



using digital video in teaching and learning

What is digital video?

Digital video is video recorded as digital data.

This means it can be stored and manipulated on a computer.

Digital video camcorders are smaller and lighter than old-fashioned VHS camcorders, and have better picture quality and battery life. But the most significant factor of digital video is that it can be edited on a computer. Unlike traditional tape-based video editing, computer video can be 'non-linear', in that you can change the order of shots and undo edits. This means that pupils can easily modify, draft and re-draft their films, try out alternatives and play creatively whilst learning.

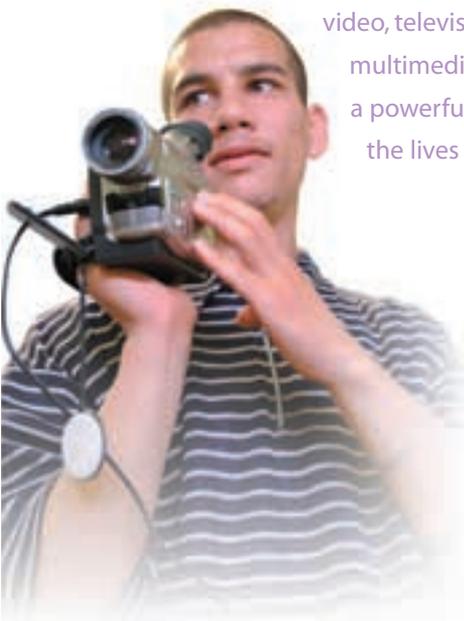
Recently, digital video camcorders, computers and software have become much cheaper and easier to use, so that a growing number of pupils are integrating moving image production into their learning.

Why use digital video?

Moving images – film, video, television and multimedia – play a powerful part in the lives of most pupils.

Digital video makes it practical for pupils to plan, film, edit and publish their own short pieces of film. This helps them to understand the techniques which moving images use to persuade, entertain and inform their audiences. Pupils can see how close-ups and music can add to the power of a drama scene. They can give an interview more impact by selecting just the key 'soundbites'. They can manipulate time and space by using a single camera to film a drama scene or interview and edit it so the viewer thinks several cameras were used.

Teachers report that using digital video in the classroom has many other benefits. Planning and editing a film can support pupils' deeper understanding of narrative. Pupils use sophisticated language when discussing and editing their films. Working collaboratively as teams, they use and develop skills in problem solving and organisation. Video-making is also hugely motivational and allows pupils to communicate sophisticated ideas more effectively through complex media.





How to get started with digital video

To start using digital video in the classroom, you will need a digital video camcorder, a suitable computer with video-editing software, and a way of connecting the camera to your computer. A tripod, a separate microphone, and headphones will help sound and picture quality.

The standard interface for connecting a digital video camcorder to a computer is FireWire (also known as IEEE 1394 or i.Link).

Digital video camcorders

Digital video camcorders range in price from a few hundred pounds to many thousands. The cheapest camcorders only have 'DV out'. This means you can only send video in one direction, from the camcorder to the computer. To be able to export from the computer to the camcorder – which is usually necessary if you want to make copies on videotape – you need a camcorder with 'DV in/out'. Another useful feature is 'analogue in', which lets you copy from non-digital sources such as VHS into your camcorder.

The camcorder should be small and light, with easy-to-use controls, especially for younger pupils. For older students or those following specialist courses, it may be worth considering more professional cameras. These are heavier and more robust, offering better quality and more creative control.

Software

Professional programs, such as Adobe Premiere and Final Cut Pro, use two main windows, one for viewing the 'source' or unedited footage and one for the movie. They also have a 'timeline' which shows video and audio tracks, and a 'browser' containing video and other material, such as still and audio clips. These programs are more powerful than consumer programs but are more complex to learn.

Some consumer programs also have two viewer windows. Others have a simpler interface with just one viewer window, such as iMovie (which comes with Apple Macs) and Moviemaker (part of Windows XP).

When choosing a computer and editing program it is a good idea to read independent reviews and to find out what other teachers are using successfully. Here are some points to consider.

- How easy is the program for pupils to use?

- How stable is the program?
- How easy is it to get technical support?
- Does the program import and export in DV (the standard consumer digital video format), so that you don't lose quality when you edit?
- What other features does the program have? Can pupils add text, sound, pictures and 'transitions' such as fades and dissolves?
- How easy is it to rearrange clips and to undo edits?
- How can the finished films be published and distributed? Can you export them to tape? Can you export them in formats which are suitable for CD-ROMs and the web?
- Does the computer have a big enough hard drive? Full-quality digital video needs about 3.7 megabytes for each second of film. It's not the length of the finished film that determines the storage space you need. To make a one-minute film, pupils may select from five, ten or more minutes of footage, and you may want to have several film projects on the computer at any one time.
- How much memory does the computer have? How much does the editing program require?
- Do you need to install a separate card to import video into the computer?

Hardware

If you are filming using a digital video camera, you need to ensure that the computer you will be using to edit your footage is equipped with appropriate ports (FireWire, also known as IEEE 1394 or i.Link ports). These enable you to connect your camera directly to your computer to download your digital footage from the camera to the computer's hard drive. If your computer doesn't have these ports you may be able to add a FireWire card. Some software and cameras are supplied with FireWire cards.

If you are filming using an analogue video camera, or if you want to capture footage from other analogue sources such as VHS cassettes, you need to ensure that the computer you will be using to edit your footage has appropriate video capture equipment. This will most likely be in the form of either an internal expansion card or an external capture device. These devices convert the analogue output from a video camera or VCR to a digital format that can be edited on a computer.

Making films in the classroom

Pupils will get more out of their film-making if they relate it to 'real' examples. You can start by viewing TV advertisements or opening sequences from films or documentaries, with the whole class:

- show an advert and ask the class to guess how many shots it includes
- discuss why particular shots, like close-ups, are used at particular points
- cover the screen and ask them what sort of images the soundtrack suggests.

Try to keep video-making tasks short and manageable. When pupils make a short film, they can plan in detail, discuss and try out different options and then edit each shot precisely. If the film is longer, this becomes much more difficult. Instead of a complete play or a documentary, try making an advertisement, an opening sequence or trailer, a single news report, or a single scene from a drama. Unless you have weeks to spare, aim for finished films of no longer than a minute or two. For the first film exercise, or with younger pupils, think in terms of seconds rather than minutes.

It is a good idea to start with a very short and simple exercise so that pupils can evaluate and improve their camera work before they go on to make a more ambitious film.



Planning

How pupils plan a film depends on their age and the complexity of the task, but it can involve a great deal of focused discussion and research. You can start by defining the purpose of the film and the target audience. Pupils can write scripts, produce storyboards by drawing or using still cameras, write lists of shots and choose locations. They enjoy using the correct technical terms such as wide-shot, close-up, pan and dissolve.

Filming

When filming, pupils should have clearly defined tasks, such as director, sound technician, camera operator, production assistant and presenter. It is important that pupils cover everything in their lists of shots or storyboards. Things to avoid are zooming and panning back and forth while filming, or shooting clips that are too short to be usable.

Editing

Depending on the project and the software being used, editing can include many different processes. For example, with iMovie 2, pupils can do the following:

- import clips into the computer
- rename clips
- select clips and move them to the timeline
- assemble clips in order and rearrange them
- trim clips
- split clips into 'sub-clips'
- add and trim audio clips
- record voice-overs
- add cutaways (inserting a video clip over another, leaving the original sound unchanged)
- import media from other sources, such as still images
- apply special effects/enhancements and slow or fast motion
- apply transitions between clips
- add text (titles, captions, subtitles and credits)
- export to videotape or computer files.

Pupils don't have to undertake all these processes. In Key Stage 1 they can start by assembling a few clips imported by the teacher.

Inspire me: what can you do with digital video?

There are a variety of applications of digital video in the classroom, including its use as:

- a communication tool, allowing pupils new ways of expressing their ideas

- a record-keeping tool, allowing new ways of recording and recognising achievement
- a measuring and monitoring tool, allowing pupils new insights into physical phenomena
- a modelling tool, allowing pupils to explore alternative ways of representing real and imagined situations
- a tool to enhance pupils' understanding of the curriculum.

Schools taking part in Becta's digital video pilot used film in a wide range of curriculum areas. For example:

In science, pupils can make films to record investigations, or to explain principles. A Year 4/5 class made a film presenting the results of an experiment on cooling to a younger class. Video is particularly useful for investigating movement. A Year 2 class filmed examples of things being pushed and pulled. The teacher imported the clips into the computer, and each group selected the ones they wanted to make their own short film.

In history, pupils have made films which include reminiscence interviews, archive still images (photographs and documents), and voice-overs. They have made historical re-enactments, and interviewed each other in role as historical figures. News reports on historical events have ranged from VE Day to the building of a Victorian school.

In geography, Years 1 and 2 have used digital video to investigate the local area. A Year 6 group, investigating a developing country, combined still images with presentations to camera to make weather forecasts for Lima in Peru.

In English and Welsh, pupils have adapted key scenes from books and plays, using camera framing, position and sound to convey mood and to express characters' feelings. They have used clips to illustrate poems. When learning about persuasive language, primary pupils have made TV advertisements for their own products. One teacher found that scripting a presentation to camera motivated Year 1 pupils to write in complete sentences for the first time.

In PE, digital video has been used to record and evaluate performance in sports and dance. One class has made a promotional film to encourage girls' participation in football.

In art and design, primary pupils used storyboards to work out how to film and edit a dance sequence from the school production of Grease.

In PSHE/citizenship, pupils have made news reports looking at the Euro, and drama productions focused on bullying.

Digital video isn't just for large projects and feature films. Once it is available, teachers find many ways of using it to support the curriculum. Short moving image clips can be used within presentation software or some word-processing programs, and on web pages and CD-ROMs.

ICT techniques

When making digital video, pupils practice ICT skills like drag-and-drop, importing, and rearranging. Other techniques are more specific, for example, selecting clips from a number of alternatives, trimming them to length, combining sound and image, and inserting transitions and special effects. One aspect which fascinates pupils is 'continuity editing', where different shots of a scene are filmed separately and then, by carefully selecting and trimming the clips, they combine them so that the action appears to be continuous.



What can digital video do for my pupils?

Many teachers, across the age and ability range, find that digital video is highly motivational. These comments come from teachers who took part in Becta's digital video pilot which ran from 2001-2002. 50 schools around the UK were provided with Apple iMacs, Canon digital video camcorders and iMovie and Quicktime Pro software.

'I've not seen anything that comes close to engaging them as much as this does.'

'Students gained an enormous amount of fun and satisfaction from planning, filming and editing their adverts...experimenting with different camera angles, transitions, soundtracks...'

'Highly motivated, willing to come in early and stay after school.'

'A very positive impact...willing to give up playtime and dinner hour...'

Other teachers have reported how digital video has encouraged participation by all pupils in the class, including pupils who are normally not motivated or who have difficulty with written language:

'One child...he's normally quite passive and laid back...he had the whole group organised, he completely took charge...that was really amazing to see.'

Several teachers reported that making a video has encouraged pupils who would not normally work well as a group to co-operate effectively.

'...has helped with group working skills and decision making... (pupils managed to stay) entirely on task.'

Digital video also provides opportunities to practice and develop thinking skills and creativity:

'Pupils demonstrated increasing forward thinking/planning but also the will to change plans as circumstances and context changed.'



Digital Video Awards

<http://www.becta.org.uk/digitalvideoawards>

The Digital Video Awards is an awards scheme for all students aged between 5 and 18 across the UK. The Awards aim to celebrate excellence in creative use of digital video and to inspire students and teachers to exploit the full potential of this exciting technology.

Resources

Listed below are publications and web sites which can provide further information on the use of digital video. While all URLs given were correct at time of printing, they may be vulnerable to change over time.

ICT Advice site

<http://www.ictadvice.org.uk>

Find out more about using digital video in teaching and learning, including case studies, on the ICT Advice site.

British Film Institute (bfi)

<http://www.bfi.org.uk>

The bfi site includes a Teachers' Centre which offers resources and help for teachers.

Digital Video Pilot evaluation report

<http://www.becta.org.uk/research/research.cfm?section=1&id=532>

This Becta commissioned report, written by the bfi, looks at patterns of use and good practice in digital video, and considers how the technology has increased pupils' motivation, broadened access to the curriculum and has fostered both creativity and moving image literacy.

Digital video forum

digitalvideo@becta.org.uk

To join the Becta digital video e-mail based discussion group, send an e-mail to with 'join forum' in the subject line.

Film Education

<http://www.filmeducation.org>

The Film Education web site is designed for primary and secondary teachers and students using film and new media across the National Curriculum.

Media Education Wales

<http://www.mediaedwales.org.uk/>

Media Education Wales is a non-profit company which supports media and moving image education in Wales through resources, training, events, projects, research and consultancy.

MediaEd – the UK media and moving image education site

<http://www.mediaed.org.uk>

This site is for teachers, students and anyone else who's interested in media and moving image education in primary, secondary, further and informal education.

Moving images in the classroom (PDF)

<http://www.bfi.org.uk/education/teachers/classroom/miic/index.html>

This teacher's guide to using moving images in the secondary school curriculum is produced by bfi Education.



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