UNIT 9  MULTI-MEDIA PACKAGES FOR SCIENTIFIC COMMUNICATION

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9.1 OBJECTIVES

We began this Block, with the basics of editing scientific research writing, which is an important and distinct branch of scientific writing. We then went on, in the other units, to discuss the editing of tables and figures, mathematical expressions, and chemical formulae which are essential constituents of most scientific texts. In this unit, which is the last in this Block, we look at a field that has become increasingly important over the past few years for any form of communication - the use of multimedia. We consider here the advantages of multimedia for science communication, since multimedia is being used to support, supplement, and to reinforce written texts in many contexts and therefore, this is an area that you will be expected to be familiar with, as a professional in STM publishing. This focus on multimedia is significant because the use of multimedia along with written text / speech is transforming science education and communication. The unit will discuss the effectiveness of multimedia for communication in general, with special reference to science communication.

In this Unit, you will learn the fundamentals behind communication design and how to effectively present them using popular multimedia packages. A basic working knowledge of any presentation software is required to learn this unit, and while these principles are independent of the software used, the use of Microsoft PowerPoint in examples is made due to its popularity and predominant usage in commercial and academic settings.
Tips and advice should be taken as healthy guidelines and not absolute rules. You should realise that designers of multimedia have the freedom to experiment depending upon the subject and purpose, once they have mastered the basics.

A study of this unit will help you to arrive at effective guidelines to make powerful presentations which will deliver higher recall and retention amongst its viewers and will significantly aid a written text in making an impact. It would be advisable to study this unit thoroughly, since it will help you to acquire the skills you will need as an STM editor, to create/edit multimedia packages to support material in various kinds of written texts.

### 9.2 Introduction

Multimedia is used in communication as an effective manner to relay information graphically in a way that would support and supplement writing/speech. The slides themselves are never meant to be the focus. In the case of an oral presentation, people come to hear the presenter and be moved and/or informed by the message.

The information being presented may not necessarily be to peers, but to stakeholders who may not be technically oriented (board of Directors, consumer focus groups, sales force, etc) and hence often the audio-visual assistance of presentations provides that effective interface between technical jargon and pertinent information.

Over the years, technology has enhanced the impact of multimedia. Flip charts made way for projectors, viewgraphs and the current computer aided presentation programs. The presentations are no longer limited to in-room audience but over webcasts, slideshows and web-conferences. With the integration of VoIP and telephony, virtual interactivity has become seamless and web/SMS polling, audience participation from remote locations is no longer a fantasy. The future holds the possibility for holographic presence and remote projections.

We now have a better understanding of audience behaviour and audience attention peaks/troughs and we can design multimedia packages which are able to elicit the desired response irrespective of circumstances. You should ensure that a multimedia package draws audience attention and keeps them engaged enough to remember it well later.

Through various studies, expert opinions and research, some simple techniques have been devised to dramatically improve the impact of multimedia packages. Through the course of this unit you will learn these techniques, improve upon them and maybe even discover better ones yourselves!

Most of all you will discover that designing multimedia presentations is interesting and demands a lot of creativity.

#### 9.2.1 Popular Multimedia Presentation Styles

In this section let us take a look at some multimedia presentation styles that have received wide acclaim. The techniques used by these successful presenters will help you to form an understanding of multimedia design and you will be better equipped to create/edit such packages yourself.

**Steve Jobs:** Founder of Apple, he is known as a charismatic speaker and his speeches and presentations are well known. Steve Jobs’ presentations carry very little, practically no text. He uses images and icons as talking points and draws the attention towards what he has to say rather than let the audience jump ahead and
read. However his presentations are designed with live interaction in mind and cannot convey anything of value if presented on their own.

**Masayoshi Takahashi:** Famous presenter and proponent/author of the “Takahashi (presentation) Method” takes an alternative view on presentations. His method uses only single words or very short phrases and absolutely no images. The idea is to use these “keywords” as talking points and to leave those keywords in audience memory. The method calls for many more slides than average, which stay on screen for very short durations. The slides change rapidly as the presenter talks through it. This method, though the opposite of Steve Jobs (one person uses only text and the other only images) is yet ironically similar as they both use imagery for highlighting the speaker’s words. (Also, the Japanese kanji characters are pictorial in nature as opposed to the English alphabets)

**Guy Kawasaki:** early Apple employee and the author of “Art of The Start”. He is also the creator and proponent of his presentation style called the “10/20/30 Rule.” The Rule dictates that there should be no more than 10 slides in the presentation (very few people take away much more than one concept from a presentation, so everything else is extra). The slide presentation should be designed to last 20 minutes, leaving room for ample questions/discussion between slides or after the presentation. Guy points out that the point of the presentation is typically to initiate a discussion. He states that the font size should be no smaller than Arial font size 30 (the audience reads faster than you can speak, so while you are talking, they are trying to read your slides and not listening to what you are saying).

These are among the more popular methods for multimedia presentations that support spoken text. They have a lot to convey about the optimum use of words and images to the designers of multimedia packages that are meant to support written text. However these are not necessarily what is best for the objective of any multimedia package. While these methods have their merits, they also have their drawbacks if used without considering the objectives in particular communication contexts. By being flexible and using the merits of all three, an optimum combination of text and image can be devised which would suit most purposes.
9.3 MULTIMEDIA DESIGN - BEST PRACTICES

9.3.1 Keep it Simple

PowerPoint uses slides with a horizontal or “Landscape” orientation. You should ensure that the message and the ability of the designer to tell a story do not get derailed by slides that are unnecessarily complicated or busy. Nothing should be included in a slide that is not essential.

Your slides should have plenty of “white space” or “negative space.” Do not feel compelled to fill empty areas on your slide with unnecessary graphics or text boxes that do not contribute to better understanding. The less clutter you have on your slide, the more powerful your visual message will become.

9.3.2 Limit Bullet Points and Text

Bullet point after bullet point is of little benefit to the users and succeed in only boring them. Some of the best slides may have no text at all but the best slides will be virtually meaningless without narration.

9.3.3 Transitions and Animations

You should ensure that object animations and slide transitions are used judiciously. Animations such as bullet points should not be animated on every slide. Some animations are a good thing, but stick to the more subtle and professional (the kind you see on TV news broadcasts etc). Users will get bored very quickly if they are asked to endure slide after slide of animation and it may reduce the impact of a point you wished to emphasise later with animations. For transitions between slides, use consistent transition effects (example: Fade in, Fade Out, Cross Fade). Basically use effects that complement each other or are from the same family. Slide transitions are not even necessary.

9.3.4 Graphics

High-quality graphics including photographs should be used. Pictures should be professionally shot product pictures (and not shot by someone with a camera phone). Ensure that professional stock photography, or inexpensive stock photo compilation CDs are used. Avoid stretching and scaling small, low-resolution photos downloaded from the internet to make it fit your layout - doing so will reduce the resolution and quality even further. You may not notice pixelation and blurring on your computer screen but they will appear glaringly when projected on a larger screen.

Avoid using PowerPoint clip art or other cartoonish line art even if available for free, since that creates an unprofessional impression. There are exceptions of course and unless there is something specific you wish to convey through unprofessional clipart, ensure that they are avoided. (See example)

9.3.5 Visual Themes

It is good to have a consistent visual theme throughout, but most templates included in PowerPoint have been seen by your audience many times. You can give the user of the multimedia a unique presentation with new content, by making your own background templates which will be more tailored to your needs. You can then save the PowerPoint file as a Design Template (.pot) and the new template will appear among your standard Microsoft templates for your future use. You can also purchase professional templates on-line or ask a designer to make one for you.
9.3.6 Use Appropriate Charts

Always ask yourself, “How much detail do I need?” Avoid including too much data in on-screen charts. Display only as much data as is required. Do not reuse complicated internal charts/diagrams but prepare custom ones for your multimedia package.

9.3.7 Use Appropriate Colour

Colour evokes feelings and emotions. The right colour can help persuade and motivate. Studies show that colour usage can increase interest and improve learning comprehension and retention. You do not need to be an expert in colour theory, but it’s good to know at least a bit on the subject. Colours can be divided into two general categories: Cool (such as blue and green) and Warm (such as orange and red). Cool colours work best for backgrounds as they appear to recede away from us into the background. Warm colours generally work best for objects in the foreground (such as written text) because they appear to be coming at us. It is no surprise, then, that the most popular PowerPoint slide colour scheme includes a blue background with yellow text.

9.3.7.1 Colour Psychology

What does colour communicate? Use colour to support your message. The users will have conscious and subconscious reactions to your colour selection. Take a look below for common colour associations.

**Blue** - a colour that is a favourite in multimedia presentations. Blue can communicate authority, responsibility and security.

**Red** - a powerful colour, red evokes very strong emotions and can actually increase blood pressure and eye-blinking. Associated with blood and fire, red stands for courage and power.

**Green** - the colour of nature is restful and soothing. Green communicates balance, harmony and tranquillity. Frequently used for natural products, the health industry and the environment. Green has a positive association in most cultures.

**Yellow** conveys happiness, optimism and cheerfulness. It symbolizes hope and appeals to an intelligent and thoughtful audience. Associated with the sun, yellow is stimulating and gets attention.

**Orange** is positive, exuberant, cheerful, bold and energetic. It is a colour that inspires action.

**Purple** is the most stimulating of the cool colours and is associated with mystery and sophistication. It is an excellent choice for a new trend or unique idea.

**Brown** is the colour of the earth. Wholesome and homely, brown communicates stability and security.

**Grey** is subtle and serene. With Silver or a bright primary colour, grey is frequently used for technology products.
Black is sophisticated, dramatic, powerful and mysterious. A great accent to other colours.

9.3.8 Choose Fonts Appropriately

Fonts communicate subtle messages by themselves, which is why they should be chosen carefully. Use the same font set in all slides, and do not use more than two complementary fonts (e.g., Arial and Arial Bold). You must be knowing the difference between a Serif font (e.g., Times New Roman) and a Sans-Serif font (Helvetica or Arial). Serif fonts were designed to be used in documents filled with lots of text. Serif fonts are easier to read at small point sizes, but for on-screen presentations the serifs tend to get lost due to the relatively low resolution of projectors. San-serif fonts are generally best for PowerPoint presentations.

Sans Serif Font

Times
Arial

9.3.9 Video and Audio

Video and audio should be used appropriately. Video clips can be used to show concrete examples and this promotes active cognitive processing, which is the natural way for people to learn. You can use video clips within PowerPoint without ever leaving the application or tuning on a video player. Using a video clip will not only illustrate your point better, it will also serve as a change of pace thereby increasing the interest of the user. You can use audio clips (such as interviews) as well. Always avoid childish sound effects (such as the sound of a horn or applause when transitioning slides), since the use of unnecessary sound effects attached to animations is a sure way to create a bad impression.

9.3.10 Sort Slides and Review

According to the Segmentation Principle of multimedia learning theory, people comprehend better when information is presented in small chunks or segments. By getting out of the Slide View and into the Slide Sorter view, you can see how seamlessly your presentation is flowing. In this view you may decide to break up one slide into maybe two or even three slides so that there is a more natural and logical flow. Also in this view, you will be able to capture more of the essence of your entire package from the point of view of your audience. You will be able to notice the unnecessary pieces of visual data that can be removed to increase visual clarity and improve communication.

9.4 ADVANTAGES OF MULTIMEDIA IN SCIENCE COMMUNICATION

There are many advantages in using multimedia packages together with STM books. For example, a CD or DVD accompanying a school science textbook can show the different stages in experiments, natural phenomena etc. A CD / DVD accompanying a medical textbook can illustrate operative / surgical procedures etc. Multimedia packages accompanying a science book should be integrated with the text and go beyond it. They should have links to relevant learning opportunities on the internet. The packages should ensure maximum interactivity, so that the user is engaged with the material throughout.
9.6 UNIT END ACTIVITY

Create a multimedia presentation on Global Warming using the sample text below. Create this presentation to convey the message in an effective manner using the points mentioned in this unit. Use your own judgment to decide what should be converted to bullet points and what should be left out for narrative. Give the presentation a consistent theme using colours and images that would suit this subject.

"Global warming is the increase in the average temperature of the Earth's near-surface air and oceans since the mid-20th century and its projected continuation. Global surface temperature increased 0.74 ± 0.18 °C (1.33 ± 0.32 °F) during the 100 years ending in 2005. The Intergovernmental Panel on Climate Change (IPCC) concludes that most of the temperature increases since the mid-twentieth century is "very likely" due to the increase in anthropogenic greenhouse gas concentrations. Natural phenomena such as solar variation and volcanoes probably had a small warming effect from pre-Industrial times to 1950 and a small cooling effect from 1950 onward. These basic conclusions have been endorsed by at least 30 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. While individual scientists have voiced disagreement with these findings, the overwhelming majority of scientists working on climate change agree with the IPCC's main conclusions.

Climate model projections indicate that global surface temperature will likely rise further 1.1 to 6.4 °C (2.0 to 11.5 °F) during the twenty-first century. The uncertainty in this estimate arises from use of differing estimates of future greenhouse gas emissions and from use of models with differing climate sensitivity. Another uncertainty is how warming and related changes will vary from region to region around the globe. Although most studies focus on the period up to 2100, warming is expected to continue for more than a thousand years even if greenhouse gas levels are stabilized. This results from the large heat capacity of the oceans. Increasing global temperature will cause sea levels to rise and will change the amount and pattern of precipitation, likely including an expanse of the subtropical desert regions. Other likely effects include increases in the intensity of extreme weather events, changes in agricultural yields, modifications of trade routes, glacier retreat, species extinctions and increases in the ranges of disease vectors.

Most national governments have signed and ratified the Kyoto Protocol aimed at reducing greenhouse gas emissions. Political and public debate continues regarding what if any, action should be taken to reduce or reverse future warming or to adapt to its expected consequences."