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Objectives

The aim of this workshop is to introduce students to the techniques of video editing, in an educational context, using freely available tools and media. After completing this workshop, you should be able to:

1. Select video editing software and related tools from the Internet
2. Understand the fundamental concepts of digital video
3. Know how to perform video editing on a basic level
4. Be aware of copyright issues and laws

Introduction to Digital Video Editing

In the old days of analogue TV and VHS video, video editing is carried out using huge workstations in a process called “linear video editing”. Linear video editing is a post-production process of selecting, arranging and modifying images and sound in a predetermined, ordered sequence from tape. Needless to say, it is highly skilled and time-consuming. Until the advent of computer-based random access non-linear video editing systems in the early 1990s “linear video editing” was simply called “video editing.”

The digital revolution has made the video editing workflow immeasurably quicker, as editors moved from time-consuming tape-to-tape linear video editing systems to powerful computer hardware and video editing software such as Adobe Premiere. Typically, video

and audio sources are first captured or transferred to computer storage. Once imported, the source material can be edited on a computer using a wide range of video editing software. From there, editors and directors are free to work with all the options to create the final cut.

Video editing is essentially the process of editing segments of motion video production footage by cutting, trimming and overlaying them, and adding special effects and sound recordings.

A Brief Digital Video Primer

The technologies behind digital video are profound and complicated. In order to begin the process of video editing, you need to know the basic concepts of digital video. The most important ones are video resolution, aspect ratio and encoding.

Resolution

This is the measure of the number of horizontal and vertical pixels of a video image, in other words, the size of the image. It ranges from 352x288 for VCD to 1920x1080 for High Definition TV. Some typical video resolutions that you will come across are:

Technology	Resolution
Analogue TV	Vertical lines 625 (PAL) 525 (NTSC)
VCD (MPEG-1)	352x288 (PAL) 352x240 (NTSC)
DVD (MPEG-2)	720x576 (PAL) 720x480 (NTSC)
LCD Display	640x480 (VGA) 1024x768 (XGA)
Digital TV (SDTV)	720x576 (PAL) 720x480 (NTSC)
Digital TV (HDTV)	1280x720, 1920x1080
Digital TV (4k UHD TV)	3840x2160

Aspect Ratio

This is the ratio between the horizontal and the vertical resolution of an image. Typically, you will come across just two: 4:3 and 16:9.

Aspect Ratio	Technology
4:3	Analogue TV, VCD, DVD, LCD, SDTV
16:9	HDTV, UHD TV

Two aspect ratios compared with images using the same height (vertical size):



4:3 (1.33:1)



16:9 (1.77:1)

When starting a video editing project, the first things you will decide are the image resolution and aspect ratio. This will most likely be determined for you by the source material.

Encoding

The term most often used to describe what kind of digital video you are using is "format". It is a confusing term because it can mean either its encoding or its file format. Encoding refers to how analogue video images are digitized (using a codec), whereas format usually refers to how digitized images are organized in a file. For example, a QuickTime Movie .MOV file may contain a H.264 or MPEG-2 encoded video. So the term "format" really just means a container of encoded video, which may or may not be itself. Here are some common container formats and encoding formats (audio and video):

Format	Container	Encoding or Codec used to encode
DAT	Yes	MPEG-1 (VCD)
MP3	No	MPEG-2 Audio Layer III
MPG	No	MPEG-1 or MPEG-2 (DVD)
MP4	No	MPEG-4 Part 2 (MPEG-4 Advanced Simple Profile)
H264	No	MPEG-4 Part 10 (MPEG-4 Advanced Video Coding)
3GP	Yes	MPEG-4 Part 2 or MPEG-4 Part 10 or H.263
WMV	No	Windows Media Video (WMV3, WMVA, WVC1)
WMA	No	Windows Media Audio (WMA1, WMA2, WMA9, WMA Pro)
FLV	No	Macromedia Flash Video

There are also three general container formats that are used to "wrap" a variety of encoded video and audio. They are:

1. AVI (Audio Video Interleave) developed by Microsoft.
2. MOV (QuickTime Movie) developed by Apple Inc.
3. MKV (Matroska Multimedia Container) is an open standard container format that is supported by most operating systems and audio-visual equipment, even HDTV.

So what does this all mean? Knowing the resolution, aspect ratio and codec used for your source material allows you to plan ahead when creating a video editing project. For example, when creating a DVD project, you should consider collecting source materials that closely match the 720x576 resolution and 4:3 aspect ratio of DVD. This knowledge will affect how much work you have to do during editing and how much work the video editor has to do when the final cut is generated (or "exported" is the term used).

Editing Tools

There are lots of free video editing tools available for download, but for Kindergarten teachers, ease of use is a primary consideration.

1. Microsoft's Windows Movie Maker is still the best in terms of ease of use and getting the job done quickly. There is little to go wrong as it takes care of all the underlying complicated technologies.
<http://windows.microsoft.com/en-HK/windows/get-movie-maker-download>
2. NCH's VideoPad Video Editor (free non-commercial version) is a fully featured video editor for creating professional quality videos in minutes using a simple drag and drop interface.
<http://www.nchsoftware.com/videopad/>
3. VSDC Free Video Editor is intended for editing video files and creating videos of any complexity involving various visual and audio effects. The program offers rich functionality and will appeal to skilled editors.
<http://www.videosoftdev.com/free-video-editor>
4. Avidemux is a free video editor designed for simple cutting, filtering and encoding tasks. It supports many video formats. It is not a true video editor, but a useful tool to prepare video clips for editing later.
<http://avidemux.sourceforge.net/>
5. Freemake Video Converter is not a true video editing tool but a handy tool for converting video to and from any format.

http://www.freemake.com/free_video_converter/

6. Clip Converter is a free online media conversion tool, which allows you to record, convert and download nearly any audio or video URL to common formats, such as YouTube and Dailymotion videos.

<http://www.clipconverter.cc/>

7. VLC Media Player is a free and open source cross-platform multimedia player that plays most multimedia files as well as DVD, Audio CD and VCD.

<http://www.videolan.org/vlc/index.html>

For this workshop we will use the NCH VideoPad, Freemake Video Converter, Clip Converter and VLC Media Player.

Exercise

In this exercise, you will learn how to:

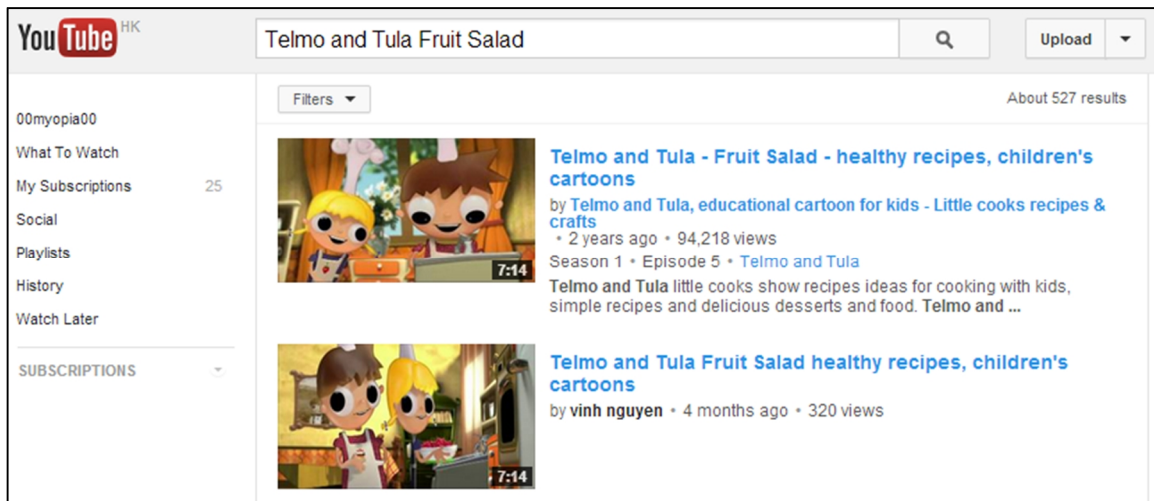
- A. Download a video clip from YouTube
- B. Load the video clip into VideoPad
- C. Cut out a portion of the video clip to work on
- D. Annotate the video clip with some text
- E. Save the video project and export the edited clip

Question: is it legal to download videos from YouTube and use it for teaching and learning?

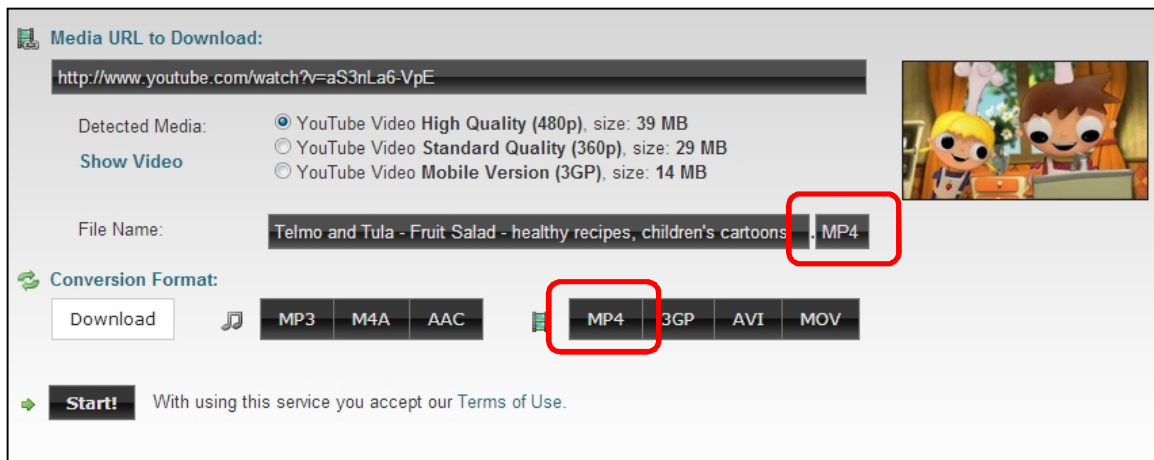
The short answer is "yes." The long answer is found in Appendix A at the end of this worksheet. A more pertinent question is whether it is legal to download videos from YouTube and use it for teaching and learning in Kindergartens.

A. Download a video clip from YouTube

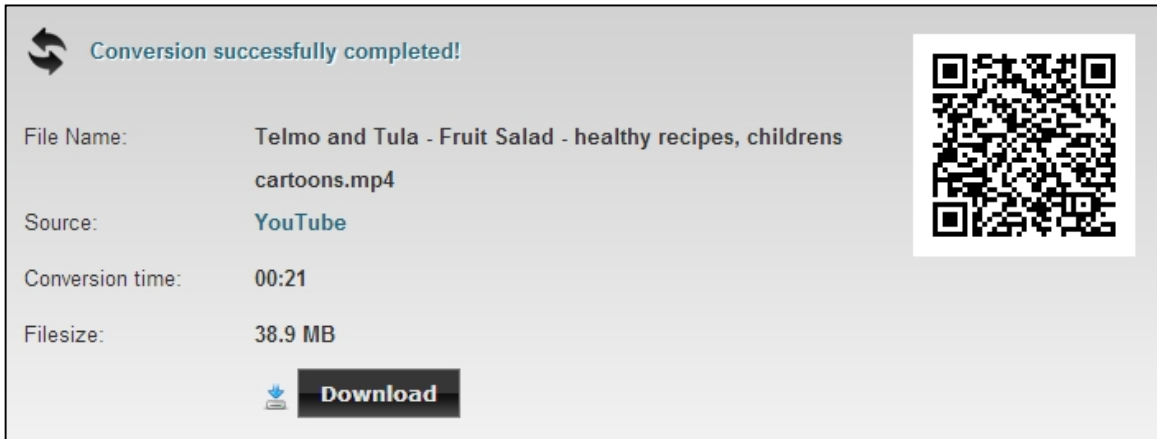
1. Using Internet Explorer, go to www.YouTube.com
2. Enter "Telmo and Tula Fruit Salad" at the search bar.



3. Locate the video from the results list.
4. Copy the video URL.
5. Then go to <http://www.clipconverter.cc/>
6. Paste the video URL at the media bar and click Continue.
7. At the Media Detected, select High Quality (480p).
8. If the file extension is not .MP4, click the MP4 Conversion Format button to select it.



9. Click the Start button when ready.
10. After some time, the video is ready for download.



Questions:

What are the resolution, aspect ratio and codec used for this video clip?

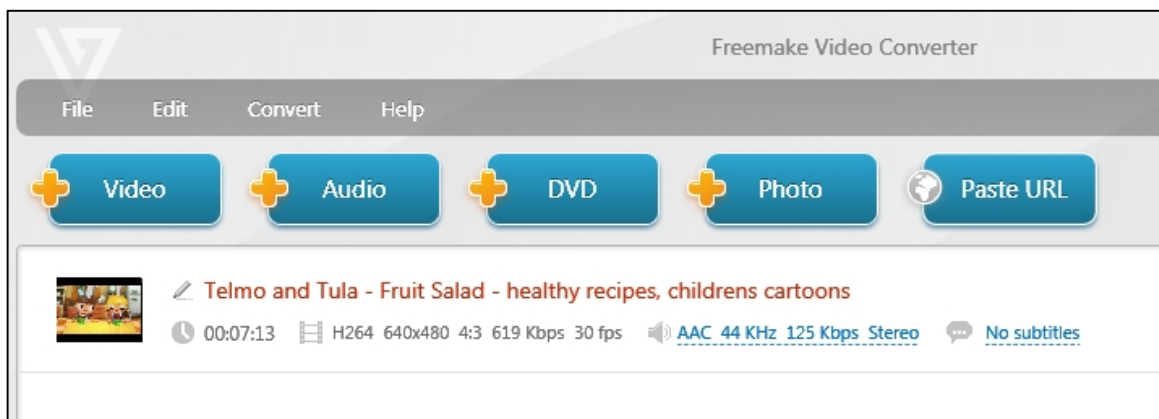
How would you find out?

What would be the target display of your project?

Answers:

This video clip has a pixel resolution of 640x480, aspect ratio of 4:3, and the codec used is H.264.

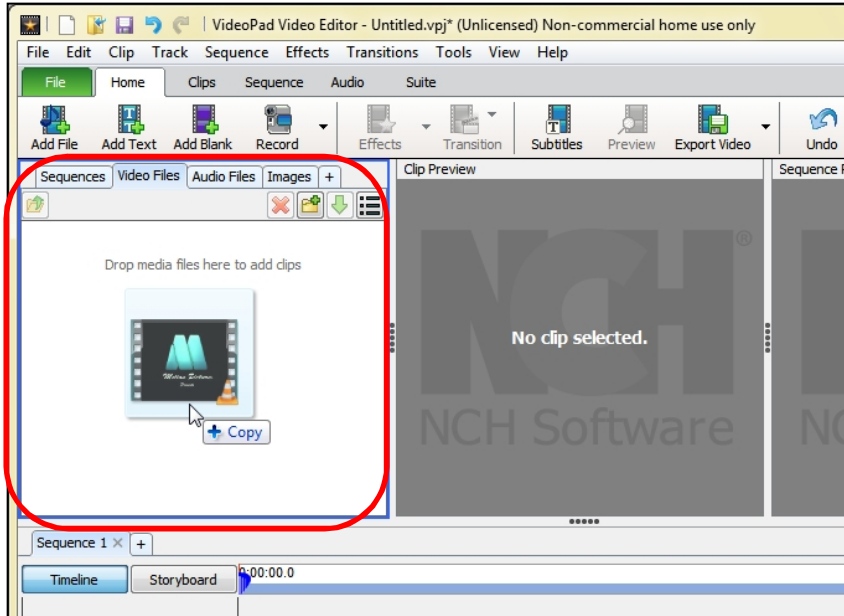
You can use Freemake Video converter to find out these values simply by dragging the video file into the application.



The target display should be: 15 inch monitor, traditional LCD projector or analogue television.

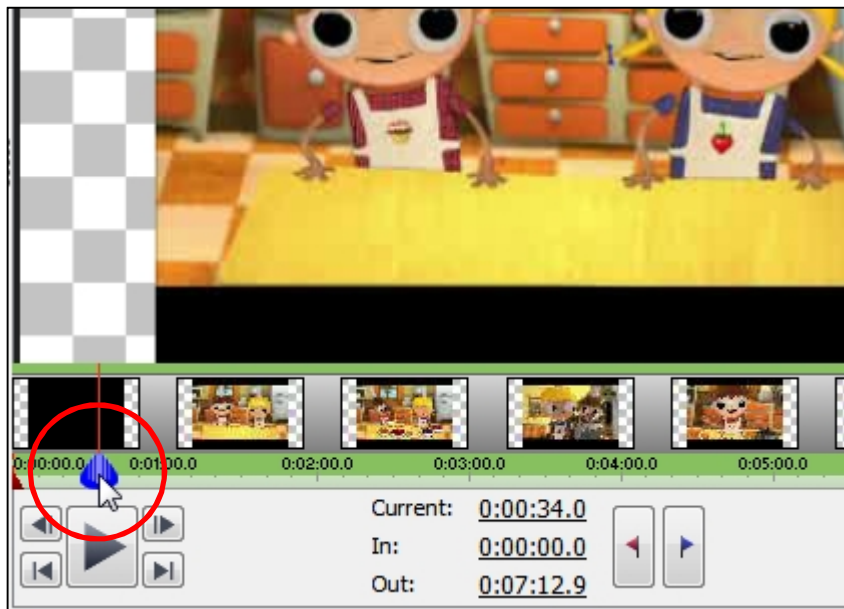
B. Load the video clip into VideoPad

1. Open VideoPad.
2. Click Create a new project.
3. Drag the downloaded video clip into the Video Files Clip Bin.

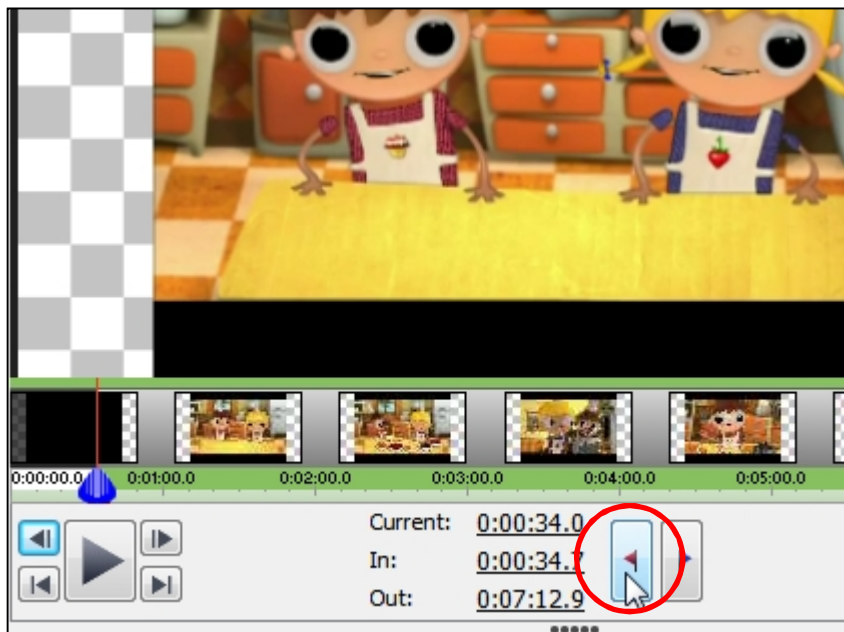


C. Cut out a portion of the video clip to work on

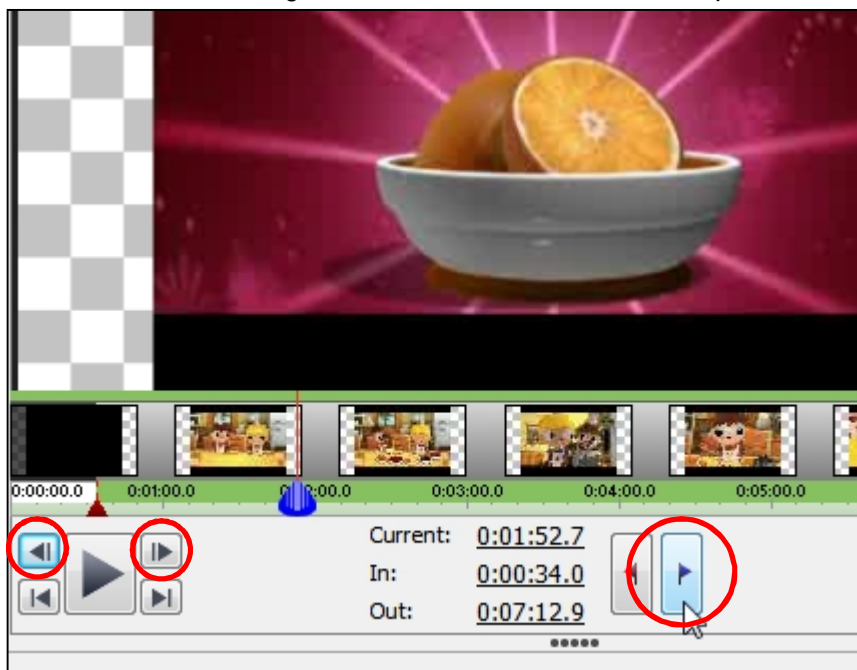
1. In the Clip Preview window, drag the Playhead to 34 seconds.



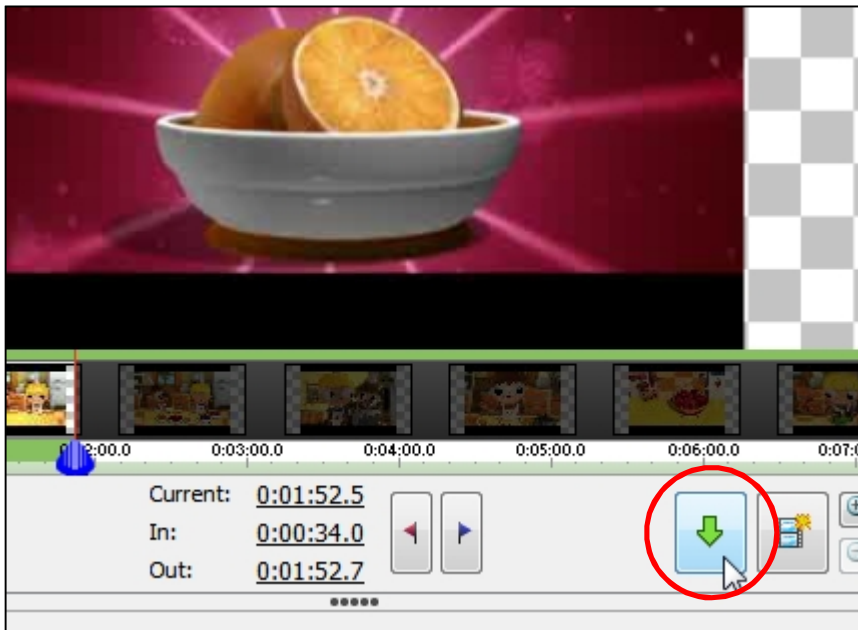
2. Click on the red flag to mark the In Point of the clip.



3. Scrub to 1:52.7, use the left/right frame button to achieve fine control.
4. Click the blue flag to mark the Out Point of the clip.

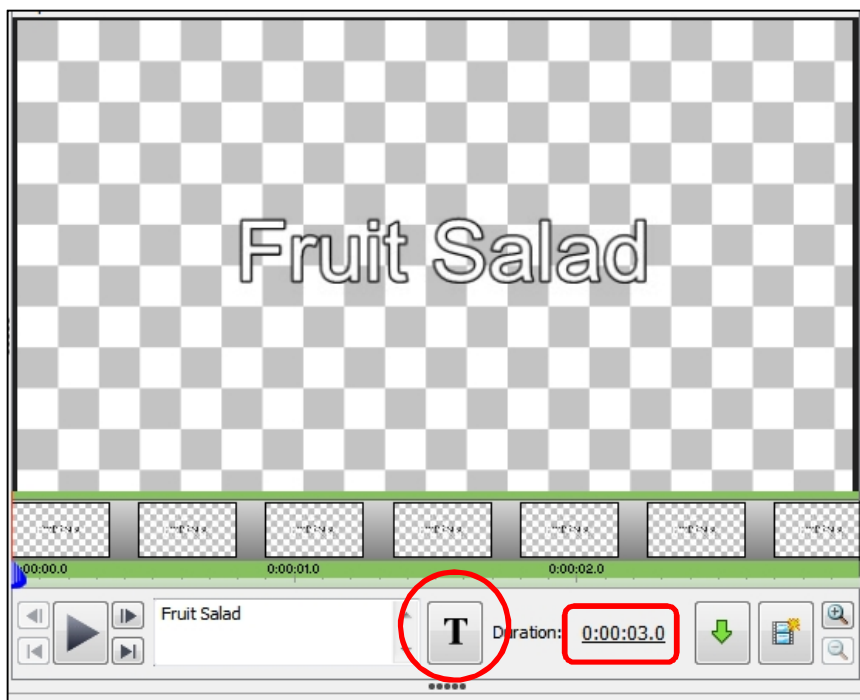


- Click the green down arrow button to place the clip onto the timeline.



D. Annotate the video clip with some text

- From the Sequence Preview window or Sequence Timeline window, scrub to 38 seconds.
- Click on the Add Text button near the program menu.
- Enter "Fruit Salad" in Text clip name and again in Text to display fields.
- The Clip Preview window now contains a text clip. Click on the T button to change the text attribute such as alignment, and the duration number to change the clip duration.



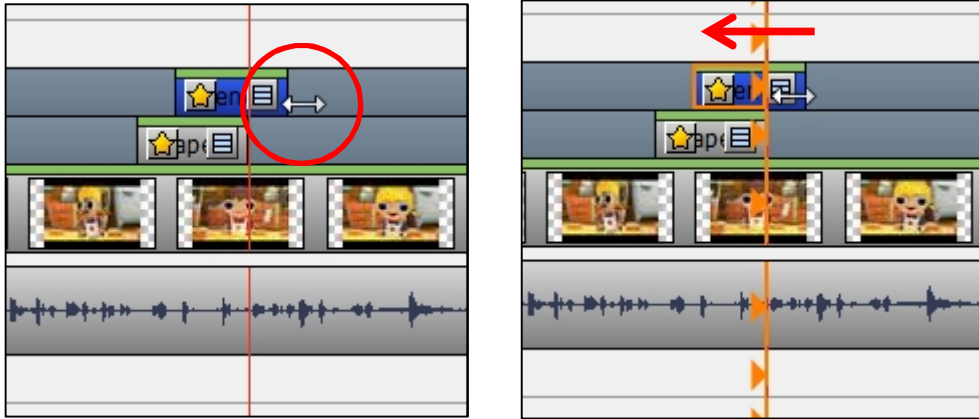
- When you are ready, click on the green down arrow button to place the text onto the timeline.
- From the Place Clip dialog box, select Overlay on Sequence at Cursor, and click Add.



- Scrub the Playhead to 54 seconds and repeat steps 2 to 6 for "paper."
- And similarly for "pencil" at 55 seconds.



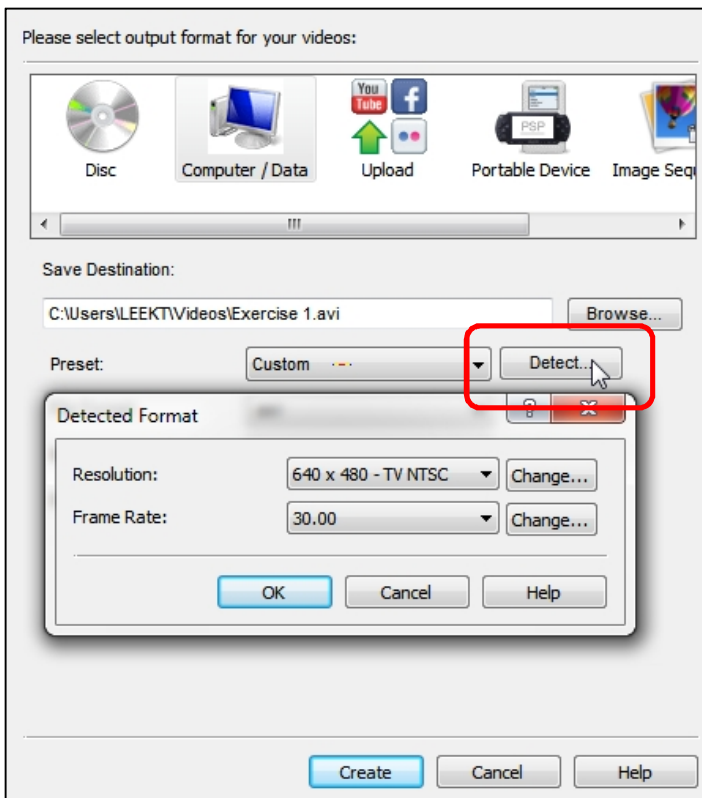
- To make both "paper" and "pencil" disappear at the same time, trim the duration of the pencil clip at the timeline using the Ripple Tool: hold mouse down and drag left.



10. Now add text clips for "Strawberries", "Cherries", "Raspberries", "Gooseberries", "Blackberries", "Sugar" and "Oranges".

E. Save the video project and export the edited clip

1. Go to the File menu and select Save Project File.
2. To save the project as a video clip, click the Export Video button.
3. From the Video Output Setup dialog box, choose Computer/Data as the target output.
4. Click the Detect button to set the video parameters, and then click OK.



5. Pull down File Format and select .mp4.
6. Optionally click the Encoder Options button to set output video quality, etc.

7. Finally, click the Create button to generate the video clip. Because the source and target resolution and codec are the same, VideoPad will take little time to complete the task.

Extended Exercise

For the extended exercise, we will look at how to replace a portion of a clip so that we can change the theme of the original clip.

In this exercise, you will learn how to:

- A. Collect media into a project folder
- B. Add a title segment with text and use transitions
- C. Replace a portion of video
- D. Replace the audio track

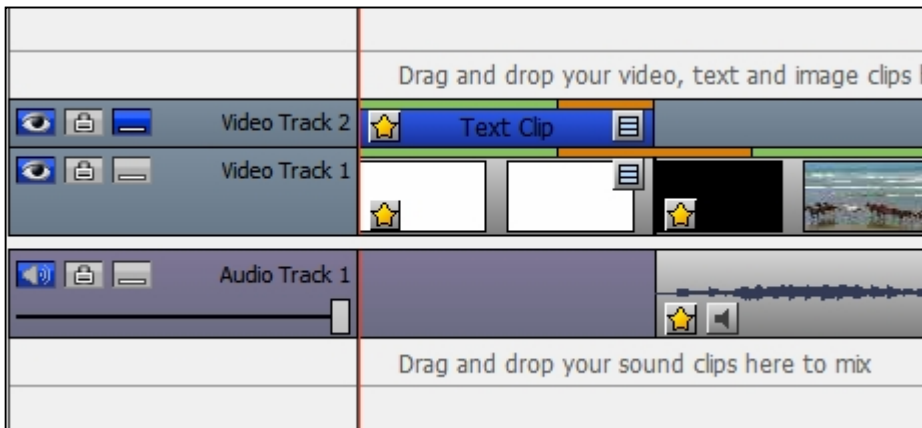
A. Collect media into a project folder

1. Create a project folder on your PC for your media files.
2. From YouTube, search for “BBC One clever polar bear” and download as mp4 video.
3. Search for “Bing Crosby Winter Wonderland” and download as mp3 audio.
4. From your PC (Windows 7) copy the Wildlife.wmv from the Sample Videos folder.
5. Open VideoPad and drag all 3 files into the Clip Bin.
6. Place the Wildlife clip on to the timeline.

B. Add a title segment with text and use transitions

1. Make a 3 seconds white blank clip using the Add Blank button.
2. Place it at the beginning of the timeline.
3. Click the Transition button and select Cross Fade for 2 seconds.
4. Make a 3 seconds text clip with the words “北極野生動物” using the Add Text button.
5. Change the text attribute by clicking the T button.
6. Overlay it at the beginning of the timeline.
7. Click the Transition button and select Cross Fade for 1 second.

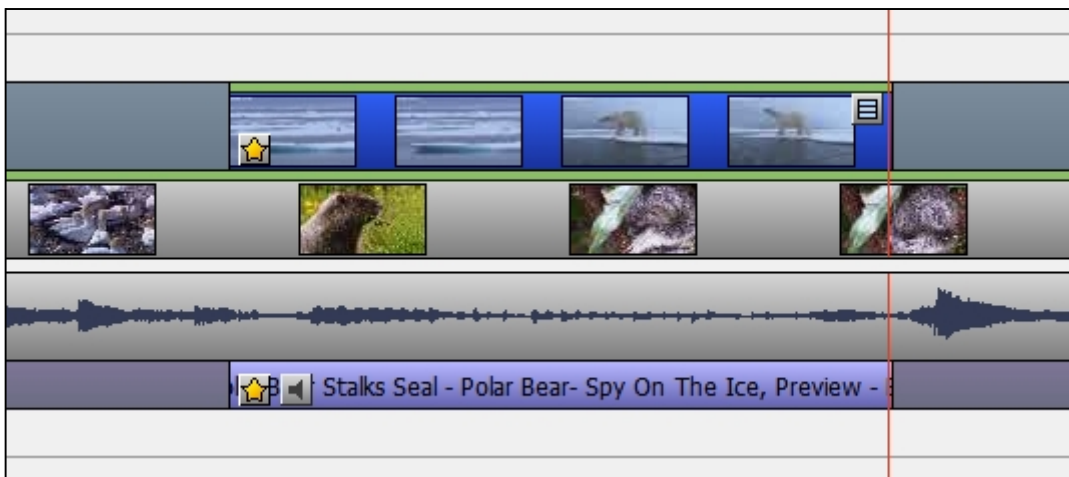
The timeline should look like this:



C. Replace a portion of video

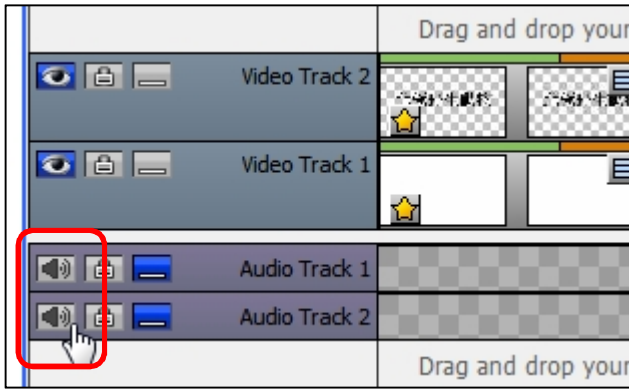
1. On the timeline, scrub the Playhead to position 20.2 seconds (just before the beaver pop its head).
2. Go to the Clip Bin and select the Polar Bear clip.
3. Set the In Point to 3.0 and Out Point to 10.0 by entering values directly at the Clip Preview window.
4. Place the clip on to the timeline, making sure you overlay it at the cursor position.
5. Now, scrub the Playhead past the sleeping Koala Bear.
6. Ripple the Polar Bear clip over to that position, making sure it completely covers the Koala Bear.

The timeline should look like this:



D. Replace the audio track

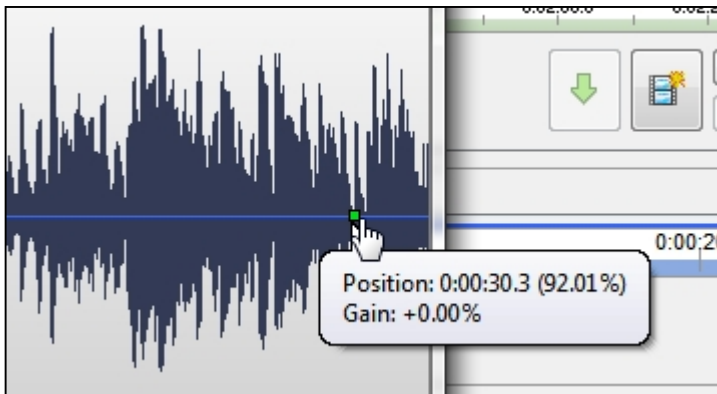
1. First, mute both audio tracks of the Wildlife and Polar Bear clips by clicking on their respective Mute Icon.



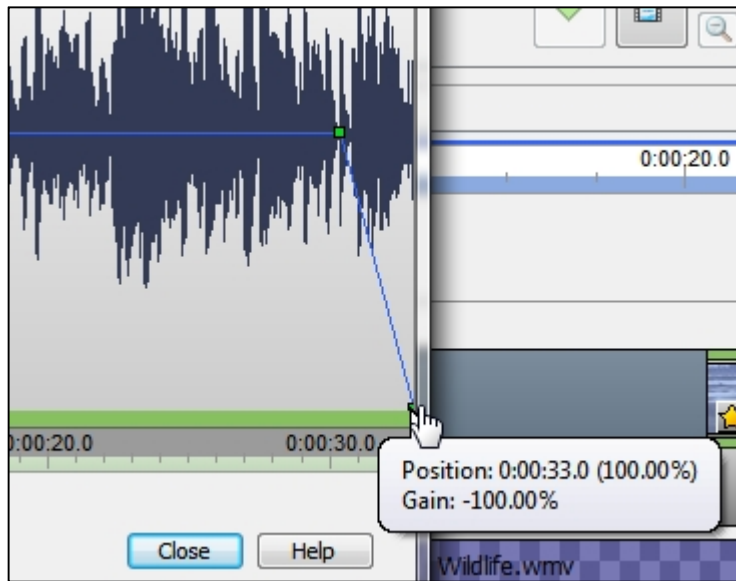
2. Select the Winter Wonderland audio clip from the Clip Bin.
3. Move the Playhead right back to the beginning of the timeline.
4. Overlay the audio clip on to the timeline.
5. Ripple the audio track so that it fits the video tracks.

To finish off, we want to fade the audio so that it is quiet when the video ends.

6. With Audio Track 3 selected, click the Effects button near the program menu. The Audio Effects Dialog box will pop up.
7. Using the mouse, click on the blue line at around the 30 seconds position.



8. Now click it again at the end of the track, but this time drag and hold it down to zero.



9. Click Close to finish. You can now preview the finished clip.

Finally, remember to save the project and export the edited clip.

Appendix A

Matters concerning the use of copyright-protected work obtained from the Internet.

In general you should not use any copyright-protected work such as images, music, audio recordings and videos obtained from the Internet for educational purposes, unless they are covered by exemptions of relevant laws. You should be aware of the following when using videos downloaded from YouTube.

A.1 YouTube Standard Licence

The standard YouTube licence is detailed in the Terms of Service. Whenever you post a video on YouTube, you basically grant YouTube to broadcast your video on YouTube. Apart from that, you retain all copyright. It means you allow people to watch your video, but not download it, copy, or distribute it. If you want people to be able to redistribute it you can select a Creative Commons license.

http://wiki.answers.com/Q/What_does_standard_YouTube_license_means

<http://www.YouTube.com/static?template=terms>

A.2 Creative Commons Licence

Creative Commons licence provide a standard way for content creators to grant someone else permission to use their work. YouTube allows users to mark their videos with a Creative Commons CC BY licence. These videos are then accessible to YouTube users for use, even commercially, in their own videos via the YouTube Video Editor.

<http://www.YouTube.com/yt/copyright/en-GB/creative-commons.html>

A.3 Fair Use of copyright-protected work

In many countries, certain uses of copyright-protected works do not infringe the copyright owner's rights. For example, in the United States, copyright rights are limited by the doctrine of "fair use," under which certain uses of copyrighted material for criticism, commentary, news reporting, teaching, scholarship, or research may be considered fair.

<http://www.YouTube.com/yt/copyright/fair-use.html>

A.4 Fair Dealing exemption in Hong Kong

The "fair dealing" exemption, aimed at facilitating modern teaching methods, is found in Section 41A of the Copyright Ordinance. The exemption applies not only to works in printed form but also to works made available on the INTERNET. It allows teachers and students to use or deal with reasonable portions of copyright works in a fair manner for teaching and learning in a specified course of study provided by an educational

establishment.

http://www.ipd.gov.hk/eng/pub_press/publications/cpr_ed_e.pdf

有關公平處理豁免的規定載於《版權條例》第 41A 條，其目的是方便以現代方法進行教學。豁免條文不但適用於刊印形式的版權作品，也適用於互聯網上提供的作品。該條文容許教師或學生在教育機構 4 提供的指明課程中，為教學或學習的目的而以公平方式使用或處理版權作品中的合理部分。

http://www.ipd.gov.hk/chi/intellectual_property/copyright/Copyright_in_Education_tc.pdf

List of Hong Kong educational establishments

[http://www.legislation.gov.hk/blis_pdf.nsf/6799165D2FEE3FA94825755E0033E532/2C08ADD260950D61482575EF0014E145/\\$FILE/CAP_528_e_b5.pdf](http://www.legislation.gov.hk/blis_pdf.nsf/6799165D2FEE3FA94825755E0033E532/2C08ADD260950D61482575EF0014E145/$FILE/CAP_528_e_b5.pdf)

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