

INTEGRATING VIDEO AND NEW MEDIA IN TEACHING

This job aid describes how effective visuals can enhance your teaching. It contains techniques and guidelines to help you use video and new media effectively.

This job aid will help you to:

- use best practice techniques for video and new media
- use new media appropriately

 Includes techniques for online courses.

Why use video and new media?

Video and new media such as animations, simulations, 360 images and virtual reality are useful learning aids for all sizes of classes, provided they are well designed and appropriately used. They are cost-effective alternatives to travel, provide access to experiences otherwise not available and can be either produced or purchased. Most classrooms are equipped with the means to display video and new media although virtual reality requires special equipment.

Video and new media can be used to:

- bring the outside world into the classroom
- provide access to locations otherwise not accessible to learners
- generate interest and motivation in students
- increase retention of information and learning
- clarify something difficult, unfamiliar, complicated, very large or too small to be seen
- stress important points or show a process
- provide a rich or immersive experience or allow interaction
- provide a resource learners can pre-view or review independently
- save instructional and preparation time because media can be reused

These tools are not just for teaching. Powerful learning takes place when learners create video and new media as evidence of learning (e.g. assignments) as the development process

- supports learner-centred education and student agency
- provides active learning opportunities
- is an engaging alternative to written reports
- supports presentations and discussions
- is suitable for collaboration, group work and team building
- results in possible contributions to open source texts and learning materials.

Key principles

Apply the following seven principles to the design and use of videos and new media.

Relevance—consider the audience and choose appropriate materials and experiences to enhance learning. Identify learning objectives first and ensure that the information and experience are relevant to the topic. Just because the technology exists isn't a good enough reason to use it.

Provide access—use to demonstrate experiments or events that are difficult to observe, inaccessible, dangerous, scarce, complex or involve change over time. Use as a field trip substitute as appropriate.

Chunk information—when information is complex, use a series of short videos, media or experiences.

Context—place the video or new media in context to ensure it adds value and is not just an 'add on' or optional activity. Embed use into the course and provide connections to the other content and assessments. Prepare learners and help them connect the media or experience to their background knowledge. Provide guidance during the experience and

follow up with discussion, application or assessment of learning as appropriate. In some situations, debriefing may be required, not optional.

Quality—ensure images, sound and experiences are high quality and easy to understand. Include clear directions.

Support student agency and choice—provide independent access to learners for pre-viewing and reviewing. Encourage student creation of video and new media as optional ways to provide evidence of learning.

Respect copyright—check on copyright and abide by requirements. When creating media, consider using Creative Commons licenses to allow use by other educators as an Open Education Resource (OER).

Online delivery of media

The principles described in this job aid also apply to media used in blended and online courses. Keep in mind that online media needs further explanation, either in text or audio format. You can deliver media either synchronously or asynchronously. Your context determines which is most suitable. Synchronous viewing (everyone reviews material at the same time using) or asynchronous viewing (individuals review on their own time) are possible both in classrooms and online. Consider using a video conferencing tool for online synchronous viewing or ask learners to view materials independently and be prepared for a discussion at a later time.

The LTC can help you with best practices and technical assistance with these educational technologies. You may want to work with an Instructional Design Consultant to assist in planning your material to make sure it is suitable, integrates well into your curriculum and will be well utilized. Contact your school liaison for more information.

Types of Media

Video

The use of video and animations in education is not new but has increased greatly in recent years. This may be due to the variety and the easy availability on online video sharing sites.

You may find suitable existing material but good-quality and appropriate video is not always available. Consider creating your own short (5–10 minute) videos to focus on content suitable for your learners. A variety of tools make it easy to do this. Some examples are below.

- Presentation software can be exported and converted to video. This provides variety for learners and reduces reading requirements. Audio can also be added for details and information that is not included in the text. Instructions can be found online for common tools.
- Online tools are available to
 - create or host video
 - create and host screen recordings
- Screen recording software allows recording and simple editing.
- Smartphones have video capacity. Videos can be created and then shared. Prepared video can be moved to your online course materials or using an online sharing service. Sharing services allow users to upload, store, edit, download and control access (private, public) to videos.

Simulations

Computer or virtual simulations allow learners to see processes and have experiences that may not be possible in other ways.

A computer or virtual simulation allows the viewer to interact and control aspects of the event. Computer simulations are often used in health, science, electronics, robotics, computing and trades. They offer powerful learning experiences, such as patient treatments or customer interactions. Some specific examples include showing how blood passes through the body, how gas is processed in an internal combustion engine or how molecule movement is affected by temperature change.

Virtual simulations often focus on knowledge and clinical reasoning. Learners are given opportunities to make choices and to see the results of those choices. Good practice includes preparation, an experience, debriefing and reflection on choices and the consequences of actions taken. Common goals for simulation are given below.

Goals for Students	Goals for Instructors
<ul style="list-style-type: none"> • Engage in multiple, positive learning outcomes • Achieve conceptual learning • Identify cause–effect relationships • Make connections to everyday life and work • Take and feel ownership of the learning experience • Direct their own learning through exploration • See the subject as accessible, understandable, and enjoyable 	<ul style="list-style-type: none"> • Create a student-centred classroom • Foster a supportive, goal-oriented learning environment • Bring their experience, professionalism, and knowledge of their students to designing, implementing, and improving activities, implementation, and sim design.

*Slightly modified PhET (University of Boulder, n.d.) goals for science and math simulations

360° Images

Both photographs and video are now available in 360 degrees. These are sometimes called panorama photographs, immersive videos, and spherical videos. Special cameras are needed to create these images but viewing is possible on a normal flat screen such as a computer monitor or smartphone. The viewer can explore the video in all directions with a few simple gestures and by clicking and dragging.

These types of images provide a richer experience than a flat photograph and are useful for a wide variety of topics, examining equipment, touring and field trips. Of course, virtual field trips are not the same experience as a real life visit but they provide inspiring and engaging options for engineering, manufacturing, life sciences and more. There are many examples online.

Virtual Reality (VR)

Virtual reality (VR) immerses a person in a digital 3D environment. A special headset or goggles are required by each viewer. The headset acts as the display mechanism and restricts what the viewer can see as projected images. Computer-generated imagery and content simulate a real experience through senses (sight, hearing and occasionally touch). In some VR experiences, participants can actually interact with the environment and make changes, control events, take action and walk through complex scenes.

Remember, as with any technology, it is important to focus on the learning experience rather than the excitement of the new tool. Best practice is to use VR to enhance rather than replace real experience.

Virtual reality has enormous potential and is being used at all levels of education to provide a wide range of learning experiences and training such as swimming with sharks, travelling through a human body, building empathy, maintaining equipment and avoiding hazards.

Planning is required to use VR for learning. Some VR experiences have been designed by others and are available online but it is also possible for those with the technical skills and equipment to create VR experiences to suit a particular educational need.

Commercial and educational VR experiences often require installation of software or apps. As well, users need goggles or viewing devices. It's also important to consider the real-world space in which the experience will take place. A clear space free from dangerous objects is necessary to ensure that people wearing goggles can move around without being injured due to restricted sight.

All this means instructors need to ensure availability of the software, hardware and an appropriate location when planning to use VR with learners.

Integrating Video and New Media Checklist

Use the following checklist to ensure use is appropriate and effective.

Resilience—I have:

- A troubleshooting list of what to check when issues arise
- A backup plan in case the technology fails. It is important to use learning time effectively so in the event of failure you must be ready to continue the lesson in a different format.
- An attitude that allows me to remain calm and move on

Content—I have:

- Checked the learning outcomes to establish what is needed
- Carefully chosen the material and included essential details only
- Included only the main ideas in the product/experience

- Obtained permission to reproduce copyrighted material
- Selected an appropriate copyright or Creative Commons license for materials I created

Format—I have:

- Ensured visuals and audio are clear and high quality
- Used templates where possible (for consistency)
- Identified the most important points
- Created short videos or experiences of 5–10 minutes each (rather than long products)

Text—I have:

- Used simple, clear language
- Used key phrases rather than long sentences
- Used no more than six short lines per view
- Used no more than six words per line
- Used upper and lower case text, not all capitals
- Used a simple and consistent font throughout (sans serif fonts are easiest for viewing, for example, Arial, Verdana, or Tahoma)

Graphics—I have:

- Used graphics rather than text whenever possible
- Chosen simple, clear images
- Labelled all important parts of each graphic
- Shown a scale if the size of an object is hard to gauge
- Avoided showing only part of an object
- Stayed away from clip art for media that include charts, photographs, or drawings
- Used no more than one clip art image in a single viewing area
- See “Designing and Using Visuals” for more tips

Colour—I have:

- Used colour sparingly to highlight key features
- Used colours that are clearly visible and readable
- Limited meaningful colour coding to five colours
- Used strongly contrasted colours rather than similar ones
- Used colour for separating, defining, and associating information

Sound and animation—I have:

- Used special effects sparingly for maximum impact
- Used sounds to serve a specific purpose—to complement and give further instruction

Using video and new media

As well as making sure your media are effectively designed, you need to make sure that they are used appropriately. Use the following checklist to prepare and deliver learning experiences.

Preparing the room and equipment—I have:

- Checked that the computer, projector and screen work reliably
- Checked that the internet is accessible, that software, headsets and equipment learners will use works reliably
- Checked that the lighting in the room is appropriate or adjustable (I may need to switch lights off above the front row)
- Stood at the back of the room to check that video/animation is clear
- Checked that learners have the equipment they need
- For VR, created a safe environment free of physical barriers
- Located the telephone number for AV Services

Delivery—I have:

- Practiced using the media smoothly and efficiently
- Practiced giving directions to ensure first use goes smoothly
- Checked that there is space to use the equipment

References

University of Boulder. (n.d.). PhET teachers' and students' goals. Retrieved November 18, 2019, from https://phet.colorado.edu/files/guides/PhET_TeacherAndStudentGoals_en.pdf

