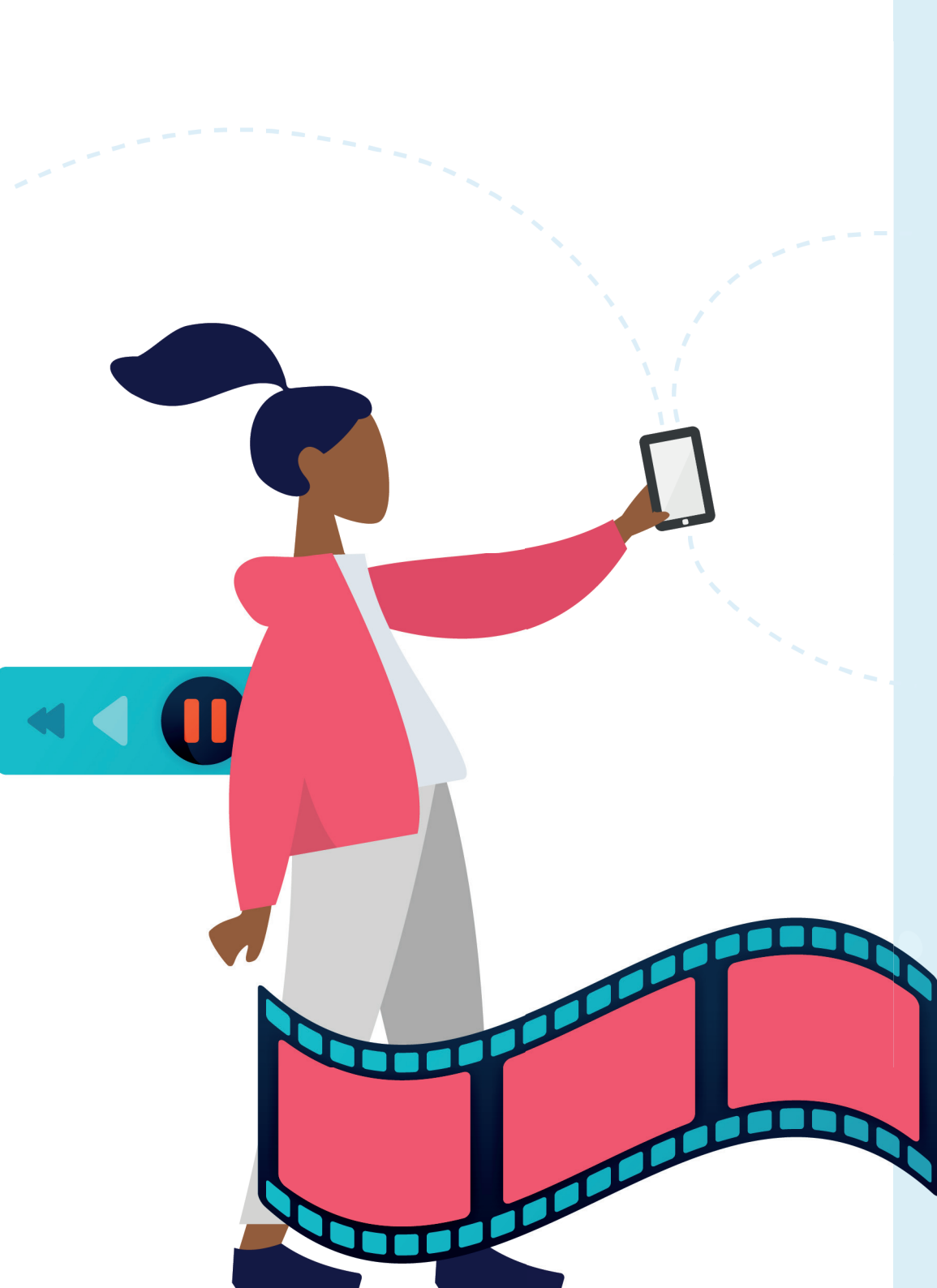


ACTIVITY:

Making & Sharing Videos

ACTIVITY OVERVIEW

In this task, students film a catastrophic event, i.e. a volcanic eruption (that the teacher organises). Students go through a simplified process of planning, filming, and editing, to produce a video which best showcases the volcanic eruption - and then discuss the merits of different ways of sharing their final product.



SYNOPSIS

With increased ease and access to many powerful applications within one device, such as the mobile phone, the interaction of different digital systems in the creation, viewing, and sharing of videos is mostly not even a consideration.

By creating video content as a class activity, the benefits go beyond learning how software, hardware, and peripheral devices are all connected to one another. The highly collaborative nature of the task gives students plenty of opportunities to exercise leadership skills, be creative and artistic, and further develop their ICT know-how.

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Foundation – Year 2

- Identify and explore digital systems (hardware and software components) for a purpose (VCDTDS013)
- Independently and with others create and organise ideas and information using information systems, and share these with known people in safe online environments (VCDTDI016)

Year 3 – 4

- Explore a range of digital systems with peripheral devices for different purposes, and transmit different types of data (VCDTDS019)
- Earth's surface changes over time as a result of natural processes and human activity (VCSSU062)

Year 5 – 6

- Examine the main components of common digital systems, and how such digital systems may connect together to form networks to transmit data (VCDTDS026)
- Explain how student-developed solutions and existing information systems meet current and future community and sustainability needs (VCDTCD034)
- Sudden geological changes or extreme weather conditions can affect Earth's surface (VCSSU079)

ACTIVITY, MATERIALS AND INSTRUCTIONS

Activity

Using simple video editing software that comes with the available devices (e.g. iPads and mobile phones), students produce and present an unforgettable video quickly and simply. In doing so, they also make discoveries about the history of film-making, volcanoes in Australia - and learn why there are earthquakes in Victoria!

Materials for the explosion

- 1 x 300ml cream bottles with pop-top lids (emptied and cleaned)
- 250g baking soda (approximate)
- At least 1L vinegar
- Tissue paper
- Teaspoon
- 1/2 cup measure
- Safety glasses
- Optional: food colouring, a splash tray, model of volcano made from papier mache, plus little figurines (e.g. people, animals, and vehicles).

Materials for students

- Recording device (e.g. iPad, mobile phone)
- Internet access
- Video editing software (e.g. iMovie, Microsoft Video Editor, Canva)
- Worksheets where appropriate, including a storyboard template, news report template, etc.

Instructions

1. Theory

Identify components of digital systems required to make and share a video clip. The explanations are made on the assumption that filming and editing are done on a tablet or mobile phone.

Equipment and components

Within a device: camera, microphone, speaker, central processing unit (CPU), and software.

Outside of the device: internet access, router, a projector, and screen.

Can students identify where the camera, mics, and speakers are on their devices? Or how about the modem and router for wireless internet access?

Highlight that cameras and microphones are input components because they collect data, whereas speakers and the screen are output components.

Storage

The video could be stored either in the device's hard drive, on the internet (cloud storage), or even on an external hard drive or thumb drive (USB flash drive).

Editing the video

Components within the tablet to manipulate videos include video editing software, touch screen, speaker, and a central processing unit (CPU), which makes it all happen.

Transferring the video

Would the final video be transmitted from student devices to the class shared folder first? Or straight from the student device to the projector? How would either of these be done?

Using thumb drives? Wired (using cables connecting one device to another)? Or wirelessly (using Wi-Fi or Bluetooth)?

2. Set up the scene

Teacher sets up a scene using a makeshift volcano and as many figurines of buildings, plants, animals to make the scene exciting. This could be done outdoors.

3. Teacher carries out the explosion.

i) Pour 1/2C vinegar into cream bottle. Place the cream bottle on the splash tray. The vinegar could be coloured using food dye.

ii) Place two tablespoons of baking soda in the tissue paper and fashion it into a sachet. Drop the tissue paper sachet into the vinegar and cover it securely with the lid.

iii) Step back.

The plastic cap should fly off the cream bottle, accompanied by a loud explosion.

iv) After the explosion, shake the cream bottle.

With enough baking soda and vinegar, the contents of the bottle will emerge, simulating lava as it spills out of the volcano.

4. Planning

Having seen the explosion demonstration, older students could use the 'story board' template and 'news report' template to help plan the story and write the script for the video.

An informative piece answers the 5Ws and 1H. Other considerations include how to film the explosion – at regular speed? Or in slow motion?

5. Filming

The teacher conducts the explosion demonstration several times, giving students the opportunity to film from at least two positions, which gives them more choice in the editing process. Shots students could take include close-ups, medium shot, or wide shot. Filming of a scene often starts with a wide shot to establish the location. They should also consider the angle from which they are filming – below or above the subject, or even tilted.

Ensure that the lens is clean and free of finger smudges to get clear images.

6. Editing

Students edit their raw footage using the software in their devices. Although the layout and tools available might change between different software, they remain largely similar.

Steps:

i) review the raw footage and make selections of what they want to use.

ii) order video clips in the right sequence and remove unwanted parts.

- iii) trim the clips and choose transitions between them
- iv) add a text overlay, such as titles and credits, apply filters, or add special effects, such as creating slow-motion videos

Note: Younger students will require a lot more assistance to complete the task as written, and, for this reason, the task will need to be modified so that the focus is on the filming of the explosion, and perhaps some simple editing. The teacher could request for each group to select and upload their best clip to a shared drive. The teacher then stitches all these clips together and makes edits, such as adding text and music, and slowing down the speed.

7. Presenting

Once the final videos have been made, the teacher compiles all student videos for the class to enjoy.

If using a projector and screen with speakers, highlight that this equipment is part of the external output components. How is the data transmitted from the teacher's device to the projector and screen? Using cables? Or Wi-Fi?

8. Sharing

Discuss with students the best ways to share these videos with other classes, the greater school community, and their families.

What methods are available for students to share their video content?

What type of devices are their parents, or the school community likely to use (e.g. mobile phones, tablets, or laptops)?

Are emails a good way to send the videos? The file would most likely be too large. How about uploading the videos onto online learning

platforms, such as Google Classroom, or digital app-based ones, such as SeeSaw? Or uploading it onto a shared folder on the cloud system that the school utilises?

How about uploading it to social media – would that be a good idea? If internet access is an issue, would USB flash drives work? Would their parents have USB ports on their devices to plug in the flash drive?

HOW TO USE THIS ACTIVITY WITH YOUR STUDENTS

Foundation – Year 2

Building on the excitement of the volcanic explosions, students explore how geological events like this have been passed on in oral tradition for thousands of years. Research has unearthed strong evidence that Aboriginal people witnessed volcanoes erupting and passed those stories on, over generations. In fact, the stories and place names served as warning about further volcanic activity. Students can use these stories as backdrop for creating a photo story or a video to share with their friends and family.

Students read the Dja Dja Wurrung story of two volcanoes, named Tarrengower and Lalgambook. The story may be accessed here:

[Dja Dja Wurrung: The Two Feuding Volcanoes – Nyernila – Culture Victoria \(cv.vic.gov.au\)](http://cv.vic.gov.au)

Independently, or with others, students create illustrations of this story and produce a 'photo story' – complete with narration, text overlays,

and even background music. This could be done by taking photos of their illustrations and using basic video editing software in the device to create a visual story from their photos. Consider free applications, such as Microsoft Photo Story, that allows users to easily create a 'show-and-tell' from photos.

Years 3/4

In the Earth and Space Sciences curriculum for this year group, students explore extreme weather events, such as flooding, which afflicts the eastern coast of Australia regularly.

Students could repeat this activity using a flood scenario. Create an outdoor scene in a sandpit by digging a trench and lining it with some plastic to stop water from draining away. Add lots of figurines to make the scene realistic.

Use the storyboard template to help plan the video.

Years 5/6

Students are expected to describe digital systems in greater detail, knowing the functions of the basic components related to data input (e.g. keyboard), processing components (e.g. CPU), external output (e.g. speakers), projector, screen, and storage components (e.g. cloud or thumb drives). They are also expected to explain how information is transmitted between devices in wired, wireless, or mobile networks.

Can students suggest solutions to these different scenarios in this process of filmmaking? What would happen if one part of the process is not working (e.g. there is no internet access, or if the classroom projector and screen are not working, or if there is no video editing software on their device)?

DISCUSSION SECTION AND KEY THEMES

KEY THEMES

Components

Filming used to be done with several pieces of equipment, such as:

- video cameras that have microphones and lenses
- storage in the form of memory cards, external hard drives, or USB flash drives
- lots of cables to transfer data
- computer with video editing software

These components are now largely integrated within one device, such as mobile phones and tablets, so that we can film, edit, present, and share it all on the same device. In addition to the mics, speakers, and lenses, the device also has capacity to store the video, software to edit the videos, and contains a very powerful central processing unit (CPU), which acts as the brain of the device, to ensure that all the different components are working and talking to one another.

Storage and transfer

The amount of memory on a computer or mobile device determines what applications can be run, and how much data - including videos - can be stored. In the 2000s, to ensure that there was enough memory on the hard drive to run multiple programs, big files like videos were often recorded onto CDs, DVDs, and USB flash drives. These days, with higher quality audio and visual data, videos could consume even more storage. Common ways to store and transfer large files include uploading them to cloud storage (e.g. Dropbox, iCloud, OneDrive, Google Drive). Large files can also be compressed before sending them via email or uploading them to cloud storage. However, this method isn't effective for JPEG and MP3 files because these files are already compressed.

Videos may also be transferred without using the internet. By using cables that connect one device to another (e.g. from computer to projector or screen), large amounts of data can be moved quickly. Storage devices, such as USB flash drives and external hard drives, can be used to transfer files. It is a straightforward method of sharing large files and generally takes up less time than uploading a large volume of data online. However, security is an issue if these drives get lost or stolen, especially if the files are not encrypted.

Posting videos

Uploading videos to social media and messaging apps has exploded in popularity but there are limitations to the size and format because videos on these platforms are intended to be viewed on mobile phones. There are also safety considerations when choosing this method because, once material is uploaded, there is no control over the content and how it is re-shared.

Digital images and sounds

The central processing unit (CPU) is the brain of any computer or smart device. It can be found on the circuit board and is often likened to a calculator. It does basic computations that allow the computer to respond to commands. Commands are converted to combinations of 1s (on) and 0s (off) – electrical signals – and these converted signals are processed by the CPU which also instructs different components within the computer to do what is needed.

For example, it converts an image into 1s and 0s, and these patterns are used to turn screen pixels on or off to make an image. Pixels are simply tiny lights. By sending a pattern of information telling a device which pixels to turn on and off, an image can be made. Images with more pixels have more detail. Sound is also stored in this pattern.

Video editing software in a device (e.g. iMovie, Microsoft Video Editor) allows us to manipulate this information to get the video that we want quite easily. There are also sophisticated software packages for video manipulation that are used by professionals, e.g. Adobe Premiere Pro.

Creating video content

Making a successful video requires preparation in all stages of planning, filming, and editing.

A) Planning

The planning, or the pre-production, stage of the process – before filming – is when decisions are made about how the story will be told.

The story, however simple, must be clear. Knowing as much of the 5Ws (who, what, when, where, why) and 1H (how) of the story before the filming will help the cameraperson find and film the best footage. Once the story has been defined, storyboards are made to help plan what shots to film and the sequence to put them in.

Other components of planning for this activity include choosing the location, accounting and scheduling the students, organising permissions, and making sure the equipment is ready (e.g. charging the devices).

B) Filming

There is a host of considerations to make when filming on a larger scale, but for this activity, the following should suffice.

- *Device:*
Instructions to operate the video mode should be easily found online for the device used in class.

Experiment with slow-motion video for a quick event, such as an explosion, or capture a time-lapse video for slower/lengthier events (e.g. passing clouds, kids passing by the school yard over recess).

Note: faster frame rates and higher resolutions result in larger video files.

- *Lighting:*
Consider the effect of lighting in the scene – shadows create a dramatic-looking scene and having plenty of light helps to create a cheerful one.
- *Focus and Zoom:*
Consider where to place the camera, so that the subject that is being filmed is in focus. Zooming in on a subject optically (bringing the device closer to the subject) is better than doing it digitally (pinch-zooming the screen) because the video clip will look pixelated.
- *Sound:*
If there is narration in the film, the speaker should stand closer to the device. Care also should be taken not to inadvertently cover the microphone with hands.
- *Editing:*
Editing is the art of putting film shots and clips together to make a completed film project. The editor makes all kinds of decisions about how the product looks, feels, and sounds. Editing is one part of the post-production processes. Other components include colour correction, sound mixing, and creating transitions between clips, etc.

Assuming that students are using devices that have cameras, microphones, speakers, and basic video editing software, the basic steps of editing can be simplified as follows:

- Open the editing software within the device
- Remove unwanted footage and select the best footage
- Create a timeline

This is based on the storyboard that was planned. Video clips are arranged in proper order and transitions are included to move between one clip and the next.

- Add effects, text, graphics, music

This alters the style, pace, or mood of the video.

QUESTIONS AND ANSWERS

Who invented videos and movies?

A video is a recording of moving pictures and sound, and, like most technologies, it is rarely one sole inventor who is credited. Very often, ideas build upon other ideas, and this process involves many collaborators.

One of these first ideas was the zoetrope, invented in the 1830s. It is a series of drawings that is moved rapidly, giving the illusion of motion. This video explains how the zoetrope works:

- <https://youtu.be/SBg6dAE3mI0>

Another one of these first ideas was the invention of the camera in the 1840s, which allowed the first moving picture ever created.

It was made with 12 photos that captured a horse in motion:

- <https://youtu.be/Bmuo45NR6qE>

How did my parents make home videos in the 'olden' days?

The olden days really wasn't that long ago! But filming and making a video was certainly a more complex process.

Unlike current digital devices, such as tablets and mobile phones, that can capture images and sound, and allow instant editing, filming and editing in the 'olden' days required multiple pieces of equipment, such as video recorders, VCR machines, VHS tapes, monitors, and a lot of cables.

In the 1990s, before computer editing was easily accessible, videos (in the form of VHS) were copied from one tape (source tape) to another tape (record tape), using two video machines connected by cables.

This process is called 'linear editing' because the process must start with the first shot and end with the last. It is almost impossible to go back and re-edit an earlier part of the film.

- [Video Media | Museum of Obsolete Media](#)

Why do people bother converting old films into digital form?

Many people do this to preserve memories that would be lost if the media (e.g. camera film or VHS cartridges) degrade over time due to moisture, mould and chemical reactions with oxygen in the air (oxidation), or if the machines used to read them become obsolete.

By turning the images into 1s and 0s, the photos will not fade, and they will become easier to organise, store, and share.

This conversion can be a tedious process, with lots of equipment, including cables with the correct types of plugs, to connect the equipment.

To convert the more familiar VHS tapes from the 1980s, the tape first needs to be played in a working VCR machine. As the tape plays, a device converts the visual and sound information (analogue) into the digital form.

This video data is now in the form of 1s and 0s and is fed into a computer with the appropriate software to save the information in a file.

What happens when we upload a video on the internet?

When we upload a video, our devices (e.g. tablets, mobile phones, and laptops), package the video into IP packets. IP packets are bits of information containing our video data, as well as other important information, such as the address we are sending it to. The packets are turned into radio signals, which are sent by Wi-Fi network to routers and switches on the internet until they reach the intended servers (e.g. YouTube). Once there, the video is reassembled and stored in large and energy-hungry facilities that house lots of servers.

Should we post our videos on TikTok or YouTube?

It's exciting to upload our videos to TikTok and YouTube! The videos get exported from our devices to these servers, which allow us to watch and share videos with a worldwide audience.

However, by uploading information onto the web, we must remember that information is then there forever, and we will no longer have control over the content and how the videos are shared. Videos we upload which might seem funny or entertaining now may work against us (and the people we have filmed) in the future, so it's best to get a trusted adult's advice before posting anything. There are also age restrictions to protect children against negative impacts that these platforms expose users to.

- [Consent for sharing photos and videos | eSafety Commissioner](#)

Where do people watch a lot of videos on the internet?

Watching online videos is a pastime for many people who have internet access. Mobile phones, computers, tablets, laptops and smart TVs are different devices people watch videos on. Online videos are popular because they can be accessed anywhere and anytime.

Depending on why people are watching videos (e.g. to learn something new, to relax, or to be entertained), they will go to different platforms. Free streaming services provided by traditional TV channels and subscription streaming platforms, such as Netflix and Disney, are popular for movies and documentaries, while social media platforms, such as YouTube and TikTok, are popular for original content.

Why does it sometimes take so long for videos to download or upload?

There are a few simple things one can do – first is to delete temporary files on the device. This will help to stream videos faster and free up storage space. Another thing to do is to make sure that there are as few devices as possible connected to the network by temporarily disconnecting them – including mobile phones, laptops, and even some coffee machines and refrigerators!

Are there volcanoes in Australia?

Since Australia does not lie on a fault – unlike places like New Zealand, Indonesia, Japan, Hawaii that do – we often do not associate volcanic activity with Australia today.

However, there is evidence that there were many volcanic eruptions up to the time humans lived there. The most recent event took place in Mt Gambier and Mt Schank (South Australia) about 5,000 years ago.

Many would be surprised to know that relatively young volcanoes exist in Victoria and South Australia.

These are maar volcanoes, meaning that they have craters with low rims. These volcanoes are being studied by researchers, who are working to find out how these volcanoes came to be, and what we can expect from them in the future.

Why are there earthquakes in Victoria?

Australia sits in the middle of a tectonic plate known as the Indo-Australian plate, which is moving in a north-east direction. This movement, of about 7cm a year, builds up pressure in the earth's crust. When this pressure is released along Victoria's fault lines, we experience an earthquake.

The earthquake on Sep 22 2021 was measured at a magnitude 5.9. This makes it the largest onshore earthquake in Victoria's recorded history. Did you feel it? Do you remember what you were doing when the earthquake happened?

- [Victorian earthquake explained: why did it happen and why was the impact relatively mild? | Victoria | The Guardian](#)

Do animals know when earthquakes are about to happen?

When no mass animal deaths occurred in Sri Lanka during the tsunami, which killed thousands of lives in Asia and East Africa in 2004, it made researchers think that animals like elephants, leopards, and monkeys, were able to sense the danger long before humans – and move to higher ground before the tsunami hit. Another example of unusual animal behaviour is in 2012 when Mt Etna in Sicily erupted. Researchers who studied goat behaviour reported that the goats only ran away prior to the eruption, and not to every ground tremor.

One theory is that animals are able to sense the earth's vibrations, perhaps being able to hear sounds that are lower than our human ears can hear.

Another theory is that they can sense these changes in the atmosphere – although there has been no conclusive evidence yet to explain how they can do that.

- [Can Animals Sense Earthquakes? \(nationalgeographic.com\)](#)
- [Do Animals Really Anticipate Earthquakes? Sensors Hint They Do – Scientific American](#)

OUTSIDE OR SUPPLEMENTARY READING

What is editing and what are some good tutorials?

- [How to Edit Videos in iMovie on iPad: 15 Steps \(with Pictures\) \(wikihow.com\)](#)
- [Online learning | How to Edit a Film | ACMI: Your museum of screen culture](#)

History of film

- [When Were Movies Invented? A Brief History of Motion Pictures \(studiobinder.com\)](#)
- [Video Media | Museum of Obsolete Media](#)

Earthquakes and Volcanoes

- [Australia's volcanic history is a lot more recent than you think - Australian Geographic](#)
- [Can Animals Sense Earthquakes? \(nationalgeographic.com\)](#)

TOPIC WORDS

- Data
- File size
- Cloud
- Online
- Applications
- Hardware
- Upload
- Camera
- Microphone
- Speaker
- Peripheral devices
- Transmit data
- Protocols
- Sharing
- Export

STORYBOARD TEMPLATE

Use the storyboard below to help you plan the order of the filming.

Renumber the shots if you want to change the order in which the film is shot, or to add more shots.

1. Make a simple drawing of your clips in the 'Drawing' box
2. Describe the image and sound you want in the shot in the 'Image' and 'Sound' column.

Order	Drawing	Image	Sound

PLANNING TEMPLATE

What's the Story?

Planning: Every good video tells a good story – with a beginning, middle, and end. Start with the 5Ws and 1H to get started.

Why? (Why is this story important? Which points are important to interest your audience?)

Who? (Who is involved?)

Where? (Where is the story happening?)

When? (When did the explosion happen?)

How? (How did the explosion happen? How severe was it? How can people get help?)



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