially true if they are reading your text in a second or even a third language, which might well be the case if you are presenting to an international audience. If you want the text on your slides to be as easily read as possible, then I suggest you stick to lower case except for normally capitalized letters.

'I' IS FOR IMAGES

The use of images whether they are photographs, diagrams or graphs, is, in my opinion, the most important use of slides. Words you can say, but pictures you have to show.

Graphs

Many of us will use graphs such as histograms, line graphs and scatter plots to illustrate our talks. These images may be complex, and many presenters fail to give their audiences enough time to take them in. The presenter will of course be completely familiar with the graph he or she is showing—they may have even collected the data used to construct it and drawn it. But, of course, that means the presenter has perhaps had days, maybe even weeks to become familiar with the graph and its significance. Now, that same presenter expects you, a member of the audience, to assimilate that graph in just a few moments.

This is a problem peculiar to slides where a pre-drawn image is shown. In days gone by, when a presenter had to rely on a blackboard and chalk, if they wished to show a graph, they would have had to draw it. The advantage of this is that most presenters can only draw at the same speed as an audience can understand.

Put simply, graphs are hard to take in and the audience needs time to do so. Look at the example in figure 3. Here, for example, a speaker might say:

Cholesterol and heart disease are obviously related…

And move on.

Fig. 3. Slide showing the relationship between cholesterol and risk of coronary heart disease.
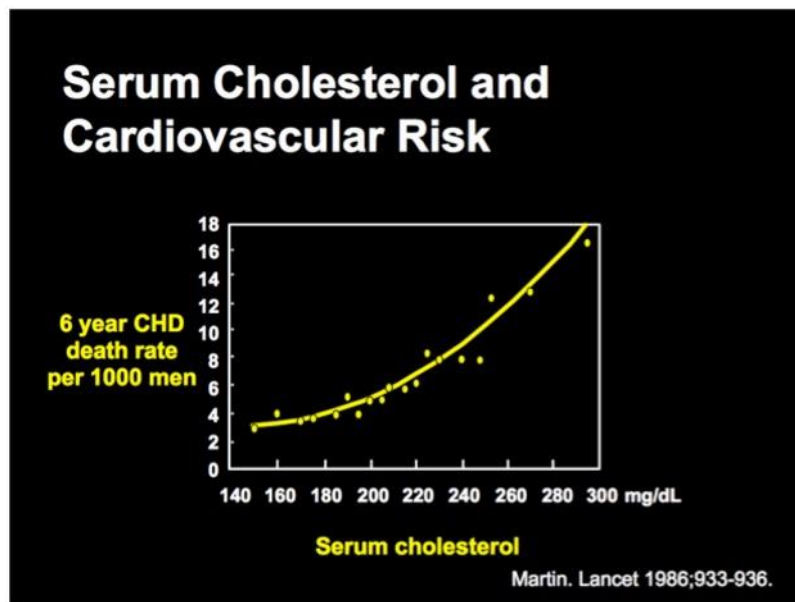
That approach took less than 5 seconds and no one in the audience could have looked at the slide and understood its contents, so why bother showing it? A simple rule to follow, when you are showing a graph on a slide, is to imagine that you are drawing it for the audience as you describe it. Tell them what the graph is about, define the axes and say what it shows.

So, now the speaker might show the slide in figure 3 and say the following:

This graph shows the relationship between serum cholesterol on the x-axis and death from coronary heart disease on the y-axis. As you can see, as the serum cholesterol increases in the population so does the risk of death – the relationship is not however a straight line but a curve which becomes steeper and steeper as we climb through the cholesterol range.

Slide flashing—showing complex images like graphs so fast that no one can assimilate them—is a particular crime of so-called experts. All it really says is: 'I've got all these slides and I couldn't be bothered sorting through them and preparing an appropriate talk for this specialist audience because you're not really worth the effort.' This also happens a lot with undergraduate teaching where senior academics do not feel the need to adjust their styles to accommodate the needs of their

students, preferring to re-use their latest conference presentation on the first-year students. Needless to say, this is not lecturing, it is simply indolence.

Graphs should, as always, be uncluttered and not contain unnecessary information. It is tempting to scan graphs into your presentations from journal articles or other sources, but inevitably these sources were not designed for projection. As such, they will contain additional text, or their colour schemes will be difficult to project. It is cumbersome, but very worthwhile, to redraw the graph so that it suits your presentation and conforms to your style. Occasionally the graph may be so complex that it is impossible to redraw without access to the original data—if this is the case you might ask yourself if you should be showing such a complex image in the first place.

Diagrams

The use of diagrams or figures can greatly enhance a presentation. Often abstract concepts can be represented and made clear by a good diagram. As noted in the case of graphs, the temptation to re-use scanned images without altering them to fit your style should be resisted. If you do have to use a copied image, at least take the time to delete or cover up any unnecessary details or associated text. This will make the image much more useful and will allow your audience to concentrate on the relevant part of the image.

An example of a slide with complex scanned elements from two papers is shown in figure 4. In this case, the speaker might spend time with his or her laser pointer directing the audience to the parts they wish them to focus on. But why show material that is irrelevant and that you want the audience to ignore? Slides simply aren't big enough for that kind of indulgence, and all it does is force you to keep the relevant material smaller and more difficult to see.

Fig. 4. A complex slide using a scanned table and composite graph from two academic papers.
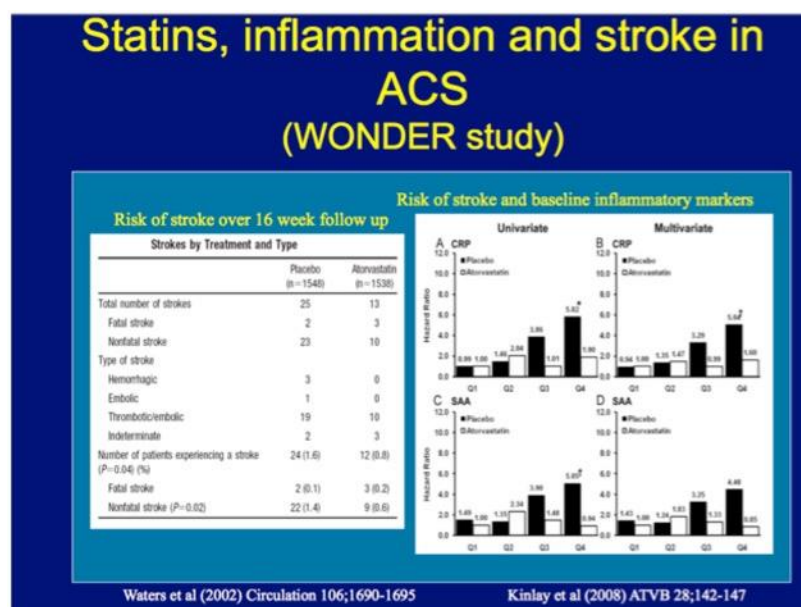
Very easily this slide can be converted into alternative better versions by simple cutting and pasting of the relevant portions as shown in figure 5.

Fig. 5. Two simpler versions of the slide shown in fig. 4. Here the table and the composite graph have been cropped and enlarged to show the relevant portions.
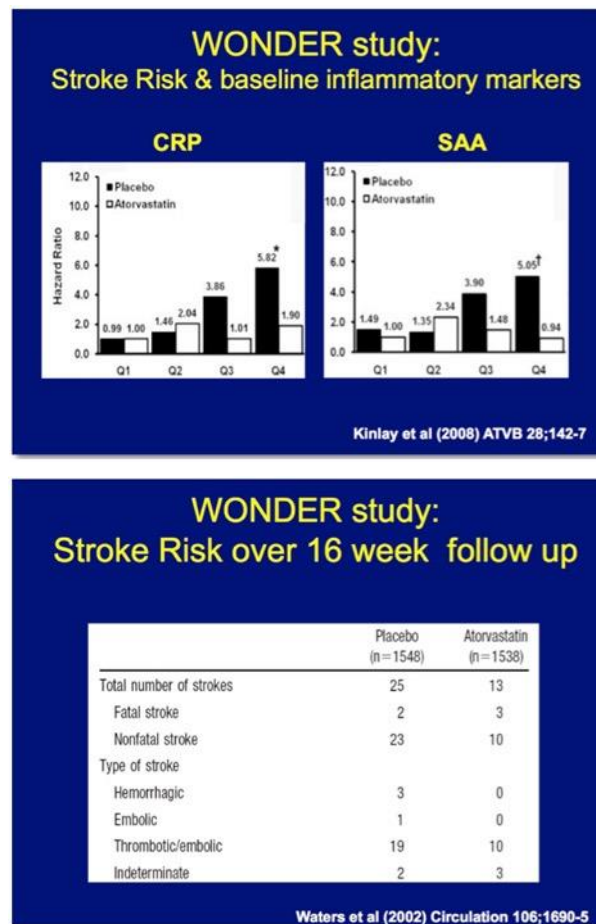
Photographs

Photographs are essential elements of many presentations. If you are speaking about the History of Art, how could you do so without showing slides with photographs of paintings or sculpture? If you are describing the marketing plan for a new brand of cereal, how could you avoid showing photos of the packaging and advertising? Other topics such as financial advice or English literature may not be obvious contenders for the use of photos, but I would strongly urge their use where possible.

Slides that only contain text very quickly become tedious—at least they do to me, as I am one of your audience members who learn from a combination of words and pictures. Why not illustrate your talk on Romantic Poetry with a portrait of Shelley, or your lecture on Individual Savings Accounts with a stock photo of a typical family or elderly couple who may be the investors in your case study. Think about how newspapers and magazines do it. Even articles about abstract concepts are wrapped around images that somehow evoke the themes therein. The editors do this to draw your eye to the article. Although your slides should not merely be used for attention grabbing, a carefully selected image may compliment the words you are saying, or the text you are showing, and may make the point more memorable.

Where to find pictures

People who compliment you on your slides will often ask where you got the pictures you use. Words, for most, are the easy part of slide design, but they stumble when it comes to combining those words with appropriate images.

Images are usually obtained from four sources: clip art, the Internet, stock image libraries or your own collection.

Most people have access to clip art in their slide making software, e.g. Microsoft PowerPoint. The problem with clip art is that everybody else has access to the same pictures too. How often have you seen slides with those little stick men, or those immediately recognisable cartoon birthday cakes or balloons? If you do decide to use clip art, there is one very simple rule to follow: don't mix styles. Often a slide that is relying on available clip art will have several pictures all drawn in a very different style. This adds to the audience's confusion in trying to assimilate the information on the slide and altogether makes it look rather messy. Two examples of the same slide are shown in figure 6, one with a mixture of styles and an alternative, still using clip art, that uses a more uniform approach. Which do you think looks better?

Rather than confining your selection to a clip art library, why not make use of the countless images available on the Internet? Websites abound with useful images that might be used to enhance your slides, but can you use them? Well, of course you can – nothing is simpler than right clicking over a website photo and saving the picture and then inserting it into your slide, a task that takes literally seconds – but the question is: should you?

Fig. 6. Alternative versions of the same slide, one using a mixture of image styles and one using a consistent approach.
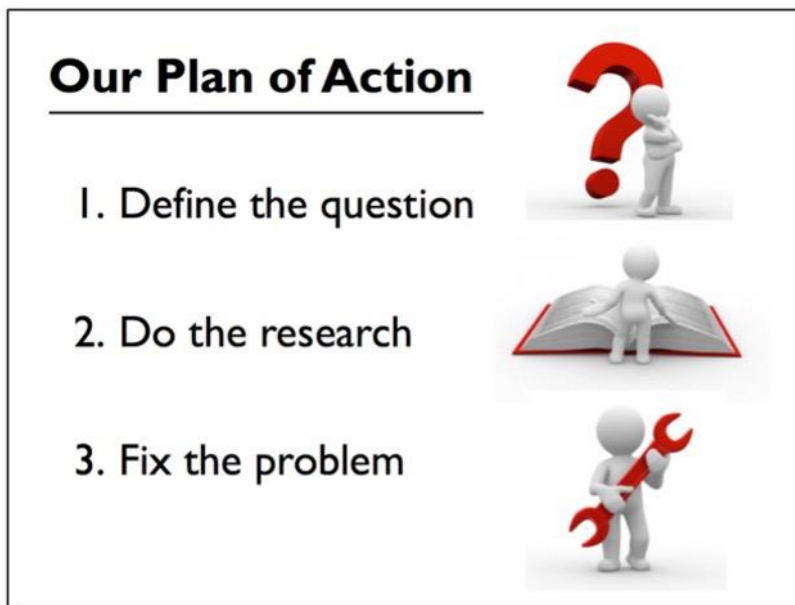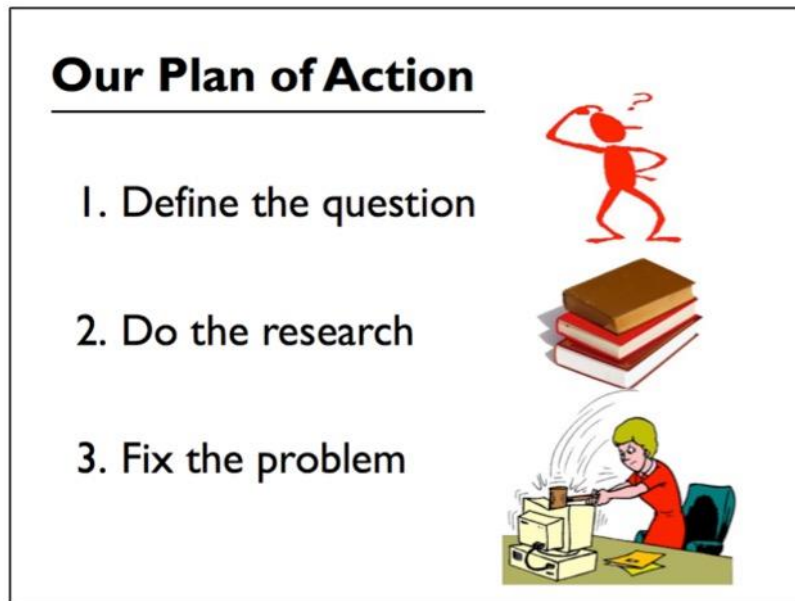
Copyright issues on the web are complex and, as far as I can see, still being defined. However, there are some sites such as Wikimedia Commons that are very useful resources.

Wikimedia Commons is a media file repository making available public domain and freely-licensed educational media content (images, sound and video clips) to everyone. The files are uploaded by individuals from across the globe and the

Wikimedia Foundation owns almost none of the content on Wikimedia sites—it is owned by the individual creators. However, almost all may be freely reused, but the Wikimedia Commons site does counsel that if you decide to reuse any of the material, "you should make your own determination of the copyright status of each image just as you would when obtaining images from other sources."

When searching for appropriate images on the internet to include in your slides, do make use of the advanced features of search engines such as Google. Using these, you will be able to specify some of the attributes of the image you are looking for by applying filters (such as content—do you want a photo or a line drawing or even a piece of clip art?; orientation—landscape or portrait; colour—do you want a black and white or a colour image?; and image size). Many people who capture images from websites to use in their slides make the mistake of picking very small, low-resolution images. When applied to your slide, and perhaps enlarged to the size of a small tennis court on the screen, they appear blurry and pixilated. I usually specify medium, but you can also get good resolution images with other size settings depending on the type of image you are looking for. Importantly, you can also limit your search to only those images that have been labelled for reuse or non-commercial reuse.

Using this advance searching strategy will save you a lot of time and will only bring up for review those kinds if images that you are interested in and not the thousands of others that don't fit the bill.

On the Internet you will also find sites that are essentially image shops, where useful and often very beautiful images can be purchased for a variety of uses, including slides. One of the largest of these is iStockphoto. There you will find literally millions of photos, drawings and video clips for purchase. Their site is also worth visiting as they regularly offer free photos and videos for download. The cost of the various pictures or videos is variable and depends on the size. These images are always very high quality and can significantly enhance your slides. However, they will rarely be personally relevant, and you do have to pay for them.

The best source of images is, however, your own camera or smart phone. These images have the huge advantage of originality and of course there are no copyright issues. The same clip art images and even photos are seen in many presentations, but your own photography is unique to you and adds a highly personal touch to your slides.

Other kinds of image

Screen shots

In your presentation, you may wish to make reference to the use of computers. Often, when this is the case, speakers may choose to show images of the screen from particular programs—or screenshots. For example, if you were giving a presentation about how to complete an online form, you might capture a series of screen shots to illustrate the procedure.

The problem with this is that the information on a computer screen, which may be only 30-50cm from your nose, is much more visible than the same information projected on a lecture room screen. Thus, screen shots contain text that that is often too small to read, as well as a lot of extraneous detail, such as screen headers and navigation bars.

This does not mean you cannot use screenshots, but it does mean you have to think about it. Often, you are showing a screenshot because you wish to highlight a particular function, e.g. where the help button is, or how you use the navigation bar on a website. If this is the case, rather than simply showing the whole screen, why not select a small section of the screen, blow it up and show that instead. It will only take a few moments to do this, but it will mean that your audience will actually be able to follow what you are saying without requiring a new prescription for their glasses.

ACTIVITY 1

A common use of slides is to summarise and display data. These may be quantitative data such as sales figures, lab results or performance indicators, or qualitative data such as customer comments and opinions.

Below you will find three slides, all showing the same numerical data that relate to applications for a specific study grant awarding body in the UK from 2013-18. However, in each slide the information is presented in different ways.

Compare each of the formats and assign a score to each of the slides according to their quality of design and presentation. Which do you think gets the gold medal, which the silver and which the bronze?

Option 1

APG Study Grant Applications

- From 2013-2018 the proportions of students applying for study grants from different parts of the world has changed

- In 2013, 66% of applications were originally from the UK, while 19% were from other EU countries and 7% from Middle East countries

- These figures were similar in the following years, but in 2016 the proportion of applications from non-UK EU countries fell by more than half, from 20% to 8%

- This decline was sustained through 2017 and 2018

- There was an increase in the proportion of applications received from African students in 2016, but in 2018 this had fallen back to 2015 levels.

APG UK Report, 2019

Option 2

APG Study Grant Applications
Percentage of total by country of application & year

	UK	EU (non UK)	Middle East	Africa	Other
2013	66	19	7	3	5
2014	55	21	9	8	7
2015	51	20	10	7	12
2016	67	8	9	11	5
2017	79	5	3	6	7
2018	79	3	6	7	5

APG UK Report, 2019

Option 3
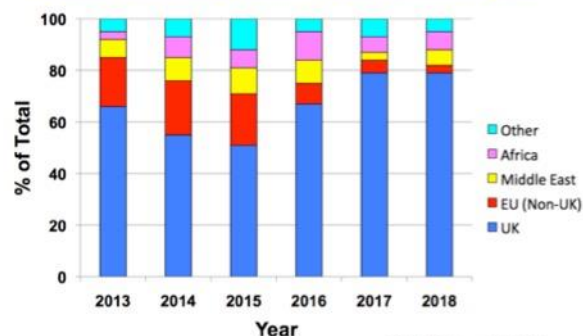
APG UK Report, 2019

ANSWER

Different people respond to different forms of presentation. That said, there is a general principle that I think is particularly appropriate to slide design, and that is if you are showing data the best way is in a picture, the second-best way is in a table and the least effective way is to present the data simply as text.

In this example, we have a simple set of quantitative or numerical data presented in each of these formats—words, table and picture.

The first option is effectively a script of what the presenter might be saying to describe the data, but importantly it doesn't actually show the data. In the second option, we have the table of raw data, and in the third option we have this data represented graphically. In the latter two options, we have shown the audience all the data and it will inevitably require some explanation and interpretation, perhaps akin to some of the bullet point text in option 1.

Overall, if we have to show just one slide, I think option 3 is the best and most readily allows the presenter to describe and talk through the data. I think option 2 is a poorer version than the graphical option, while option 1 is providing a partial interpretation of the data, but without presenting the complete picture.

'P' IS FOR PALETTE

As with background designs and text fonts, when it comes to colour schemes, you literally have the full spectrum to choose from. But some colours and colour combinations work much better than others.

In choosing your palette, you should pick not only the colours that you like but that work well together. You are especially looking for colour contrasts. Light green text on a pale-yellow background, or a purple line drawing on a blue background do not work well because there is not enough contrast between the colour pairs for the audience to see the content clearly. Instead, look for more extreme contrasts: black and yellow, blue and orange, white and dark green.

As before, I would counsel simplicity. Just because you can use hundreds of colours, doesn't mean you should. Interestingly, when professional graphic designers embark on a new project, they often define a simple and limited palette of colours that they then use repeatedly throughout. This is a good practice to emulate. You may, for example, choose a single background colour for all your slides, one or more text colours and perhaps, if you are showing a series of graphs, re-use a few simple colours there too. Slides that use lots of different coloured backgrounds, fonts and other design elements can become confusing and distracting, as well as looking unprofessional.
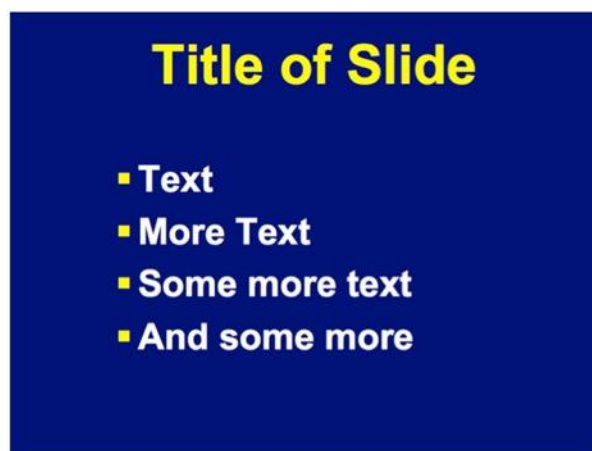
Fig. 7. Examples of slide colour schemes.

(a) Although red on black looks fine when printed or displayed on a computer screen, it does not project well and should be avoided.
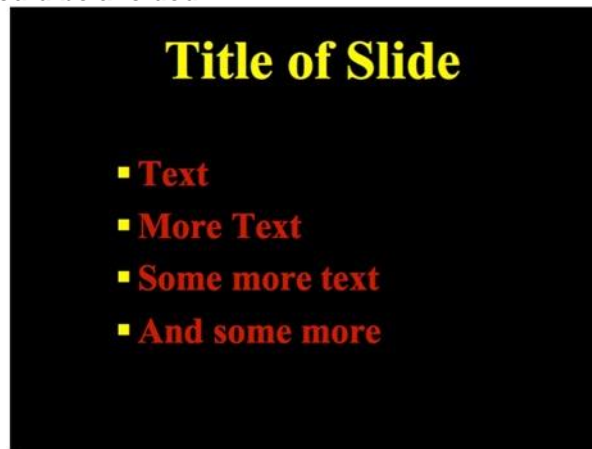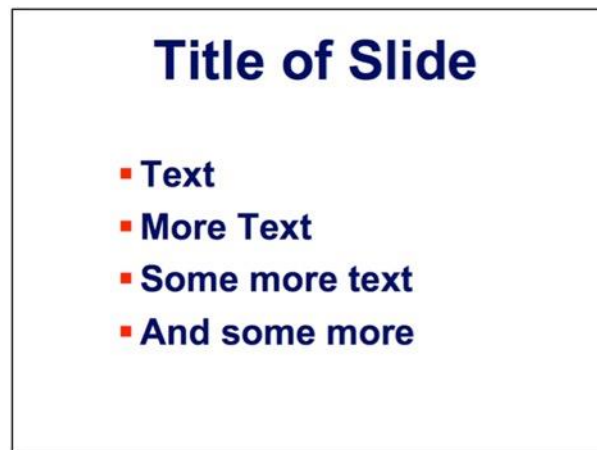

(b) Red on green or vice versa should always be avoided.

(c) White or yellow on a dark background always works well.

(d) Dark text on a contrasting light background can also work well.

When choosing your colour palette do bear the following important points in mind.

Take care when using red

First, remember that the colour red—red texts, red lines, red figures—does not project well and is often completely invisible especially if the contrasting background chosen is black or blue. Perhaps the reason why this colour choice is used so often and causes so many speakers problems is that most people design their slides on a laptop where the LCD screen makes red, even against a dark background stand out brightly. The first time the presenter sees the slides projected is when they stand up to deliver their talk. Suddenly in a room where the lighting controls make it difficult to fully darken the space and perhaps with a poor projector or screen, they realise that their red text is unreadable and their red diagrams incomprehensible. This is not such a problem if your slides are being displayed on a plasma screen rather than being projected. However, as you may be unaware of the exact media in use at the venue where you are to speak, it is always safer to assume the worst and proof your slides against this possibility by avoiding the combination of red and dark backgrounds.

Using simple contrasting colours

Tried and tested colour schemes are white and/or yellow on dark blue or black backgrounds. Such colour combinations are seen nowadays as dated, even clichéd. However, to become a cliché you have to be used a lot and the reason these colours schemes are used is because they work. You may, however, be particularly prone to purple or green or burnt sienna and of course there is no problem in using alternative background colour schemes, but you should consider very carefully the corresponding contrasting text and graphic colours.

Considering the colour blind

Another consideration when choosing your colour palette is to remember that around one in twelve of the men sitting in your audience are colour blind and may have trouble distinguishing your colour schemes, especially if they are based on reds and greens. Although there are other forms of colour blindness, red-green is the commonest. Despite this, I cannot count how many times I have seen slides used with red text on a green background, bar graphs with adjacent red and green columns and scatter plots composed of red and green dots. Clearly such a combination should be avoided.

Citing websites in slides

One final consideration is the citing of websites in slides. If you wish to include the URL of a website on your slide, perhaps to tell your audience where they might find further information, pay attention to colour schemes. When you type a website address in, e.g. Microsoft PowerPoint, it will default to being a hyperlink and will acquire the font colour set for hyperlinks in your program. This colour may be very unsuitable. For example, the default colour may be blue, and your slide background may also be blue. Obviously for the URL to be visible you will need to change the colour, but this cannot be done in the usual way. Because the program thinks it's a hyperlink you will have to change the default colour of all hyperlinks.

Conclusion

Whatever you choose—a colour scheme that is tried and tested and acceptable to most audiences or something a little more quirky, individual and therefore risky—keep it consistent. Use the same background format and colour scheme throughout your lecture. This will make your presentation more coherent and will allow your audience to relax a little and concentrate on the slide content rather than trying to work out why one slide is blue, the next is yellow with flowers down the side and the third black and white.

'E' IS FOR EXTRAS

By extras I mean those embellishments that any slide presentation software allows you to add to your slides to make them even more effective visual aids. Usually this is in the form of some visual effect, such as a simple transition effect, build or animation, but it may also be the use of a sound effect, or it may be the embedding of a short audio or video file that can be played from within the slide set.

Slide advance and transitions

If you are using a slide show to illustrate and enhance your lecture, one of the things you must decide on is how the slides will advance and how they will transition. In most instances you will be in control of your own slides and will have access either to the computer keyboard and mouse, or to a remote control that will allow you to advance and reverse as you need. If, however, you are speaking at a venue that offers neither of these you may have to rely on a third party to control your slides for you. If possible, try to avoid this as the interminable 'Next slide please' becomes very grating on the audience. Also, if you have builds or embedded files such as audio or video there will be a roughly 50:50 chance of this working as you had planned it.

When it comes to how the slides transition this will be a decision you make beforehand when you are making up your presentation. The software package you use will allow a variety of transitions from none (the next slide simply appears) to wipes from left, right, top or bottom, and on to a variety of more theatrical effects.

You will even have the opportunity to use random effects—a different one for every slide. Please believe me when I say that this is not a good idea. The use of random effects—indeed the use of any exotic effect—diminishes your lecture and dilutes your message. Either use no effect, a fade or a simple wipe, but always in the same direction. As with colour schemes and overall styling, consistency is important. You do not want your slides to overpower and dominate the lecture by dazzling and/or irritating your audience.

Builds and animations

Building is when you animate the text or images on a slide in such a way that you only reveal part at first and then, as required, you reveal the rest. For example, a bulleted list may not be shown at first in its entirety, but one bullet at a time. The beauty of this approach, from an educational point of view, is that it brings your slides closer to the blackboard style of teaching. We have slowed things down, we are only showing what we are actually talking about rather than a lot of other, for the moment, extraneous text or images.

Similarly, if you wish to compare and contrast two graphs or images on the same slide, show one and then reveal the other. This allows your audience to direct their attention to each image in turn rather than being confronted with both simultaneously.

As for animations, depending on your topic, these can range from the epitome of educational excellence to the ridiculously irrelevant. The complexity of such elements also varies enormously. Most people find it difficult to create anything beyond very simple animations without professional help, and this is probably for the best. The more complex the animation, the less likely it is to enhance the presentation. Remember, any animation is only an additional element to help you make your point and it shouldn't become the defining feature of your presentation.

For the practicalities of using build techniques and simple animations, I would refer you to the manuals and the online support offered by the suppliers of whichever software package you choose. However, do remember that like everything else connected with slides, the use of builds and animation can be overdone. If so, this technique loses its impact and, very quickly, its audience appeal.

Audio clips

The insertion of audio files into your presentation can be highly innovative and educationally stimulating at one end of the spectrum and deeply irritating at the other. They may even render your presentation faintly ridiculous and memorable for all the wrong reasons. Unless the sound clip is entirely relevant, and you are completely confident in its use, don't use it.

If, for example, you are giving a lecture about President John F. Kennedy and you have a sound clip of one of his key speeches, then its inclusion may give your audience more information than you could ever impart by simply showing a quotation in written words.

However, squeaks, bells, animal sounds, or anything that belongs as a sound effect in a radio play rarely have a place in your presentation.

One important practical point—if you have sound, either alone or as part of a video make sure you have checked whether the audio-visual (AV) system you are using can cope with it. Is the laptop into which you have just inserted your memory stick connected to those speakers in the lecture hall? At the very least, try it out beforehand or, if there is one, discuss it with the AV technician. Few experiences are more disconcerting than giving this part of your lecture a big build up, clicking the slide and then being hit by silence—stony, embarrassing, interminable silence. This is especially so if the contents of that audio or video file were critical to the flow of your presentation. It is better if any audio/video is regarded as optional just in case you arrive at the venue and only then discover that you cannot use them.

Video clips

An important extra that can bring a presentation very much to life is insertion of video clips into your slides. As with all extras, this technique should be used sparingly and should always be appropriate. The inclusion of funny videos, just because they are funny, will be viewed as gratuitous by the audience. However, the video clip that is relevant to the talk, perhaps serving to illustrate or emphasise a point, will be seen as an enhancement. Always ask yourself the question, "Does this add something to my presentation that I could not achieve otherwise?" If the answer is yes, go for it; if not, put the clip of the funny Japanese game show back in its folder.

The advantage that video offers is the chance to show live action, and to introduce other players on to your stage. If you are giving a presentation about the history of the tango, what better way to illustrate your narrative than to show an appropriate clip of a couple expertly dancing the steps. If you are lecturing on the mating habits of lyre birds in Australia, how could you top showing a short clip of their intricate mating ritual. And, if you are talking about your company's latest advertising campaign, why not show some footage of consumers being interviewed. Relevance is all-important and should always take precedence over humour or drama.

Where can you find video for inclusion in your slides? There are many short video clips that can be readily downloaded from the Internet. Some are freely available, while others are copyright protected. These are on every topic imaginable, but if you cannot find a suitable clip there is another alternative. You can, of course, also make your own. Again, a mobile phone can serve as a video camera and often produces perfectly adequate results. More sophisticated equipment will produce more professional results, but often you won't need this.

ACTIVITY 2

Although judging whether a slide is good or not may seem highly subjective, there are, I believe, a number of objective tests of slide quality. In order to tease these out, we need to study slides in detail.

Look at the slide below and consider not its contents but its design. I think there are several major problems with the design, and a number of simple things we could do to make it a more effective slide—do you agree, and if so, what do you think they are? Think about your own answers before seeing what I have to say.

Slide for analysis

The easiest way to deconstruct and critique this slide is to use our acronym SWIPE and look at each of the components in turn.

Style

The presenter who used this slide employed a template that dictated the colour scheme, background graphic and fixed-element imagery. Background graphics are often distracting, and in this slide, I think they are especially confusing. I remember looking at this slide when it was being presented at a talk I was attending and my first thought was, "What is that in the background?" Needless to say, as a member of the audience that should not have been my initial concern. What the graphic represents is a map of the UK overlaid with what look like tyre tracks. Neither of these were particularly relevant to the topic of the talk. In addition, we have a fixed element in the top left-hand corner which depicts five faces. Again, these were irrelevant to the presentation and were merely included to add some graphical interest to the slide template. In other words, they were meaningless, gratuitous and taking up valuable space on an already crowded slide.

Words

One of the major problems with this slide, as with many slides, is that it contains too much text. There are 17 lines of text not counting the virtually unreadable footer and reference. One plus point is that the text has been written as a series of bullet points, but the overall impression is still of a very busy slide. Such an amount of text ideally should be spread over two or more slides, but it is always worth asking yourself if you really need to show it all. The font used is a sans-serif one which is good for projection, but because there is so much text the font size is smaller than ideal. This is especially true of the footer and reference. Some would argue, "it's only a reference, no one needs to read it." However, I firmly believe that if there is text on a slide, it must be readable from the back of the room. The reference is also given in a very full format, such as would be used in an academic paper, and for the purposes of this slide it could be significantly abbreviated, and the font size increased accordingly.

Images

Apart from the image components of the slide template, which we have already critiqued above (the background map and the faces in the top left-hand corner), the slide contains no other images of graphics. As it stands, there would no space to include any further images. If, however, the text was reduced and the slide simplified, it may be possible to present some of the text, such as the numerical data, in graphical form.

Palette

The only right colour scheme is the one that works. To work effectively, we need as big a contrast as possible between the background colour and anything you place on top of it. In this slide, the purple/yellow combination is less than ideal. This is

especially so because the yellow used is quite a dull one and the background purple is varied from pale lilac to darker purple because of the background graphic. Overall, this would be a better slide if the background was made darker and a constant shade of purple, while the text was lightened to improve the contrast.

Extras

Because we are reviewing a static image, we cannot really comment on any transition effects or builds that might have been used when it was delivered. This slide would probably be more effective if the different items of the bulletted list were built one by one rather than simply shown in their entirety.
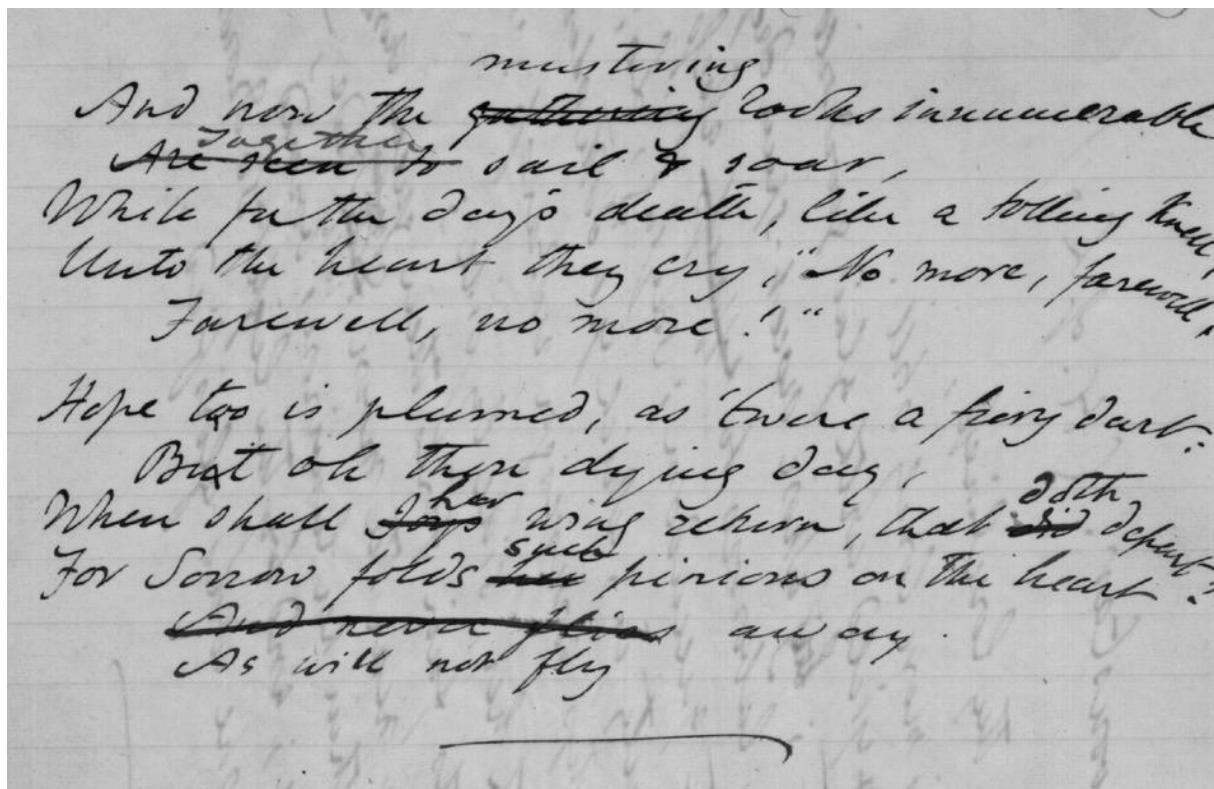
HOW TO USE SLIDES EFFECTIVELY?

How you design a set of slides to support your presentation is important, but so is how you use those slides during the talk. In this section, I want to look at several things you need to think about when you are on the podium with the slide changer in your hand.

Pacing your presentation

One of the commonest questions that comes up at my slide design workshops is how many slides should I have in my presentation? The answer, of course, is, "It depends." It depends on the duration of your talk, it depends on your topic and it depends on your style of delivery.

There is a commonly voiced mantra that good slide-based presentations use one slide per minute. This is a good starting point, but it needs to be adjusted as you become familiar with your own material and way of using slides. I have colleagues who know, based on their style and because of the kind of slides they show, that they need an average of two minutes per slide, and maybe even three minutes per slide. I also have colleagues who are happy to use 15 or even 20 slides for a 10-minute talk. This is because they show very simple slides with little detail that needs to be assimilated by the audience. At the other end of the spectrum, I remember

attending a 45-minute lecture delivered by an Art Historian who showed only a single slide in that time—the painting she was discussing.

You have to time your own talks, and I suggest starting with the one slide per minute formula. Remember, however, that this slide count should include any title or introductory slides as well as closing or acknowledgement slides. Once you have designed say a 10-minute presentation with a total of 10 slides, rehearse the presentation and time its delivery. As I have said repeatedly throughout this guide, many people make slides with excessive detail and complexity, and you may well find that you cannot deliver and do justice to your slide content in the allotted time. Don't think at this point that it won't matter—that the conference organiser or the interview panel chair will just indulge you and let you carry on speaking for 11, 12, even 15 minutes. If it was supposed to be a 10-minute talk, it must be 10 minutes. For some informal talks you may get away with it, but in any setting where it matters, timing is crucial. I have seen microphones switched off by conference chairs and interview candidates asked to sit down in mid-sentence.

Being able to keep to time is thus a professional necessity and a skill you must master. And the only way you will do it is through practice and by self-awareness of your own delivery style.

Looking at your slides

As I have mentioned earlier, some speakers use their slides as their script—they stand facing the screen and read them to the audience. This is not a presentation but a recital and is a very poor use of slides. Most other speakers will draw cues and prompts from their slides to help them keep their talk on track and will look at their slides to check details and key words as they are speaking. This is fine, but remember the audience is in front of you and deserves your attention. Don't give your talk to the screen—give it to the audience. The simplest way to achieve this is to make sure you are standing at a 45-degree angle to the screen, allowing you to turn your head easily to glance at your slides without turning your back on the audience.

In some settings, you may have a monitor either on the podium or perhaps on the floor in front of you to allow you to see your own slides. This is often the set-up at conferences, especially if the staging and podium arrangements make it difficult or impossible for the speaker to see the screen. Whatever the situation, before your give your talk, make sure you are very familiar with the content of your own slides and try to limit looking at the screen as much as possible.

Slides as signposts

Your slides will contain content—words, graphs, photos, diagrams, maybe even videoclips—and you will use them to support the educational messages and arguments you wish to convey. Some of your slides will, however, have another purpose—to signpost your presentation. Any good presenter will recognise that their audience needs help in navigating their way through the talk, especially if it is lengthy, and you will be able to help them by providing a few key signposting slides.

The most obvious signpost slide you will use is your title slide. Like all your slides, this should be as clean and simple as possible, conveying the information you deem to be essential and nothing else. An example is shown in figure 8. Here the title of the presentation is given a prominent position in a clear and large font. In addition, the title slide contains your name as the presenter and perhaps a brief affiliation. There is, of course, the opportunity here to give your full professional title, your degrees, your departmental address, phone number, e-mail address, website and even your inside leg measurement. As always consider the maxim—*Less is More*—and ask yourself the question, what do the audience need to know about me?

Fig. 8. Example of a title slide.
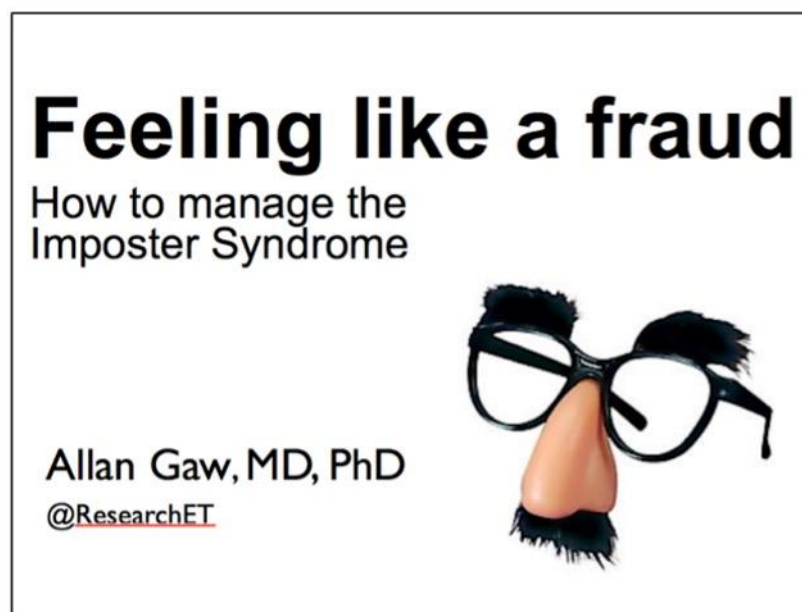
Next, you may wish to outline the content of your presentation. There are several different ways to do this, but one of the simplest may involve showing a single introductory slide with 3-5 bullet points that you plan to cover in your talk. These bullet points may be the titles of sub-sections of the talk, or they might be learning objectives for the lecture, i.e. what you are hoping each of the audience will know or be able to do by the end of your talk.

After you have taken the time to define and state your objectives at the beginning of your lecture, it takes very little further effort to order and organize your talk around them. As you proceed, it is also highly desirable to offer your audience signposts along the way. This simply means either saying something or showing a slide to announce: now we are going to look at the first point, or my second objective, or our third question.

Signposting can be very effectively done using simple slides. A common and highly efficient technique is to show your objectives or questions as a short list of bullet points at the beginning and to repeat this slide each time you are embarking on a discussion of the next point. The same slide can be used as your summary slide at the end of the talk. The beauty of this approach is that the audience knows exactly where it is on the journey through your lecture. For example, "She's going to cover three points and, OK, this is the second of them."

A further subtlety that works well is to highlight on the slide which point or question you are addressing. This means rather than simply using the same slide each time, you use a version where all the points except the one you are introducing are dimmed or rendered a different colour. As with tried and tested colour schemes and font choices, this technique may be seen as clichéd. But again, always remember things only come to be regarded as such because they are used extensively, and they are used because they work. There are many other ways to structure and signpost a talk, but this is an excellent starting point and one that works reliably.

Finally, you need to signpost the end of your presentation. Don't simply stop speaking and expect your audience to know it's over. If your talk simple fizzles out in this way and no one in the room is sure whether it is over or not, it creates a tension that is unnecessary and easily avoided.

Think how it works in the cinema or the theatre. *The End* appears on the screen, or the curtain falls, or the stage lights dim. You will not have ready access to a curtain or complex stage lighting, but some lecturers do favour a final slide which is the equivalent of the cinematic *The End*. I have seen sunsets as well as gravestones and even photos of generous backsides all used to signify *the end*. In general, I would counsel against the use of such gimmicks, and if you give it some thought you can probably do better.
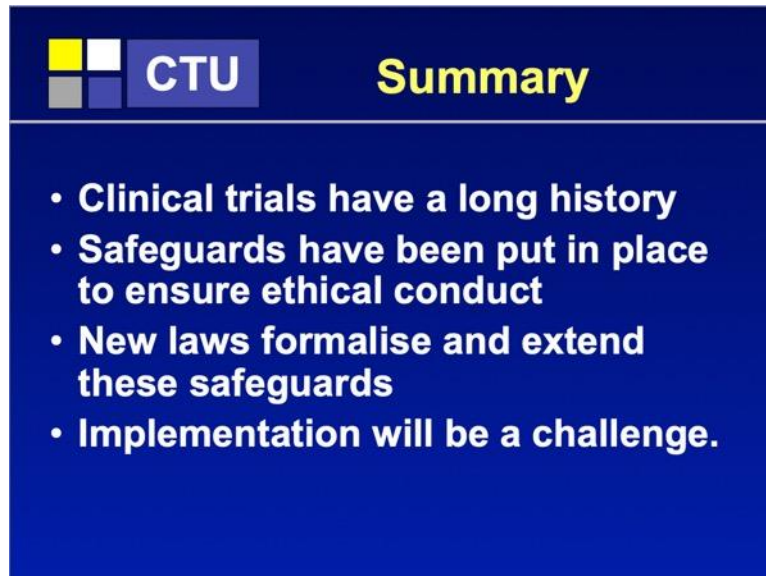
What then is the best way to draw proceedings to a close? Again, simplicity should reign. The classic lecturing mantra—say what you're going to say; say it; and then say that you've said it—guides the way. Saying that you've said it usually translates into summarizing your talk. Ideally this can be done in a single slide with 3-5 bullet points. This allows you to recap the main learning points you had identified and hoped to convey in your lecture.

An example of such a summary slide is shown in figure 9(a). As always, with any text slide, limit the number of lines of text to 5-7 and remember to include the title line in that count. An example of the kind of summary slide to avoid is shown in figure 9 (b).

An alternative approach to the standard summary slide which works well is using the same signpost slide that you began with, thus topping and tailing the lecture with the same list of objectives. In this way, you can recap in your own words while the list of objectives is back on the screen.
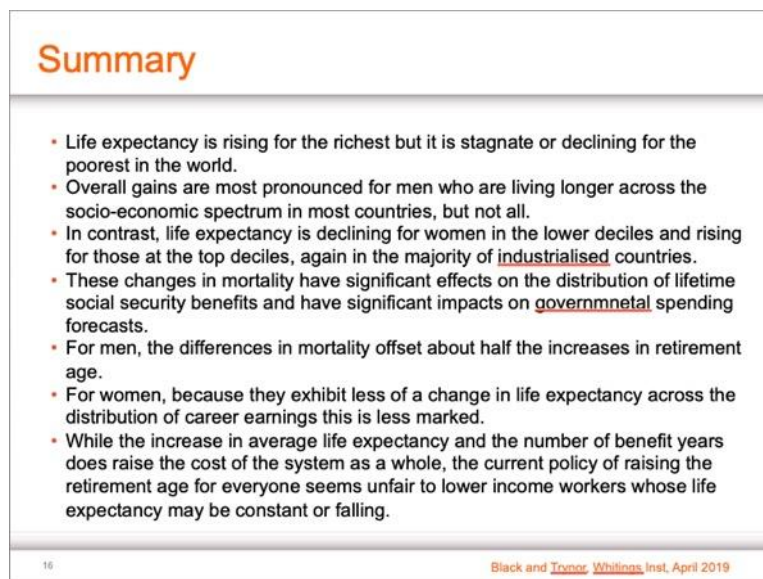
Fig. 9.

(a) An example of an effective summary slide.

(b) An example of a poor summary slide.

Laser pointing

If you don't know how to turn it on and have to be helped by the chairperson or the last speaker, don't use one. If your hands shake, don't use one. If you look at the screen and turn away from the audience and the microphone to use the pointer and forget to turn back again, don't use one. If you are a waver, pointing it all over the room like some crazed hitman trying to identify a target, don't use one.

In short, unless you really feel comfortable, try to get away from relying on a laser pointer. I know such advice is anathema to some speakers who feel they are enhancing each word they say by pointing at every detail of a slide. But the simple reality is that you're not. Laser pointing can be clumsy, distracting, misguided and just plain irritating. Better to design your slides so that they do not require you to point out specific sections of them.

One other practical point should be remembered—if you are giving a talk in a room where there is more than one screen, such as a large auditorium, pointing at one screen will not be visible on the others. Similarly, if your lecture is being video-conferenced your laser-pointing will not be seen by the audience at the end of the line. In these latter cases, if you must point then you will require access to the cursor, usually on the laptop. But again, this can be very clumsy, and I would recommend for simplicity's sake to steer clear of pointing. Your words and your slides should need no red dot or computer cursor to underline them.

Slide changers

Another reliable source of comic relief for the audience is the slide changer. These come in all sorts of shapes and sizes, and because of that, speakers who have not taken the time to check beforehand invariably find themselves laser-pointing instead of changing the slides, or, if they have managed to identify the slide control on the lectern, reversing instead of advancing.

Occasionally at large meetings the slides will be controlled by an AV technician, and you will have a "slide advance" controller that is not connected to the computer, but to a signal in the AV technician's box. When you press the button, they get a signal and advance the slide. All well and good until you want to go back or if you have accidently pressed your controller twice. In this case, you will simply have to ask the technician to go to the slide you want. All of this can be especially disconcerting if the first time you encounter this system is when you are at the lectern giving your talk. Again, a little preparation can save a lot of panic.

When nothing is best

Sometimes, even if you intend to use slides, there may be parts of the presentation during which you would like the audience's undivided attention. The best way to do this is to force their eyes on you by turning off the slides. If you are using PowerPoint this is easy. When you are in presentation mode simply hit the 'B' on the keyboard and the screen will go black. Similarly, if you hit the 'W' it will go white. To

return to your slides simply hit the key again. Pauses from the slide presentation, like this, can be very useful and allow you to recap important points, perhaps enter into an interactive discussion with the audience, or simply relate an anecdote that requires no visual back-up.

CONCLUSIONS

Let's tie things up. Being able to create effective slides that serve as visual aids to support and enhance your presentations rather than overwhelm or distract from them is an important professional skill.

With that in mind, this Study Guide is designed to help address what I and many others see as a real problem. Put simply, many speakers use slides that are quite simply terrible. They may be terrible for several reasons. They may be overcrowded with text, they may be overloaded with images, they may use fonts that are too small or too frilly, they may be dressed up in colour schemes that hurt the eyes or make it impossible to make out what is what. Or they may even be all of these things at the same time. What these slides are not are clear, uncluttered and thoughtfully designed. The principles of good slide design are, however, not complicated, with simplicity as the overriding consideration.   If you apply these principles, they will guarantee the production of good slides every time and you should always remember the acronym SWIPE. 'S' is for style or the overall look of the slide, 'W' is for words, 'I' is for images, 'P' is for palette of colours and 'E' is for all the extras you might include.

I hope this Study Guide has given you new ways to think about how you tackle such a task—where to start, how to construct your slides while thinking about all the key elements of good design and finally how to use your slides in the most effective way to support your presentations.

FURTHER READING & RESOURCES

As always there are more books written on slide design than you could ever hope to read, so I have listed several below that you may find useful.

slide:ology: The Art and Science of Creating Great Presentations. Nancy Duarte. O'Reilly Media, Inc, 2008.

> Nancy Duarte, the author of this book, runs the company that created the presentation for Al Gore's film *An Inconvenient Truth*, proving that you can win not only an Oscar, but also a Nobel Peace Prize, with a great slide show. Her book, therefore, needs little more recommendation, but you will find that it is packed with great ideas and sound advice about slide design and is written on the premise that you should "never deliver a presentation you wouldn't want to sit through."

Presentation Zen: Simple Ideas on Presentation Design and Delivery. Garr Reynolds. 3rd Edition New Riders, 2020.

> This book is a simply beautiful object and is full of new (at least new to me) ways of designing slides for more effective presentations. The emphasis is on business presentations, but most of what is included could be easily adapted

for other settings. Hundreds of examples are shown in full colour, and even the foreword is presented as a PowerPoint slide show.

A Handbook for Teachers in Universities and Colleges: A Guide to Improving Teaching Methods 4th edition. David Newble and Robert Cannon Routledge, 2000.

This is one of the first books I read about lecturing and teaching and remains one of the best. It has been updated and revised several times over the years and it is the one book I always recommend to new university lecturers, no matter what their discipline. It contains useful information not just on how to make effective slides but how to use them and other visual aids in your presentations.

ABOUT THE AUTHOR

Allan Gaw, MD, PhD, FRCPath, FFPM

I have worked in academia for over 30 years and for the last ten I have been running courses teaching under graduates, post graduates and academic staff a range of essential academic skills. Amongst these have been writing and presentation skills as well as time management and project management. I have also authored or edited more than 25 books and I write a regular blog entitled: The Business of Discovery which you can access here: www.researchet.wordpress.com You can also follow me on twitter: @ResearchET or visit my webpage: www.allangaw.com

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