Module Title: **LEARNING TECHNOLOGIES**

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***Module Description*:** This module will introduce participants to a variety of low cost computer peripherals for sound and image recording. Participants will develop skills in using scanners, digital cameras, video and associated software to produce simple multimedia elements. The participants will then practice combining these elements to produce a basic multimedia science related resource for students and teachers.
The module presents a variety of activities for the facilitator from which to select the most appropriate activities. It is not intended that the participants attempt all activities. The facilitator is advised to survey the participants to choose the activities that will provide new experiences and sufficient challenge for her/his audience.

Summary of Activities:

	Title	*Min*
0	Prior survey of participants' existing skills	Att.0
1.0	Creating digital audio from a tape or CD player.	15
2.0	Creating digital audio.	5
3.0	Using a scanner.	10
4.0	Image enhancement and special effects.	15
5.0	Using a digital camera to capture still images	20
6.0	Using a digital video camera.	20
7.0	How to use digital elements in the science classroom.	20
8.0	Integrating audio and images into a science presentation.	25
9.0	Creating a simple science multimedia resource.	20

Module Outcomes:

- Increase awareness of digital imaging technology and its application as a learning tool in science education.
- Develop skills in the capture of science related sound and digital images using a range of peripheral devices.
- Provide practice at integrating images and sound into other widely used educational software packages.
- Provide practice at combining simple sound and image components to produce a basic multimedia science resource for students or teachers.

Pre-module Skills Survey:

- This is available as Attachment 0, and also exists as a file in the Administration folder.
- Completion by participants at least a week before the Learning Technology module, will allow appropriate planning.

Resources and Materials:

- DEET "Acer" laptops or desktop computers
- Cassette tape player or CD Player.
- Connectix "QuickCam VC" or Tops-Mate Int'l Corp. "CUCUS" (or similar) for still image and video capture.
- Kodak "DC50"or Sony "Mavica" (or similar) digital camera for high resolution still images.
- Image scanner
- Samples of black and white drawings, colour drawings and photographs. (Magazines, text books etc)
- External microphones (DEET Laptops, "*Acer Extensa 500T*" have a microphone integrated into the top left of the screen.)
- Optional - data projector, Web access
- Attachments as below can be found on the CD under `LrnTech/Attachments/`;
  1.0 Digitising audio from a cassette tape
  2.0 Creating digital audio
  3.0 Using a scanner
  3.1 Respecting Copyright
  3.2 Image file formats –Which one to use?
  4.0 Manipulating digital images
  4.1 Digital stills to digital video
  4.2 Image Enhancements and special effects
  5.0 Capturing still images with a digital camera
  5.1 Setting up a Logitech/Connectix "QuickCam – VC"
  5.2 Setting up a Kodak DC50
  6.0 Using a digital video camera
  7.0 Ideas for digital elements in Science
  8.0 *Creating a multimedia resource using MS PowerPoint 97*
- DEET on-line discussion area - http;//www.sofweb.vic.edu.au
- Other related professional development programs, such as Computers Across the Secondary Curriculum, Computers Across the Primary Curriculum, Learning with the Internet.
- Sony "Mavica" digital imaging camera
  Http://www.sel.sony.com/SEL/consumer/ss5/pin.shtml
- Connectix QuickCam Cameras
  Http://www.logitech.com/au/cameras/index.html
- Kodak Digital Learning Centre
  Http://www.kodak.com/US/en/digital/dlc/
- Commercial image/photo/clipart CD collections - Kodak digital science Photo CD Sampler, Corel Web Graphics CD, SciArt CD - Cambridge University Press or http://www.eduart.com.au
- Collins, Hammond and Wellington (1997) "Teaching and learning with multimedia" Routledge London
- Grabe, M and Grabe C (1998), "Integrating technology for meaningful learning" Houghton Mifflin Company, Boston
- Rodrigues, S & Corrigan, D (1998) "Including IT: Managing information technology in the science classroom" User Friendly Resources Enterprises Ltd. Book #190

Activity 1.0 : Creating Digital Audio from a Tape or CD Player

Purpose: To create a digital audio file from a cassette tape or CD player.

Resources required:

- Cassette tape player or CD player with recorded sound.
- Computer with 'line-in' socket (to go into the sound card).
- Audio cables with correct plugs to connect sound player and computer.
- Attachment (1.0) "*Digitising audio from a cassette tape"*.

Teaching Procedures: Activity based investigation using Attachment (1.0)

Time allocation: 15 minutes

What to do

FACILITATOR	PARTICIPANT
1.1 Organise participants into groups of at least two, and have floppy disks or hard disk space allocated for each group.	1.1 Form into working groups with equipment.
1.2 Refer to Attachment (1.0) "*Digitalising audio from a cassette tape*".	1.2 Read Attachment (1.0) and digitalise a sample of sound from a cassette tape.
1.3 Copy and use hand out as required.	1.3 Save file onto a floppy disk or a dedicated place on the computer's hard disk and replay. Explore as time permits the various sound options, such as reversing the sound, adding echo and practice saving and editing files.
1.4 Using a whiteboard, start the development of a definition or question and answer board. This can be used to assist participants in building up a glossary of definitions and technical terms.	1.4 Obtain a copy of the definition or question and answer board. Continue to use this throughout the module.

Discuss/Consider:

- File size and storage medium.
- Where to obtain sounds eg animals, people talking, etc.
- Sound wave analysis – e.g. Displays the frequency, wavelength and harmonics of the recorded sound.

Tips and Tricks:

- Determine the format requirement of the end application before digitising the sound.
- The recording settings on the computer may need to be adjusted before you start (in Windows95, right-mouse click on the sound icon>Open Volume Controls>Options>Recording).
- The *Windows Sound Recorder* is adequate, however the sound recording software that comes with many sound cards (eg *Vibra*) are usually better (more options, cut segments, sine wave display).
- It is less time consuming to create the digital sound directly as in Activity 2.0

Skills Checklist:

- ❑ Connecting a cassette player or CD player to a computer.
- ❑ Saving and retrieving computer files.
- ❑ Creating a digitised sound file from a pre-existing non-digital sound.
- ❑ Using a sound editing application.

Activity 2.0 : Creating Digital Audio

Purpose: To create a digital audio file using a computer and microphone.

Resources required:
- Computer with microphone jack or integrated microphone.
- Compatible microphone.
- Attachment (2.0) "*Creating digital audio*".

Teaching Procedures: Activity based investigation using Attachment (2.0).

Time allocation: 5 minutes

What to do

FACILITATOR	PARTICIPANT
2.1 Organise participants into similar groups as in Activity 1.0	2.1 Form into working groups and allocate equipment to groups as required.
2.2 Refer to Attachment (2.0) "*Creating digital audio*". Copy and use handout as required.	2.2 Read Attachment (2.0) and digitise a sample of sound using a microphone. 2.3 Save file on a floppy or a dedicated place on the computer's hard disk.
2.3 Using the board, continue with the development of a definition or question and answer diary.	2.4 Add unfamiliar terms or questions and answers obtained during this activity to the definition or question and answer diary. Continue to use this diary throughout the module.

Discuss/Consider:
- File size and storage medium.
- Sending sound files as attachments to e-mail.

Tips and Tricks:

- Determine the format requirement of the end application before digitising the sound.
- The recording settings on the computer may need to be adjusted before you start (in Windows95, right-mouse click on the sound icon>Open Volume Controls>Options>Recording).
- Again the *Windows Sound Recorder* is adequate, however the sound recording software that comes with many sound cards (eg *Vibra*) are usually better (more options, cut segments, sine wave display).
- Audio files can quickly become very large, so keep your recordings short and content straight to the point. Write a script and rehearse.

Skills Checklist:

- ❑ Connecting a microphone to a computer.
- ❑ Creating a digitised sound file directly into a computer.
- ❑ Using a sound editing application.
- ❑ Saving and retrieving computer files.

Activity 3.0 : Using a Scanner

Purpose: To use a scanner to create a digital image.

Resources required:

- Samples of black and white drawings, colour drawings and photographs.
- Scanner and software
- Attachment (3.0) "*Using a scanner*"
- Attachment (3.1) "*Respecting copyright*"
- Attachment (3.2) "*Image file format – which one to use?*"

Teaching Procedures: Activity based investigation using Attachment (3.0)

Time allocation: 10 minutes

What to do

FACILITATOR	PARTICIPANT
3.1 Organise participants into groups and have floppy disks or hard disk space allocated for each group.	3.1 Form into working groups and with equipment as required.
3.2 Refer to Attachment (3.0) "*Using a scanner*". Copy and use handout as required.	3.2 Read Attachment (3.0) and digitalise at least one colour photograph and a line drawing. Save files onto a floppy disk or the computer's hard disk and view the file by double clicking on the filename from within the computer's file manager (e.g. Windows Explorer)
3.3 Handout Attachments (3.1) "*Respecting copyright*"and Attachment (3.2) "*Image file format – which one to use?*". Suggest participants read these when time permits.	3.3 Explore, as time permits, the various editing options in the scanning software, such as resize, crop, and recolour.
3.4 Using the board, continue with the definition or question and answer diary.	3.4 Add unfamiliar terms or questions and answers obtained during this activity to the definition or question and answer diary.

Discuss/Consider:

- The effects of file format and image dimensions on file size.
- Attachment (3.1) "*Respecting copyright*"
- Attachment (3.2) "Image file format – which one to use?"

Tips and Tricks:

- When scanning several images, you can save time by placing the images on exactly the same place on the scanner each time.
- To obtain the same size image for numerous scans, set the image size required, then scan the images.
- Similar to photocopying a photocopy, rescanning a scanned image will result in a loss of image quality. If the image is to be edited a number of times, it is best to scan it first at high quality and close to the original dimensions as file size will permit, otherwise scan it using the final format and dimensions required.
- Use some of these scanned images for use in later activities.
- Files may have their format converted so they can be imported into other applications. See Attachment (3.2).

Skills Checklist:

- ❑ Operating an image scanner.
- ❑ Scanning photographs and drawings.
- ❑ Saving and retrieving computer files.

Activity 4.0 : Image Enhancement and Special Effects

Purpose: To enhance and manipulate digital images to create multiple 'versions' of the one image, and use digital still images to create a digital video.

Resources required:

- Sample of manipulated images can be found on the CD at: `Lrntech/activity-4/demo*.bmp` and `Lrntech/activity-4/demo*.avi`
- Attachment 4.2 explains the techniques used in manipulating the images.
- A collection of suitable images for manipulation. Several still images from the CD could be used for this activity. These can be found at: `Lrntech/activity-4/image*.bmp`
- A painting program such as MS Paint (limited features), *MS PhotoEditor* (comes with the MS Office suite) or *PaintShop Pro* (The shareware version of the program can be found on the CD at: `Software/PaintShopPro/`) or other image enhancement software such as those that accompany a digital camera.
- An animation or morphing program such as *PhotoMorph* (The shareware version of this can be found on the CD at: `software/PhotoMorph/`).
- Attachment (4.0) "Manipulating digital images".
- Attachment (4.1) "Digital stills to digital video".
- Attachment (4.2) “Image Enhancement and Special Effects”

Teaching Procedures: Activity based investigation using Attachments (4.0) and (4.1)

Time allocation: 15 minutes

What to do

FACILITATOR	PARTICIPANT
4.1 Display a number of prepared images (.bmp files) which have been manipulated (Change contrast, hue, embossed, negative etc.) or merged or morphed (video created from separate images, .avi files). Discuss briefly the techniques by which they were created (Attachment 4.2).	4.1 View and discuss the prepared images presented.
4.2 Divide participants into groups of two. Have each pair select several .bmp files from the CD for manipulation or morphing using the shareware software provided.	4.2 Divide into pairs and practice manipulating the prepared files. Discuss difficulties encountered. Save the manipulated file with a new file name.

4.3 Using the board, continue with the definition or question and answer diary.	4.3 Add unfamiliar terms or questions and answers obtained during this activity to the definition or question and answer diary.

Discuss/Consider:

- Discuss briefly the strengths and weaknesses of manipulating digital images as a learning tool and record suggestions on the whiteboard.
- The manipulation of the images as a resource for creating classroom teaching materials, ie worksheets, displays, presentations.
- The development and recording of material for a student's portfolio.
- The use of special effects on images to enhance features of interest or improve visual interest.
- The value of creating digital video from digital still images for use in the science classroom.

Tips and Tricks:

- Store all the images for a piece of work or module in the same directory.
- Decide on the final image dimensions before multiple images are made.
- When selecting digital images to be merged into digital video the still images should be the same size and colour depth.
- Participants may find it an advantage to pair with a person of similar background or subject areas, ie Primary or Secondary, chemistry, biology or physics.
- Encourage participants to focus on developing specific applications of the techniques demonstrated for their classroom practice.

For Web sites with lots of images see:
http://www.dewa.com/3D/http://ftp1.rad.kumc.edu/clips/index.htm

Skills Checklist:

- ❑ Using different image filters on a digital image to gain multiple effects.
- ❑ Saving and retrieving computer files.

Activity 5.0 : Using a Digital Camera to Capture Still Images

Purpose: To create a digital image using a digital camera.

Resources required:
- Digital camera attached to a computer, such as "QuickCam VC"or "CUCUS" or a standalone digital camera such as Kodak "DC50" or the Sony "Mavica".
- Software drivers for camera.
- Attachment (5.0) "*Capturing still images with a digital camera".*

Teaching Procedures: Activity based investigation using Attachment (5.0).

Time allocation: 20 minutes

What to do

FACILITATOR	PARTICIPANT
5.1 Organise participants into groups and have floppy disks or hard disk space allocated for each group.	5.1 Form into working groups with equipment as required.
5.2 Refer to Attachment (5.0) "*Capturing still images with a digital camera".* Copy and use handout as required.	5.2 Read Attachment (5.0) and capture an image using the camera.
5.3 Refer to Attachment (5.1) "*Setting up a QuickCam VC*".	5.3 Explore features of the camera available, such as how it is attached to the computer, focus adjustment and the format of image files produced.
5.4 Refer to Attachment (5.2) "*Setting up a Kodak DC50*".	5.4 Explore features of software such as brightness, contrast, hue controls. Use the camera to take a few still shots. Save the files onto a floppy disk or hard disk. View the images and save them onto a floppy disk.
5.5 Using a board, continue with the definition or question and answer diary.	5.5 Add unfamiliar terms or questions and answers obtained during this activity to the definition or question and answer diary.

Discuss/Consider:

- How digital images could be used in the classroom and integrated into special class projects to aid record keeping and data collection.
- The transportability and ease of use of a stand-alone camera compared with a camera and attached laptop computer.
- Using shareware software (*PhotoMorph*) to animate a sequence of images to create a 'time-lapse' video.
- The improved image resolution of the standalone digital cameras (Kodak or Sony) compared with the less expensive "CUSUS" or "QuickCam VC". See Attachment (3.2).

Tips and Tricks:

- Set up and test equipment before participants are assembled.
- After each participant has captured their image with the camera, while the next participant is using the camera, they could practice enhancing the image (Activity 4.0) using *MS PhotoEditor* or *PaintShopPro.*

Skills Checklist:

- ❑ Using a digital camera to take still images.
- ❑ Transferring of images onto the computer
- ❑ Saving, retrieving and viewing image files.

Web sites:

- Sony "Mavica" digital imaging camera
  http://www.sel.sony.com/SEL/consumer/ss5/pin.shtml
- Connectix QuickCam Cameras
  http://www.logitech.com/au/cameras/index.html
- Kodak Digital Cameras
  http://www.kodak.com/US/en/digital/cameras/DCSGateway.jhtml
- Kodak Digital Learning Centre
  http://www.kodak.com/US/en/digital/dlc/

Activity 6.0 : Using a Digital Video Camera

Purpose: To use a digital video camera to create a digital video.

Resources required:
- Digital video camera such as a “QuickCam VC”, “CUCUS” or Sony “Mavica”.
- Floppy disks if using a Mavica.
- Attachment (6.0) "*Using a digital video camera"*.

Teaching Procedures: Activity based investigation using Attachment (6.0).

Time allocation: 20 minutes

What to do

FACILITATOR	PARTICIPANT
6.1 Organise participants into groups and have floppy disks or hard disk space allocated for each group.	6.1 Form into working groups with equipment as required.
6.2 Refer to Attachment (6.0) "*Using a digital video camera"*. Copy and use handout as required.	6.2 Read Attachment (6.0) and attempt to create a short video (3-4 second) using the equipment provided.
6.3 Refer to Attachment (5.1) "*Setting up a QuickCam VC* "	6.3 Explore features of the camera such as how it is attached to the computer, file sizes and the file formats used. Explore features of software such as audio quality, frame rates and available colour choice. After taking a short (3-4 second) video, save the file onto a floppy disk or the hard disk and replay.
6.4 Using a board, continue with the definition or question and answer diary.	6.4 Add unfamiliar terms or questions and answers obtained during this activity to the definition or question and answer diary.

Discuss/Consider:

- File format, size, and storage.
- Uses of digital video in the classroom to assist in instruction and demonstration.
- Transportability of a camera and laptop.
- The ease of use of time lapse video and animation using single frame options.

Tips and Tricks:

- Refer to examples of time lapse video and single frame animation provided on the CD under:
  `Lrntech/activity-6/video*.avi`
- Insist that the sample video is short or the required file sizes will be too large for saving onto a floppy disk.

Skills Checklist:

- ❑ Using a digital camera to take a video.
- ❑ Transferring of images onto the computer.
- ❑ Saving, retrieving and viewing video files.

Web sites:

- Sony "Mavica" digital imaging camera
  http://www.sel.sony.com/SEL/consumer/ss5/pin.shtml
- Connectix QuickCam Cameras
  http://www.logitech.com/au/cameras/index.html
- Kodak Digital Cameras
  http://www.kodak.com/US/en/digital/cameras/DCSGateway.jhtml
- Kodak Digital Learning Centre
  http://www.kodak.com/US/en/digital/dlc/

Activity 7.0 : How to Use Digital Elements in the Science Classroom

Purpose: To devise and record a variety of ways that digital elements could be used to enhance learning in the science classroom.

Resources required: A2 sheets of paper, pens, video-clips from CD:
`Lrntech/activity-7/Daphnia.avi`
`Lrntech/activity-7/Saturn.avi`
`Lrntech/activity-7/POE steelwool SF3.avi`
`Lrntech/activity-7/images*.bmp`
Attachment (7.0) *"Ideas for digital elements in Science"*

Teaching Procedures: Brainstorming, and group discussion.

Time allocation: 20 minutes

What to do

FACILITATOR	PARTICIPANT
7.1 Demonstrate a number of the prepared images and video-clips to the participants and discuss briefly the technique by which they were created. (See Attachment 7.0)	7.1 View the prepared images and video-clips presented.
7.2 Divide participants into groups of four. Pass out sheets of paper and pens to each group. Have each group discuss and record ways in which they could use, or have used digital elements in their science classes.	7.2 Divide into groups and discuss and record suggested uses of digital elements in the science classroom.
7.3 Have each group report back suggestions to the whole group and discuss proposals and discuss briefly the strengths and weaknesses of a digital media as a learning tool. Record suggestions on the whiteboard. These can be recorded and duplicated for distribution or posted on the online discussion area.	7.3 Report back to the whole group and discuss/comment on suggested proposals.
7.4 Using a board, continue with the definition or question and answer diary.	7.4 Add unfamiliar terms or questions and answers obtained during this activity to the definition or question and answer diary.

Discuss/Consider:
Using a digital camera to capture images for:

- Creating classroom teaching materials. eg worksheets The development and recording of material for a student's portfolio.
- Recording experimental results for future analysis by the class or for presentation by groups of students.
- Recording of microscopic life as still images or video.
- Recording of time based observations, ie plant or mould growth using time lapse options.
- Optical experiments ie refraction, dispersion, infrared observation. Recording images as the eye would see them.
- The observation of remote or hazardous events usually performed in the safety of a fume cupboard or outdoors.
- Analysis of events over short time intervals using single frame advance of captured video.
- The demonstration of critical or expensive procedures or events, ie animal dissections or use of liquid nitrogen.

Advantages/disadvantages of the technology

- The ease, with which multimedia material can be stored, reused and shared between teachers using e-mail or web pages.
- The cost of equipment (A data projector is an expensive item at ≈$6000 and replacement bulbs may be up to $300 each).
- The manufacture's frequent upgrading of software and equipment and the poor connectivity due to multiple industry standards.
- The low user costs after initial equipment purchase.
- Cost of equipment repairs and servicing.

Tips and Tricks:

- During the presentation of the prepared images and video it is important to note that all have been prepared using equipment available to most primary schools and colleges. They have been included to demonstrate possible applications.
- In small group activities it may be beneficial to have members with a mix of school and subject backgrounds ie Primary, Secondary, chemistry, biology and physics.
- Try to get groups to focus on specific applications of the technology in their classroom.

Activity 8.0 : Integrating Audio and Images into a Science Presentation

Purpose: To introduce participants to the ease of creating a multimedia presentation.

Resources required:

- Sample *MS PowerPoint* presentation which incorporates a variety of images and video clips as a discussion starter. On CD at `Lrntech/activity-8/Presentation.ppt`
- Samples of audio, images, video and text from the CD at `Lrntech/activity-8/`
- *MS PowerPoint version 97,* though earlier versions will cover some of the sections of the activity presented.
- Attachment (8.0) *"Creating a multimedia resource using PowerPoint 97"*.

Teaching Procedures: Activity using Attachment (8.0) *"Creating a multimedia resource using PowerPoint 97"*.

Time allocation: 25 minutes

What to do

FACILITATOR	PARTICIPANT
8.1 Organise participants into groups (The size will depend on the availability of computers).	8.1 Form into working groups.
8.2 Outline the task – To insert an image, a sound, a video and text into a presentation of no more than three slides.)	8.2 Read Attachment (8.0) and attempt to complete the task. Participants may wish to use the following files from the CD (`Lrntech/activity-8/`) in conjunction with Attachment (8.0) for this module: `Clap.wav` (audio file) `Butterfly.avi` (video file) `Butterfly.bmp` (image file)
8.3 Discuss briefly with all participants the strengths and weaknesses of multimedia presentations created by the teacher or learner as a learning tool and record suggestions on the whiteboard.	8.3 Discuss briefly the strengths and weaknesses of multimedia presentations. Record suggestions.
8.4 Using a board, continue with the definition or question and answer diary.	8.4 Add unfamiliar terms or questions and answers obtained during this activity to the definition or question and answer diary.

Discuss/Consider:

- The "non-linear" pathway a student may choose to take through the presentation in comparison with the pathway that the creator may have intended. "Is all the content intended in the presentation still being covered?"
- What is being learned? The intended content or the presentation technology?
- How group dynamics of the class may influence the intended learning outcomes using multimedia technology.

Tips and Tricks:

- The above tasks are intended to prepare participants for the final activity. It is important that participants demonstrate sufficient understanding of this activity before attempting the final activity.
- Save all files associated with a presentation in a separate directory.
- As a general rule, use a dark background with light text for a presentation to be displayed on a screen, and use a light background and dark text for a presentation to be printed.
- *MS PowerPoint* presentations can be easily reformatted for distribution over the Web. To do this File>Save As HTML option.
- Participants should be encouraged to experiment with the variety of options available in this versatile program.
- Participants should be made aware that there are training Web sites eg*;*

http://www.microsoft.com/education/curric/ppt97/start.htm
http://www.kodak.com/US/en/digital/dlc/

- A Web location for free sound clips:

http://www.soundcentral.com/computer/cartoon/

- Web locations for free video clips:

http://www.yahoo.com/Entertainment/Movies_and_Films/Multimedia/Video_Clips/
and http://www.JurassicPunk.com/movies.html

Skills Checklist:

- ❑ Inserting text into PowerPoint.
- ❑ Inserting graphics into PowerPoint.
- ❑ Inserting video into PowerPoint.
- ❑ Inserting sound into PowerPoint.
- ❑ Running a PowerPoint presentation.

Activity 9.0 : Creating a Simple Science Multimedia Resource

Purpose:

- To encourage participants to co-operatively plan and commence construction of a science based multimedia resource using the skills and ideas acquired from previous activities.

Resources required:

- Software, such as *MS Word 97* or *MS PowerPoint*.
- Digitised multimedia elements such as audio, still images and video which can be created or downloaded from the Web.
- Attachments as required.
- Computer peripherals as required.

Teaching Procedures: Introduction to an activity based task.

Time allocation: 20 minutes

What to do

FACILITATOR	PARTICIPANT
9.1 Set participants the task of planning the development of a multimedia resource which could be used in a science lesson. They should attempt to use a variety of digital elements and incorporate images, audio and video into a *MS Word 97* document or *MS PowerPoint* presentation.	9.1 Discuss purpose of task, and suggest some ideas for the resource and how it could be evolved in 'classroom' situation.
9.2 Participants should be encouraged to work in a group of three members to work to plan the resource. Refer to ideas which were raised in Activity 7.	9.2 Form groups of three and select a topic or component of science they wish to development a multimedia resource for
9.3 Participants should be encouraged to complete the multimedia resource after the PD session is finished. The resource could be developed by individual participants, between participants, or with students.	9.3 Develop a strategy to develop this resource away from the PD program.

Discuss/Consider:

- How the development of the resources could be part of classroom practice.
- Collaboration between schools (students and teachers) to develop a multimeida resource.
- Arrangements for participants to share the completed multimedia presentations - this could be through the on-line discussion area of the DEET..(http://www.sofweb.vic.edu.au > Discussion Groups)

Tips and Tricks:

- The aim of the task is to encourage the participants to plan the production of a simple science multimedia resource which could be used in their classroom. The multimedia resource could be planned, created or appropriate images and sounds could be researched and downloaded from the Internet.
- The task provides a valuable opportunity for participants to work in small groups, reflect on the contributions of others, exchange ideas, build skill and confidence in exploring the application of the learning technology demonstrated.

Module Review

Between Session Tasks: Participants should be encouraged to work on Activity 9.0 and to share materials developed with the rest of the participants.

Support Materials: Attachments as below can be found on the CD under `LrnTech/Attachments/`;

1.0 Digitising audio from a cassette tape
2.0 Creating digital audio
3.0 Using a scanner
3.1 Respecting Copyright
3.2 Image file formats –Which one to use?
4.0 Manipulating digital images
4.1 Digital stills to digital video
4.2 Image Enhancements and special effects
5.0 Capturing still images with a digital camera
5.1 Setting up a Logitech/Connectix "QuickCam – VC"
5.2 Setting up a Kodak DC50
6.0 Using a digital video camera
7.0 Ideas for digital elements in Science
8.0 Creating a multimedia resource using MS PowerPoint 97

Note – no attachments for activity 9

Product information is available from the following sites:

- Sony "Mavica" digital imaging camera
http://www.sel.sony.com/SEL/consumer/ss5/pin.shtml

- Connectix QuickCam Cameras
http://www.logitech.com/au/cameras/index.html

- Kodak Digital Cameras
http://www.kodak.com/US/en/digital/cameras/DCSGateway.jhtml

- Kodak Digital Learning Centre
http://www.kodak.com/US/en/digital/dlc/