

Risk IT

Animation

Preparatory Session

Session Objective

- To equip and teach the session leader and team in the skills required to teach this course.
- To gather together the equipment and materials that will be used in the course.

Session Outcomes

By the end of this session, you should:

- Be competent in the skills required for animation.
- Have the equipment and materials required for the course, or be aware of them.
- Be confident in teaching animation to a group of students.

Overview for the Session Instructor

Before teaching others to animate, it is necessary to be able to know how to animate yourself. Leading an animation course can be quite stressful if ill-prepared; this session should be done well in advance of the first session with the students, in order to prepare you and your team for a smooth delivery. The content of this session will be drawn on throughout the rest of the course so being familiar with this session maybe very useful.

Once all of the materials and equipment have been prepared, this session will take about 2 to 3 hours to complete.

Session Outline

Before you Begin
The Theory
Some useful terminology
Setting Up
How to Animate (using the software)
Practice Exercises
The Basics of Editing
Working with Young People and Technology: Some Pointers

Before you Begin

You will need...

IT Skills	A basic knowledge of how to use a computer.
A Team	Depending on how many students there are, it is advised that there is one team member for every 4 students. Extra hands/helpers are always useful to keep the students on track and troubleshoot problems.

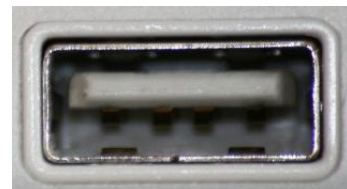
You will also need...

Equipment (per animation set/per 2 to 3 students)

A Camera	There are two types of camera that are available to connect to a PC, which are categorised by the type of connector that is used to transfer the data from the camera to the computer. These two types are 'USB' (Universal Serial Bus) and 'Firewire' (sometimes known as 'IEEE 1394' or 'iLink').
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Firewire (6-pin)



USB

USB

USB cameras tend to be used with webcams for internet conferencing. They are small and relatively inexpensive; prices range from £10 to £100 pounds. Cheaper cameras many not have the ability to focus automatically on the subject being animated; make sure that the camera is in focus before beginning to animate.

Some schools may have special animation cameras (such as Digital Blue's 'Digital Movie Creator'). These cameras are recommended over webcams for animating.

The software drivers for a USB camera will need to be installed in advance of using most USB cameras with a particular computer. Make sure that there are drivers available for the operating system on the computer being used; there are a limited number of USB cameras that have drivers available for the Mac OS.

Firewire

Generally, Firewire cameras will be better quality than USB cameras, although they also tend to be a lot more expensive; prices range from £100 upwards.

A Firewire connector can often be found on digital camcorders and high-end webcams. It maybe necessary

to use a tripod with Firewire cameras and often a Firewire cable will need to be purchased separately in order to make the connection from camera to computer.

Firewire cameras do not need drivers to be installed on the computer that it is being used with; they generally work with all operating systems automatically.

A Computer

Most computers made in the last 3 years will be suitable to be used to make an animation. The only condition is that the computer being used needs to have the appropriate connector (USB or Firewire) to be able to attach the camera being used.

Mac vs PC

If possible, it is recommended that Macintosh computers are used in this course, mainly due to the software available for them for animating and editing. Most schools will use Windows based PCs; this course is written to take into account either a Mac or PC system being used. It is recommended to use either one or the other system, not both.

Animation Software

The recommended software for this course is Boinx's 'iStopMotion'. It costs about £20 and can be purchased from Boinx's web site (<http://www.istopmotion.com>). Discounts are available for volume licence purchases.

However, this software is only available for Macintosh computers.

There is alternative software for Windows computers called SMA (Stop Motion Animator), which is free. This course has been tested using this software and contains tutorials for operating it. As the Crux goes to press, SMA is available to download from:

<http://www.animateclay.com/anasazi/smafull.exe>

or take a look at the Crux web site for a list of active links to this software and alternative software.

Video Editing Software For Windows:

Windows MovieMaker - Comes free with Windows XP and Vista.

For Mac OS X:

iMovie - Comes free with all new Macs.

A Table Top

A working area large enough to accommodate a computer and some models to move around (about 1m by 2m is recommended).

Optional:

DVD burner & software Useful for distributing the finished animations.



Tripod Maybe required for digital cameras and camcorders.

Desk Lamps Two per set. Desk lamps are recommended for lighting the sets, especially in poorly lit rooms. Changes in light within a room are very obvious in animated clips; using desk lamps will keep the lighting of a scene constant and also keep the plasticine models warm, soft and easy to work with.

NOTE: It maybe part of a school's insurance policy that equipment used on their premises is PAT tested for electrical safety. If you are using your own equipment in a school, ask about this before taking in equipment that has not been PATtested.

It is recommended that if you are bringing electrical equipment into schools, that the number of available electrical sockets in the room in which the animating is taking place, is checked before hand. It maybe necessary to bring some 4-way strip-sockets or a mains extension lead in order to plug in all the required equipment.

Materials & Art Kit

Plasticine Can be bought from art and craft shops, or if you know well in advance what colours are required, can be purchased through a school supplier. Suggested basic colours: Blue, Red, Yellow, Green, Purple, Orange, Black and White.

Large (A3 or A2) Paper Especially, white, blue and green are very useful.

J-Clothes For cleaning up afterwards.

Felt-Tip Pens

Pencils

Story-boarding Paper Can be downloaded from <http://www.thecrux.co.uk>

Optional:

Lighting Gel If desk lights are being used, the light produced from them can look very yellow/orange on camera. This can be treated by putting a piece of film over the face of the light, known as a 'gel'. Gels come in many different colours, and there are some blue gels available that will cause a yellow/orange light to look white on camera. These gels are known as 'corrective-white'. For more information on lighting gels, visit <http://www.rosco.com/uk/>.

Hard case If models are used session after session, it is important to protect them between. Keep a plastic box to protect the models. Plasticine doesn't dry out easily so it isn't necessary for the box to be sealed.

Drinking Straws **Useful for holding models together.**

Scissors

NOTE: Not all of the equipment and materials listed here will be required for every session; a list of equipment and materials required for any particular session is listed at the start of that session.

The Theory

Video is a series of consecutive photos being shown rapidly one after another. In the UK, TV operates at 25 frames (photos) per second. To the eye, this appears as a smooth motion on the TV, since the human eye has a limit as to how fast it can take in information.

Animation is the process of taking each of these still images, each one differing slightly from the next, in order to create a movement in whatever is being animated.



It is literally a matter of taking a photo, moving the subject slightly, taking another photo, moving it slightly again, and so on, to build up an animated sequence.

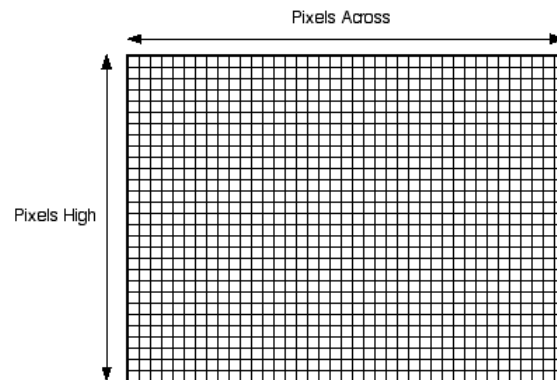
Some useful terminology

Resolution A digital image is made up of little blocks called 'pixels', each of a different colour in order to create the image. The number of pixels that make up an image is known as the resolution. Resolution is measured in terms of how many pixels wide an image is, against how many pixels tall it is.

Resolutions are often written in the form:

640 x 480 or 640 by 480

This means the image is 640 pixels high by 480 pixels across.



A digital image made up of pixels

Some common resolutions are:

640 x 480 (known as 'VGA')
768 x 576 (the resolution of digital video in the UK)
1920 x 1080 (the current highest resolution of Hi-Definition Video)

For animation in the course, it is recommended to use VGA resolution; 640 x 480.

Frame A single picture in a video. Many frames shown rapidly one after another make up a video sequence.

Frame Rate This is how many images make up every second of footage. UK Television is broadcast at the equivalent of 25 frames every second. It is recommended that for this course, a frame rate of 15 frames per second is used i.e. for every second of animated video footage, 15 photos need to be taken.

Scene An event that occurs in a particular place.

Shot The way that a particular scene is viewed. A scene maybe made up of several shots, which help the viewer to understand what is happening in the scene.

Setting Up

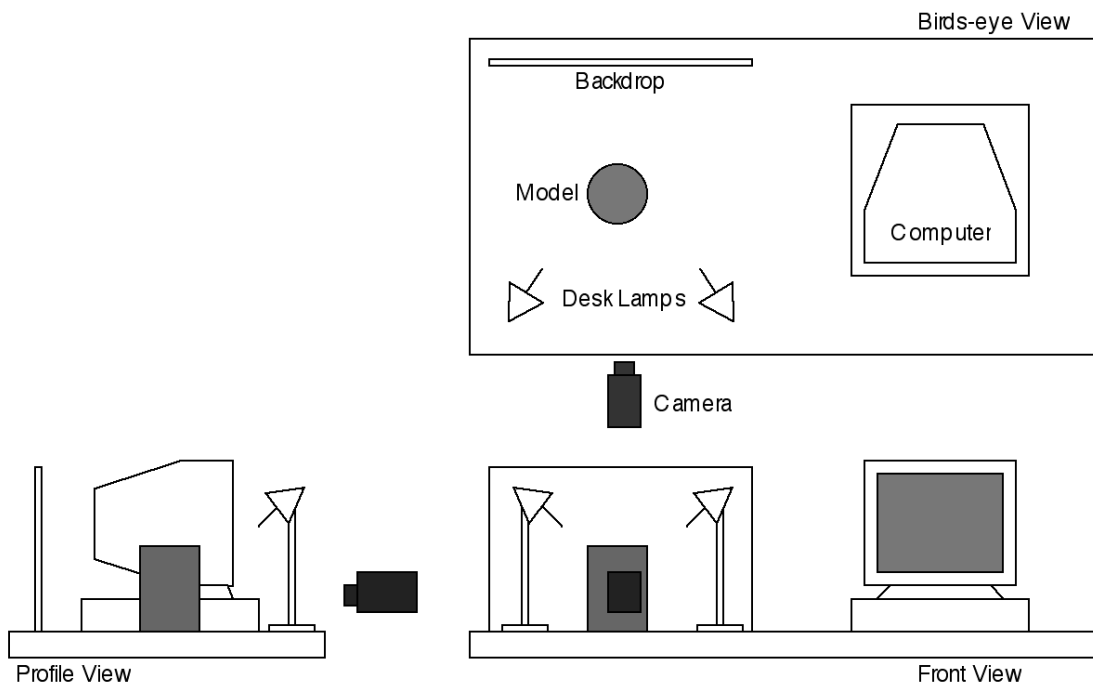
This is a general overview for setting up the software and set and to get you going animating. Depending on the camera and computer being used, some of these steps may not be necessary.

It is assumed that the camera drivers and animation software is already installed on the computer being used. Most driver installers will have a step-by-step guide to installing the software, as do the installers of the recommended animation software in this course.

1. Setting up the Scene

Before putting together an animation set, it is important that there is an appropriate work surface available. It is recommended that an area of at least 1m by 2m is available per set, though the larger the area, the better.

A basic animation set can be put together as follows:



Setting up an animation work area

Positioning of Camera

Depending on the desired effect, the most appropriate camera positioning for an animation is so that the camera is pointing directly forward (not tilted up or down) and is at the 'eye-level' of the models. If the camera is on a tripod, it may be necessary to put the tripod on the floor to achieve the desired height. If the camera is not on a tripod, place it on the table and rise it up using books or boxes. If the camera is very light in weight, use tape to stick the camera to the surface it is placed on, to prevent it moving between photos; changes in camera positioning will be very obvious when an animation is played back.

If the feature is available, remember to focus the camera on the model. If the camera is 'auto-focusing', remember to check that it is focusing on the model, not the backdrop or something else in the shot.

Positioning of Lights

The animation set shown previously uses two desk lamps to light the models and backdrop. Each lamp is positioned at about 45° either side of the model, and at an elevation of about 45° above the camera. This should create an even wash of light across the set. When shooting using lights, try not to get prominent shadows in the camera shot.

Using the camera, check to make sure that the set does not appear over exposed (too much light causing the camera shot to be 'washed out'). If this is the case, either reduce the sensitivity of the camera, or if this is not possible, reduce the power of the desk lamps by moving them away from the set or placing a 'neutral density' gel over the face of the lamp (see <http://www.rosco.com/uk/> for more details).

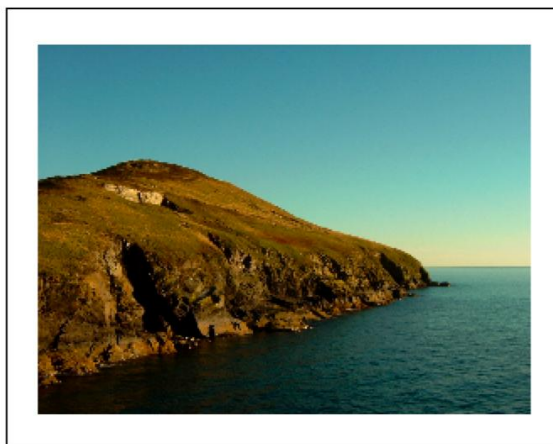
Traditionally, the best and simplest method of lighting for film is a technique called 'Three-point lighting'. However, animation sets are usually so small, the method suggested here works well enough. If more professional results are desired for the animation, three-point lighting may be appropriate.

Positioning of Background

The background should be fixed at the back of the set. The distance between the backdrop and the camera should be sufficient that the models can move around and be animated while remaining in focus, but not so great that the background does not fill the entire camera shot. Depending on magnification of the camera, about 0.5 to 1m should be sufficient.

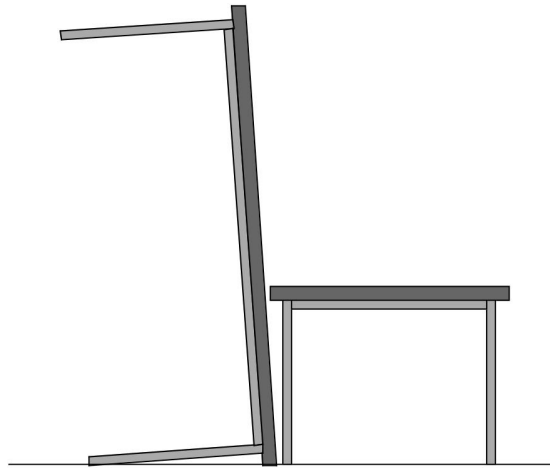


Correctly Positioned Background



Incorrectly Positioned Background

Backgrounds can be held in place by having the whole set backed up against a wall and sticking the background to the wall using blue-tac, or by placing a spare table on it's end next to the animation set and sticking the background to the surface of that table.



Positioning of Models

Models can be positioned as close or as far away from the camera as desired. However, remember that they should remain in focus and remain lit, which may have some bearing on where the models can be positioned.

NOTE: All of these guidelines for positioning of models, backdrops, cameras and lamps are suggestions; there is no 'correct method', though the previous maybe helpful. In the end, do whatever looks good on the camera.

2. Connect the camera to the computer

If using a firewire camera, make sure everything is turned off before connecting it together; cameras have been known to catch fire when being connected to a computer while turned on (this is nothing to do with the name).

If using USB, make sure the drivers for the camera are installed before connecting the camera.

3. Turn on the computer (and camera) and launch the animation software

How to Animate (using the software)

1. Configuring the software

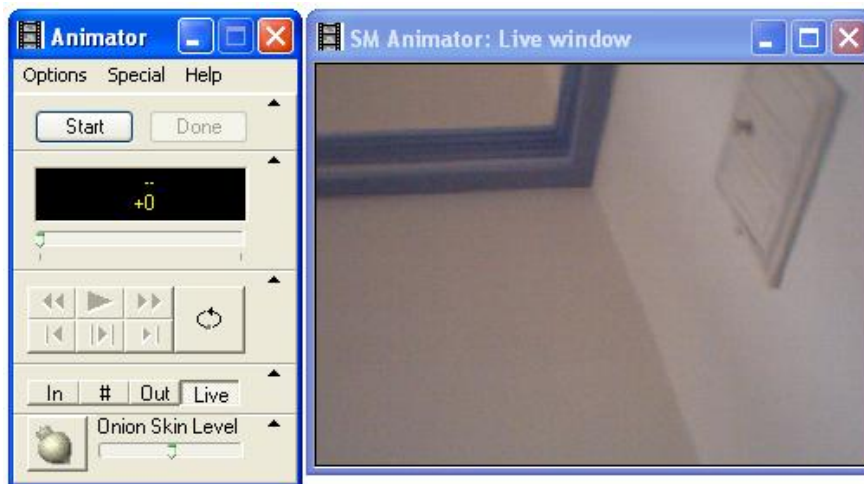
There are accompanying videos on the Crux web site which provides a visual explanation of how to set up the recommended software, and mirrors the explanation given below. Explanations are given for the software SMA (PC) and iStopMotion (Mac). If you are using different software, the following configurations are recommended:

Photos are taken with a resolution of 640 pixels wide by 480 pixels high
Videos are played back at a frame rate of 15 photos per second

These configurations will need to be made every time a new animation is begun.

In SMA:

- Launch the Stop Motion Animator Software. Two windows should appear which will look something like this.



The SMA Software

- To configure the software to the correct specification, in the 'Animator' Window; click on the 'Options' menu and select 'Capture Options...' from the menu which appears. This should open a new 'Capture Options' window.

- Make sure that in this window, these options have been selected:

Movie will run at 15 fps.
Grab 1 frames at a time.

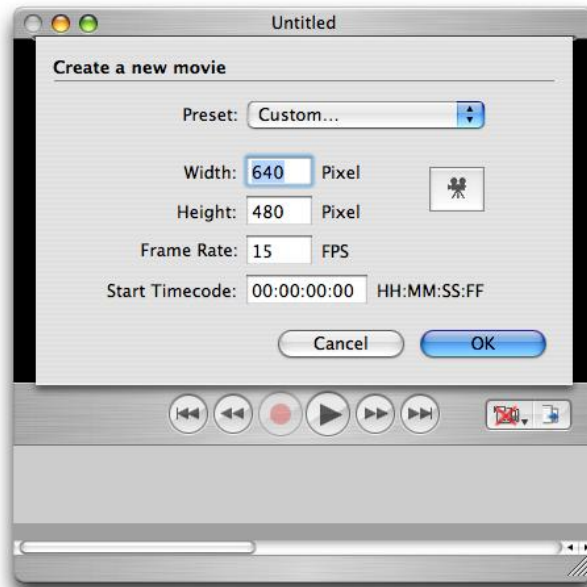
- In the top-right hand corner of this window, click on the 'Video Format...' button. This should cause another window to launch with the titled 'Video Format'. The 'Stream Settings' tab should be selected. In this tab, change the resolution to be '640 x 480'.

- Click on 'OK' in the 'Video Format' window and click 'OK' in the 'Capture Options' window.

- Click on the 'Special' menu in the 'Animator' window. Select 'Video Window Size...' from this menu. A 'Video Window Size' menu should appear; in this window change the 'Size in Pixels' to have a width of 640 and a height of 480. Click on 'OK'.

In iStopMotion:

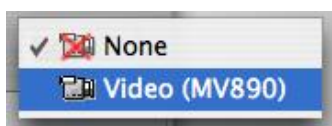
- Launch iStopMotion. A window which looks similar to the following should appear.



Set Up Window in iStopMotion

- In the 'Width' field, type '640' as the number of pixels wide and in the 'Height' field, type '480' as the number of pixels high.
- Change the number in the 'Frame Rate' field to '15' frames per second.
- Make sure that the timecode is starting from '00:00:00:00'; this is the default value.
- Click on 'OK'. A video window should open and the video images being sent from the camera should appear on the screen.
- If the video images do not appear, click on the camera icon to the right of the video control buttons and select the desired camera from the list which appears. If the camera does not appear in the list, close iStopMotion, turn the camera off and then back on again and then follow the previous instructions to set up iStopMotion again.

For further assistance, visit <http://www.istopmotion.com>.



Camera List in iStopMotion

2. Framing

Framing refers to how the models are positioned in the camera shot. Framing is very useful in telling stories using images; using different types of camera shots will create different atmospheres and make the story more interesting. This is true for both film, picture story books and comic strips.

Here are some examples of how models can be framed in a shot:



A Wide Shot

Wide Shot

Useful for setting the scene and putting characters and models into the context of their situation. Often used at the start and end of a scene.



A Mid-Shot

Mid or Half Shot

Standard shot for filming news readers, sometimes known as a 'Head and Shoulders Shot'. Can be used to establish relationships between people; if someone is being looked down upon they appear to be inferior, whereas if the camera is looking up at a character, they appear to be superior or stronger.



A Close Up

Close Up

Used to convey emotion or something personal.

In each of these shots, the character has been positioned so that the eyes/face is about 2/3 of the way up the frame and the character is roughly central. This does not have to be the case, though is often quite aesthetically pleasing. Remember when framing a shot to keep the models in focus.

3. Taking Photos

In SMA:

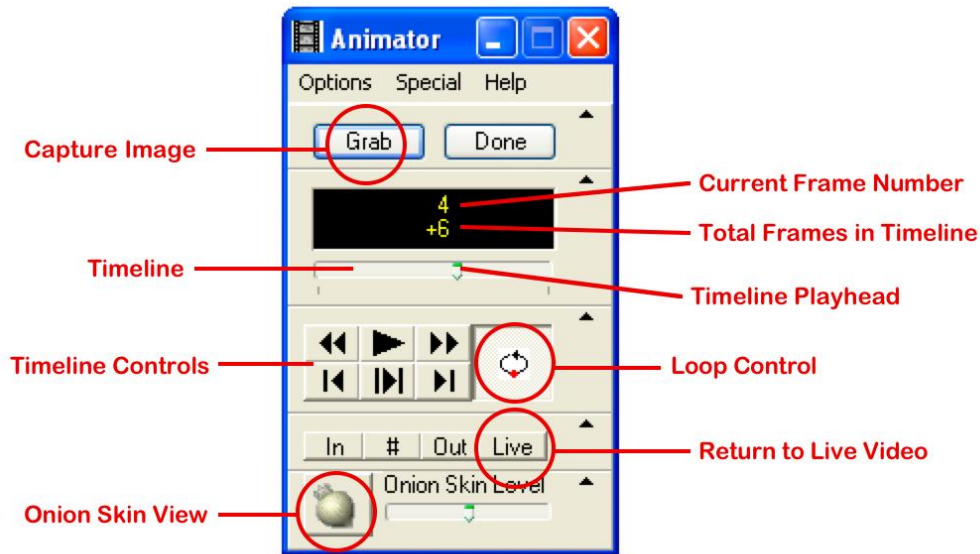
- In the 'Animator' window, click on the 'Start' button to begin the animation. Clicking on 'Start' will automatically capture the first frame of the animation. After the first frame has been captured, the 'Start' button changes its name to become the 'Grab' button.

- To capture subsequent frames, click on the 'Grab' button. Clicking on 'Grab' will always put frames at the end of the animated sequence, regardless of where the arrow is in the timeline.

NOTE: Once a frame has been captured, it cannot be deleted directly within the SMA software. Unwanted frames can only be removed in the editing process and can be tricky to do; it is best to take the shot right the first time.

- Frames can be reviewed by clicking on the timeline strip in the 'Animator' window. The arrow on the timeline shows the frame currently being viewed, with reference to the other frames in the timeline. The reference number of the current frame being viewed is also displayed in the black box above the timeline (the number above). The number below this is the total number of frames in the timeline.

- The timeline can be navigated using the controls below the timeline. Using these controls, the animation can be rewound to the beginning, skipped forward to the end, moved back or forward one frame at a time and played as normal. Clicking on the 'loop' button can also loop the animation.



Controls in SMA

- At any point, to return to the live camera image, click on the 'Live' button in the animator window.

Onion Skinning

It maybe useful to be able to see how larger movement is being made between frames, before taking the photo. This can be done by clicking on the 'Onion Skin' button at the bottom of the animator window.

The onion skin facility displays the last photo taken, and overlays on top of it, the photo which is about to be taken. The difference between the two pictures should be visible.

In iStopMotion:

- Taking photos in iStopMotion is very easy; click on the 'record' button beneath the video image in the iStopMotion window. This will add a photo to the timeline below the video controls, at the current location of the timeline playhead.



- Multiple photos can be taken at once by pressing the number keys on the computer keyboard; '1' to take one photo, '2' to take two photos, etc. up to '4'.

- Note that the photo about to be taken is overlaid onto the photo just taken so that the difference between the two photos can be clearly seen. This is referred to in iStopMotion as 'Preview Overlay'.

- Footage can be reviewed by using the video controls. Much like a DVD player, the timeline can be skipped to the beginning or end, or checked through one frame at a time. The footage can be played through to ensure that the animation is looks as it should.

- Photos will be added into the timeline where ever the playhead currently is in the timeline; remember that after footage is reviewed, to return the playhead to the end of the timeline before continuing to animate.

- If a frame is taken accidentally, or is incorrect, it can be deleted by selecting the frame at issue in the timeline and pressing the 'backspace' key while holding the 'apple' key on the computer keyboard. This should remove the offending frame from the timeline.

4. Moving the Models

Remember, for every second of footage that you require, you will need to take 15 photos. Act through the motion you are animating as you move the model; think about how long it takes you to perform the action and how many frames you will need to take in order to make your animation perform the same action, and how small the movements you need to make should be.

Time to perform action (seconds) x Frame Rate = Number of frames to be taken

e.g. 1 x 15 = 15 frames

If using the recommended frame rate (15 frames per second) then:

1 frame	1/15th second
Time	Number of frames to be taken
1/2 second	8 frames
1 second	15 frames
2 seconds	30 frames
5 seconds	75 frames
10 seconds	150 frames
20 seconds	300 frames
30 seconds	450 frames
60 seconds	900 frames

5. Saving the Animation

In SMA:

- When all of the required frames have been captured, click on the 'Done' button in the animator window. This will automatically open a 'Save File As' dialogue box.

- Select the location to save the animated sequence and give the file a name. Click on the 'Save' button to save the sequence. Files produced by SMA are always AVI movie files. These can be played back using most video viewing

software, such as Window Media Player, and are supported by most operating systems.

In iStopMotion:

- From the 'File' menu at the top of the screen, select 'Save'. If this is the first time that the animation has been saved, a window will appear asking that the animation be given a name and for the location which it is to be saved into, to be selected. When this has been done, click on the 'Save' button in the bottom right of the window.

- Remember to save your animations regularly to prevent work being lost.

- When an animation has been completed, it needs to be exported ready to be edited. This is done by selecting 'Export to DV...' from the file menu.

- A window should appear asking that the exported movie file be given a name and to select the location that the movie is to be saved into. When this has been done, click on the 'Save' button in the bottom right of the window.

Practice Exercises

The best way to learn is by doing; have a go at some of these practice exercise to become familiar with setting up the software, animating a sequence and exporting it into a video file to be edited.

1. The Race

Get two objects and make them race across a table top so that they are moving smoothly, but at different speeds. The whole race should last between 10 and 15 seconds (150 to 225 frames).

2. The Wicked Witch

Get a piece of plasticine and animate it 'melting' into a plasticine puddle. Then try 'morphing' the plasticine puddle into a character. The whole sequence should last between 5 and 10 seconds (75 to 150 frames).

3. Walking the Walk

Using either a toy with moveable legs, or a plasticine model with legs, practice making it move across the screen using it's legs. The whole sequence should last between 5 and 10 seconds (75 to 150 frames).

4. Miracle-Grow

Animate a plasticine tree growing out of a table top. The sequence should last up to 15 seconds (225 frames).

The Basics of Editing

Usually each shot in an animated scene should be saved as a different video file. When this has been done, the shots can be put together into a single film, in a process called 'Editing'. The editing process also includes tasks such as adding transitions, effects, audio and titles to the film, enhancing the film and helping to tell the story.

1. Starting a Project & Import Clips

In Windows MovieMaker:

- Launch Windows Movie Maker.
- On the left hand side of the screen is almost a step-by-step guide to editing video in Windows Movie Maker. The first step is to import the animated footage into Movie Maker. This is done by clicking on the 'Import Video' link, under the heading that reads '1. Capture Video'.
- An 'Import Video' dialogue window should appear. In this window, locate the animated clips that are to be imported and click on the 'Import' button.
- These clips are imported into a 'collection', that is, a folder within WMM. Each time more clips are imported, a new collection is created. The collections can be viewed and selected by clicking on the 'Collections' menu list, just below the menu bar at the top of the screen.
- In the same way, still images and audio tracks can be imported.

In iMovie:

- Launch iMovie. Usually the last project that was worked on in iMovie will be automatically loaded. If this is the case, close the open project. If the last project worked on can not be found, or iMovie is being launched for the first time, a window will appear similar to the one shown here. Ignore this window to begin with.



iMovie Start Screen

- From the menu bar, select 'iMovie' and from the menu which appears, select 'Preferences'.
- Another window should appear entitled 'Preferences'. Depending on which version of iMovie is being used, this step will vary. An option needs to be

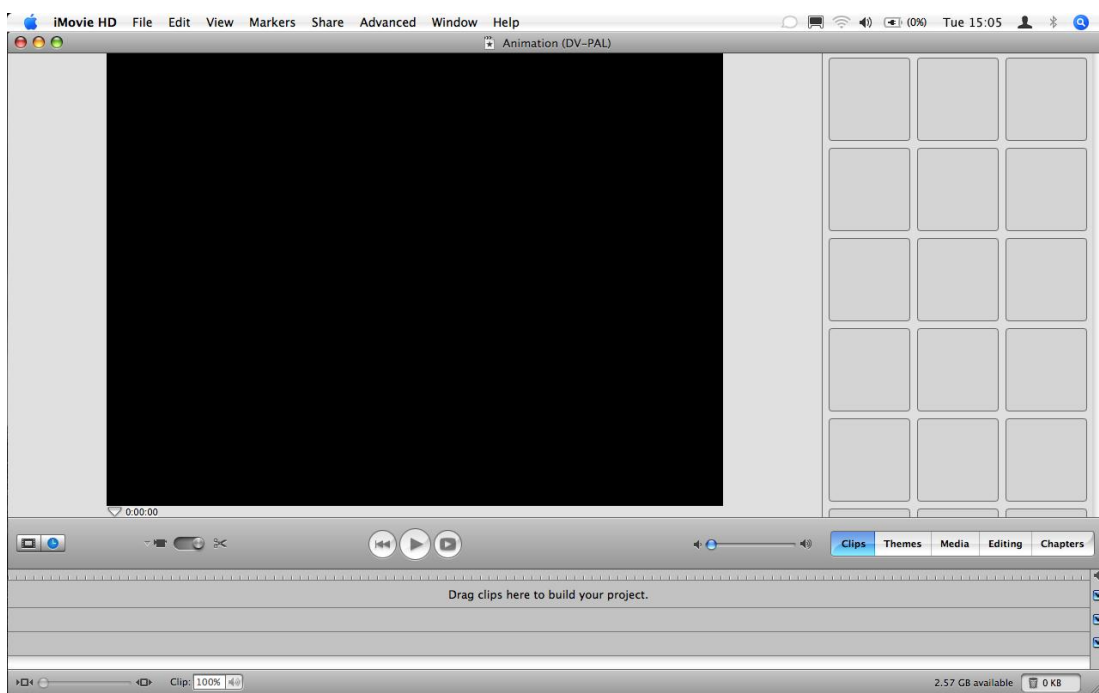
selected to say that new projects being created are 'PAL' format (rather than NTSC), or if iMovie HD is being used, that new project frame rate is 25 frames per second (rather than 29.97 frames per second). This step need only be done once; it is a necessary step to ensure that the edited film will play on UK televisions.

- Close the preferences window. In the iMovie window, click on the 'Create a New Project' button.

- A window will appear asking where to create the new project. Select the location where the project is to be saved and give the project a name.

- Towards the bottom of the window is an option which allows the video format to be set. Select 'DV' as the video format. Click on the 'Create' button.

- A window should appear, similar to the picture shown in here.



An iMovie Project

To Import Clips into iMovie:

- From the menu bar, select 'File' and from the menu that drops down, select 'Import...'

- A window will appear showing the disks available to the computer; locate the animations to be added into the project, select them and click on the 'Open' button. Repeat this step if there are more clips to be imported from a different location.

- The computer should copy the clips into iMovie. These clips should appear in the clips library on the right hand side of the iMovie window.

2. Adding Clips to a Timeline

In Windows MovieMaker:

- There are two views for the timeline in WMM; the 'storyboard' view and the 'timeline' view. The two views can be toggled between by clicking on the 'Show Timeline' button in the storyboard view, or on the 'Show Storyboard' button in the timeline view. These buttons appear just above the timeline.
- Clips from collections can be dragged and dropped from the central part of the WMM window, into either of these timeline views to add them into the timeline.

In iMovie:

- There are two views for the timeline in iMovie; the 'timeline viewer' and the 'clips viewer'. These two views can be toggled between by clicking on the timeline buttons shown here. These buttons can be found just above the timeline on the left-hand side of the iMovie window.



The Timeline/Clips View Buttons in iMovie

- Click on the required clip within the clips library on the right-hand panel of the iMovie window, and drag it on to the timeline at the bottom of the iMovie window. Release the mouse button; the clip should disappear from the clips library and appear in the timeline.
- In the same way, clips in the timeline can be moved back into the clips library window, or rearranged within the timeline.

3. Top & Tailing

Top and tailing is a term which describes cutting the beginning and end off of a clip so that it fits more appropriately into an edited sequence. It may also be useful for cutting out unwanted frames from an animated sequence.

In Windows MovieMaker:

- The start and end points of an animated clip can be changed once it has been dropped into the timeline.
- Click on the 'Show Timeline' button to show the film as a timeline.
- Click on the clip that is to be edited. A black box should appear around the inside of the selected clip, with an arrow appearing at each end.

- Moving your mouse above these arrows will change the cursor into a red, double ended arrow. Click and drag the ends of the selected clip to set the new start and end points.

- To remove an individual frame from a sequence, drag two copies of an animated clip onto the timeline. Move the end of the first copy of the clip so that it ends just before the unwanted frame, and move the start of the second clip so that it begins just after the unwanted frame. When the whole sequence is played back, the unwanted frame should be hidden in the timeline.

In iMovie:

- Click on the clip in the clips library which is to be top and tailed, to load it into the viewing area in the iMovie window.

- Click on the playhead at the bottom of the viewing screen and drag it to the position in the clip where the clip should begin.

- In the menu bar, select 'Edit' and from the menu which appears, select 'Split Video Clip at Playhead', or alternatively press 'T' while holding down the 'apple' key on the computer keyboard.

- The clip in the clips library should become two clips; the first one of these is the start of the video (before the video split) and the second is the end of the video (after the video split).

- Reposition the playhead at the bottom of the viewing screen to the desired end point of the clip. Again, select 'Edit' and then 'Split Video Clip at Playhead' to split the video. There should now be three clips in the clips library, the middle clip of which should be piece of video which has been top and tailed.

- If the top and tail of the clip are no longer needed, they can be deleted by clicking on the clip in the clip library panel and pressing the 'backspace' key on the computer keyboard. Watch the clips before deleting them to make sure that something which is needed isn't going to be deleted.

4. Adding Transitions

A transition is a way of making a change between two shots. They can be useful in telling a story, or making the changes between scenes more interesting or obvious. The most common transitions are 'cuts' where one shot jumps from the end of one shot to the start of the next shot with no other motion in between, or 'dissolves' where the outgoing shot fades into the next incoming shot.

In Windows MovieMaker:

- Under the '2. Edit Movie' menu on the left-hand side of the screen, click on the 'View video transitions' link. This will display various transitions which can be applied between clips in the central area of the WMM window.

- The transitions can be previewed by double-clicking on each of the transitions in the central area. An example of what the transition will look like should be shown in the preview area on the right of the screen.

- When an appropriate transition has been found, it can be applied between two clips by dragging it into the small box between each of the clips in the 'storyboard view' of the timeline.

- Transitions can be removed from the timeline by right-clicking on the transition box between the clips on the timeline and selecting 'Delete'.

In iMovie:

- Adding Transitions in iMovie will vary depending on the version of iMovie being used. In iMovie HD, click on the 'Editing' button, just above the timeline on the right of the screen. This will change the panel above it. In this panel, click on the 'Transitions' tab at the top of the screen.

- A list of possible transitions will appear as a list in the right-hand panel. These transitions can be previewed by clicking on each of them in turn and viewing how the transition will look in the main viewing area of iMovie.

- When the desired transition has been identified, the speed at which the transition occurs needs to be set. Click and drag the speed slider at the bottom of the list of transitions, or type the number of frames into the speed field, over which the transition should take place. The new speed can be previewed in the main viewing window.

- When the desired transition and speed have been chosen, click and drag the name of the transition onto the timeline between two clips. A new piece of video should appear between the two clips; this is the transition.

- Watch over the transition to make sure that it appears as expected.

- If a transition is no longer required, click on the piece of video in the timeline which represents the transition, so that it is highlighted in blue, and press the backspace key on the computer keyboard. The transition should disappear and the clips returned to as they were before the transition was applied.

5. Adding Effects

An effect is something that can be applied to a video clip to change the way it looks. These changes may be to do with the colours of the video image, the size, the speed, the perspective or adding something new to the clip. Using effects on video clips can create a different feel to the video and can be used to enhance or even tell the story being presented.

In Windows MovieMaker:

- There are numerous effects that can be added to clips in the timeline to give the animations a different feel and can be used to enhance the story being told.

- Under the heading '2. Edit Movie', click on the 'View video effects' link. This will display the available effects in the central section of the screen.

- Effects can be previewed before applying them to a clip by double-clicking on the effect in the central section of the screen. This will display what difference the effect makes to the a clip in the preview display on the right-hand side of the screen.

- When an appropriate effect has been found, it can be applied to a clip by dragging and dropping the effect from the central section of the WMM window, onto the desired clip on the timeline.

- Effects can be removed by right-clicking on the clip which is to have the effects removed, and selecting 'Video Effects...' from the menu which appears. This will launch a window entitled 'Add or Remove Video Effects'.
- In the right-hand column of 'Displayed effects:', select the effect which is to be removed and click on the 'Remove' button between the two columns.
- In the same way, effects can be added to the clip by selecting the desired effect in the left-hand 'Available effects:' column and clicking on the 'Add' button between the two columns.
- When only the desired effects to be applied to the clip appear in the right-hand column, click on 'OK' at the bottom of the window.

In iMovie:

- Adding Effects in iMovie will vary depending on the version of iMovie being used. In iMovie HD, click on the 'Editing' button, just above the timeline on the right of the screen. This will change the panel above it. In this panel, click on the 'Video FX' tab at the top of the screen.
- The panel below should change to display a list of effects that can be applied to the clips. In the timeline, click on the clip which the effect is going to be applied to.
- From the list of effects, select an effect by clicking on its title. A preview of how this effect will change the look on the clip can be seen in the viewing area of iMovie.
- Some effects will have parameters which can be altered to change how the effect will affect the clip. These appear beneath the list of effects in the right-hand panel. Set the parameters so that the clip preview appears as required.
- When the desired effects and parameters have been chosen, click on the 'Apply' button in the bottom right-hand corner of the effects panel. The video clip should render (a red box will appear at the bottom of the clip in the timeline) and then whenever the clip is played back, should have the chosen effect applied to it.
- Multiple effects can be applied to a clip at once by selecting another effect from the effects list, adjusting the parameters and clicking on the 'Apply' button again.
- All the effects applied to a clip can be removed by either selecting 'Undo Apply Effect' from the 'Edit' menu, just after an effect has been applied, or by holding down the 'Ctrl' key on the computer keyboard and clicking on the clip which is to have the effects removed from in the timeline. A menu should appear above the clip; select 'Revert Clip to Original' from this menu and the clip should return to how it looked initially.

6. Adding Titles

Titles can be useful for introducing a story, adding credits to the ends of films or helping to establish a story. A title is any text which is applied to a video clip in the editing process, and sometimes titles can be as interesting as the films themselves in terms of creativity and style.

In Windows MovieMaker:

- Under the '2. Edit Movie' menu on the left-hand side of the screen, click on the 'Make titles or credits' link. This will display a list of types of credits which can be applied to the film. Follow the tutorial to add titles to the edited film. To return to the main menu at any point, click on the 'Cancel' link.

In iMovie:

- Adding Titles in iMovie will vary depending on the version of iMovie being used. In iMovie HD, click on the 'Editing' button, just above the timeline on the right of the screen. This will change the panel above it. In this panel, click on the 'Titles' tab at the top of the screen.

- The panel below should change to display a list of ways in which titles can appear onto the screen. From this list, select one of the titles. Similarly to the video effects panel, a list of parameters should appear beneath the list of titles. A preview should play in the video viewing area of iMovie, showing how the title will appear at present.

- In the text field beneath the list of titles, type the text which is to appear in the video, and adjust the parameters for the text to change the size, font, colour and speed at which the title occurs. A preview should appear in the viewing area of iMovie, as the parameters are altered.

- When the desired title and parameters have been chosen, drag the playhead in the timeline to the place where the title should be inserted into the film.

- In the bottom right-hand corner of the titles panel, click on the 'Add' button. The title should be placed into the timeline and will automatically be rendered. The title can then be played back as a video clip in the timeline.

- If at any point, the title needs to be altered, click on the title clip in the timeline so that it is selected in blue. The title panel should appear on the right-hand side of the iMovie window. Make the appropriate changes and then click on the 'Update' button at the bottom of the title panel. The title should be re-rendered, and so can be played back as part of the timeline.

- If a title is no longer required, it can be removed from the timeline by clicking on it in the timeline so that it is selected in blue, and pressing the 'backspace' key on the computer keyboard. The title should disappear from the timeline, which will return as to how it was before the title was applied.

7. Adding Sound and Music

In Windows MovieMaker:

- In the same way in which video clips can be imported into a collection, click on the 'Import audio or music' link under the '1. Capture Video' menu on the left-hand side of the screen. Locate the music or audio files to be imported and click on the 'Import' button in the bottom right-hand corner of the import window.

- Audio can be added into the timeline within the 'timeline view' of the edited film. Drag and drop the audio files from the collections area in the central part of the WMM window, onto the 'Audio/Music' line beneath the video timeline.

- Audio can be repositioned by dragging the audio clip to the left or right.
- Audio clips can be deleted by right-clicking on the audio clip in the timeline and selecting 'Delete' from the menu which appears.

In iMovie:

- Adding audio in iMovie will vary depending on the version of iMovie being used. In iMovie HD, click on the 'Media' button, just above the timeline on the right of the screen. This will change the panel above it. In this panel, click on the 'Audio' tab at the top of the screen.
- A list of titles should appear beneath this tab; each of these titles is a location where some sound effects or music tracks are stored. Clicking on each of these titles will display another list below, of the audio files available in that location.
- These audio files can be played by double-clicking on the title of each file.
- When an appropriate audio clip has been found for the film, move the playhead along the timeline to the place where the clip should begin. Click on the 'Place at Playhead' button at the bottom of the audio panel on the right-hand side of the iMovie window. The audio clip should be placed onto the timeline.
- The audio clip can be repositioned by clicking and dragging the clip along the timeline. Audio clips can be shortened in length by dragging the ends of clip on the timeline.
- An audio clip can be removed by selecting it in the timeline and pressing the 'backspace' key on the computer keyboard.
- If the computer being used has a built-in microphone, a narration can be added to the video by placing the playhead at the beginning of the clip to be narrated and clicking on the record button within the audio panel on the right-hand side. This will record audio from the microphone into a new audio clip on the timeline.

NOTE: Be aware of copyright laws regarding music. Most pieces of music being used in a school for educational purposes maybe used without explicit permission, so long as they are not widely distributed and not sold for profit. If a video is being distributed on DVD or on the internet, it advised to look into the rules regarding copyrighted music. For more information on music copyright, visit:

<http://www.mcps-prs-alliance.co.uk>

8. Exporting the Video

Once a video has been edited, it needs to be exported into a final movie file so that it can be distributed, either onto a DVD or put onto the web or so that it can be viewed on a computer with out having to use the editing software.

In Windows MovieMaker:

- Under the '3. Finish Movie' menu on the left-hand side of the screen, click on the 'Save to my computer' link. This should launch a wizard which takes the user through the exporting of an edited video.



- Enter a name for the finished video and select a location into which it will be saved. When this has been done, click on the 'Next' button at the bottom of the wizard window.

- On the next page of the wizard, select the 'Other settings:' radio button, and from the drop down list to the right, select 'DV-AVI (PAL)'. Click on the 'Next' button at the bottom of the wizard window. The edit video should export into a stand-alone file which can be played back using Windows Media Player.

In iMovie:

- In the 'File' menu at the top of the screen, select 'Export...'. A window should appear displaying the methods by which the edited film can be exported.

- Click on the 'QuickTime' button at the top of the window. In the panel which appears beneath, click on the drop-down menu next to the text which reads 'Compress movie for:'. From the list of quality options given, select 'Full Quality'.

- Click on the 'Share' button in the bottom right-hand corner of the window. A 'Save' dialogue should appear. Give the film being saved a name and specify the location as to where the film should be saved.

- Click on the 'Save' button. The film should be exported and a movie file should appear in the location specified. This is the final movie file which can be viewed using the QuickTime Player.

Working with Young People and Technology: Some Pointers

- Many young people will be quite familiar with using a computer and with the theory of animation; most of them will just want to get on with it.
- Many young people, once they get the hang on animating will get quite enthusiastic about capturing images using the computer and will accidentally get their hands in the shot. Try to encourage them to take their time and make sure their hands are well away from the model before taking a photo.
- When animating for the first time, students may make the movements of models between photos too large, causing the animations to be very jumpy and quite short. Try to encourage the students to make very very small changes to their models between photos; remember, every second of footage requires 15 photos.
- Assume that the first few animations that the students produce are not going to be very good. Try to encourage them and point out what they are doing right as well as what they need to improve on. Don't be afraid to take the time to help them develop a good skill in animation; it's better to have a few good skills than half a dozen sloppy ones.
- Don't try to cram too much into the sessions; take your time in order to let the young people develop their skills. Make sessions flexible; it doesn't matter if something spills over into the following session.
- Make sure everything works before hand...literally everything. Assume nothing will just work without it having to be fiddled with first!
- Assume that everything that can go wrong will go wrong. Be prepared to know how to solve problems and what to do if a problem can't be solved. Always have a plan B that doesn't involve a computer; maybe model making (Session 1) or story-boarding (Session 3).
- If the students are enjoying themselves, let them carry on; don't force them to move on if they aren't ready, though also don't let them spend too long on something that is only a small part of the course.
- Keep plasticine off the floor; it's difficult to get out of carpet once trod on and can sometimes stain fabric.
- When teaching, use examples of animations to demonstrate what you are try to explain. There are some examples on the Crux web site.
- Chat with the students as they work; ask them about their ideas for animations so as to clarify in their own minds what they are going to do.
- Keep smiling no matter what happens.