Stage 5 Graphics Technology

Resourcing for the *Computer animation* unit of work

Rationale

This resource follows the requirements set out in the unit of work for this elective module. Wherever an overhead transparency is listed in the unit of work it is provided here. Overheads were chosen over printed notes, since printed notes often are not permitted in bulk for students, and overheads can competently convey the necessary information. It should be noted that at a number of points in the unit of work the teacher is to engage the students in brainstorming and class discussion, here there are no transparencies provided.

Originally there was a great deal of uncertainty as to how best to present *Flash* tutorials/lessons. But in the end it was decided to utilise the lessons provided with the Macromedia *Flash* software. These lessons are highly useful and also impact little on the schools printing budget as the student follows on-screen instructions.

Finally the major assignment for the unit is provided. The approach of the unit is such that it culminates in this major assignment with the teacher acting as a facilitator in a truly student centred environment. If your school suffers from limited PCs, then it may be necessary to do the assignment as a group project.

Overhead set 1

Introduction to computer animation

Computer animation, simply put, is animation produced by the computer. Animation is the process of producing moving pictures, using a series of images or frames presented in rapid succession. Animation has been done for years, Warner Brothers and Disney cartoons are an example.

The big advantage of animation is it has greater impact than a series of still images. For example, an animation showing a rocket launch is much more exciting than the still images shown in a row.

Now with the growth in computing power it is possible for the computer to perform the animation. And with many powerful desktop computers now available it is no longer out of reach to the home user.

Computer animation is useful in movies for producing an entire film, e.g. Final Fantasy, or it can be used to supplement live action where a live stunt may be too difficult or a live background is impossible. In Jurassic Park computer animation was used to produce dinosaurs that were more realistic than stop-motion photography.

Exercise: List 5 movies that use computer animation.

Animation often uses 30 frames per second, which means for 5 minutes there would be 9000 frames. It would be very difficult to draw each frame, so for longer animations special software is used.

Overhead set 2

OHS in computer animation

Any person doing computer animation will spend a majority of time seated in front of a computer; hence good ergonomics becomes a prime concern. It is important that certain factors are maintained.

Environment: where possible a cool environment should be maintained. Generally 22°C is considered the best temperature for a work environment.

Workstation: it is essential that the workstation is uncluttered and follows acceptable ergonomic practice. It is important a good quality adjustable chair is used in conjunction with a good desk that places the computer in the optimal position for the user. See handout.

Hardware: the computer hardware provided should also consider human requirements, mice and keyboards should be chosen that are comfortable to use for prolonged periods.

Regular breaks: while it is not suggested that in a work environment people should take too many breaks it is important to move from a stationary position at least every 50 minutes. If an animator is working at a computer for over an hour they are likely to suffer cramping and discomfort. To avoid this good seating position and regular breaks are essential.

Handout: Computer workstation ergonomics

Insert appropriate image

Compare this seating position to the way you think you normally sit. List some things you need to improve.

Overhead set 3

Animation methods

Cell based animation

This involves drawing and displaying each individual frame or *cell*. Each individual frame is stored in the primary memory when it is loaded into the graphics page. The first frame is displayed in the graphics page, and then the second graphics page is developed with the next frame. This second frame will differ slightly from the original. This is the traditional animation method and requires a very powerful computer to achieve seamless animation.

Path based animation

This form of animation centres on displaying the movement of objects against a fixed background or *path*. Only the pixels of the moving object are changed, which means this method uses less memory and processes faster. The object is drawn, then erased and redrawn in the new form. Animation software generates the frames in between the objects. This process is called *tweening* (short for in-betweening).

Morphing

Morphing involves starting with one image and progressively transforming it into another image. This is achieved by changing the size, shape and colour of the first image until it becomes the second image.

Warping

While morphing transforms a whole image, warping splits the image up into separate parts and then those individual parts can be altered. For example, characters eyes can be opened and closed or they can be made to smile.

Exercise: Think of a use for each of the animation methods listed above.

Class task

You are to find an image then scan it and save it in .jpg format. Then take an image with the digital camera. Save both of these in a folder on the school network.

Challenge task

Once both of these images are obtained try to cut part of one image out and place it into the second image using *Corel PHOTO-PAINT*.

This introduction is to prepare you for more detailed work with your major computer animation assignment.

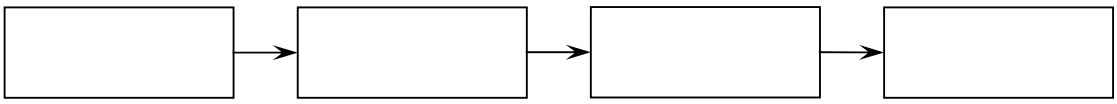
Overhead set 4

Storyboards

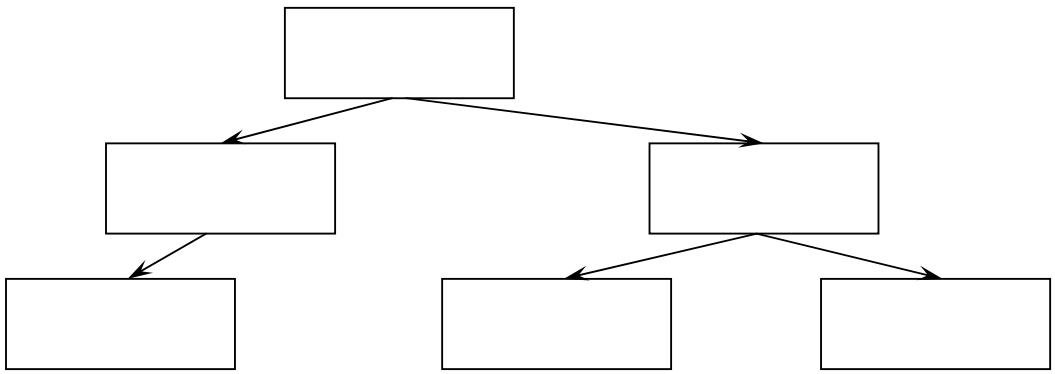
Storyboards are a series of graphical frames used to represent what is happening in the proposed animation. Storyboards are used by movie directors as a way to visually display to others working on the movie what they imagine will happen in certain parts of the movie. They are also used in multimedia development to plan out what is happening when developing some type of multimedia project.

Storyboards may be grouped into four categories:

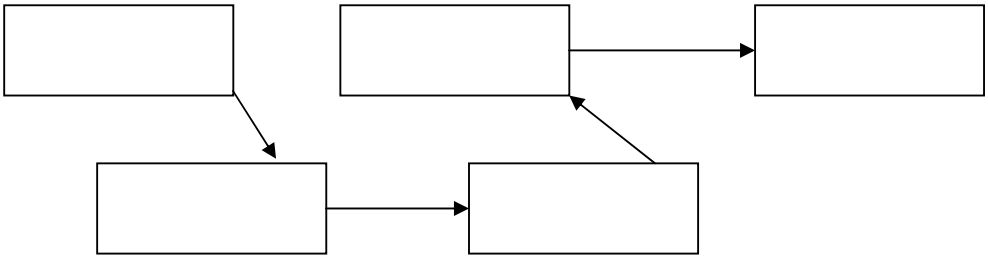
1. *Linear*: this is a sequential path that steps out what will happen, e.g. a *Flash* presentation.



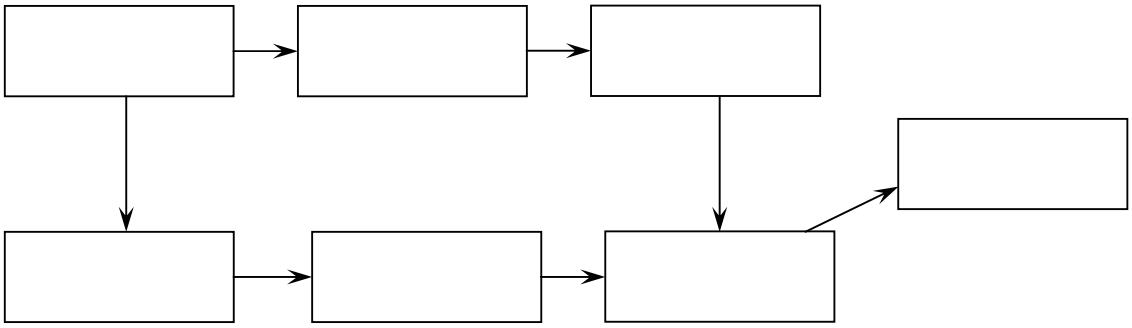
2. *Hierarchical*: this form uses a sequential process from the top down, e.g. simple computer games.



3. *Non-linear*: here there is a lack of structure, it moves between styles, e.g. a complex multi-layer computer game.



4. *Combination:* a blending of the three styles mentioned.



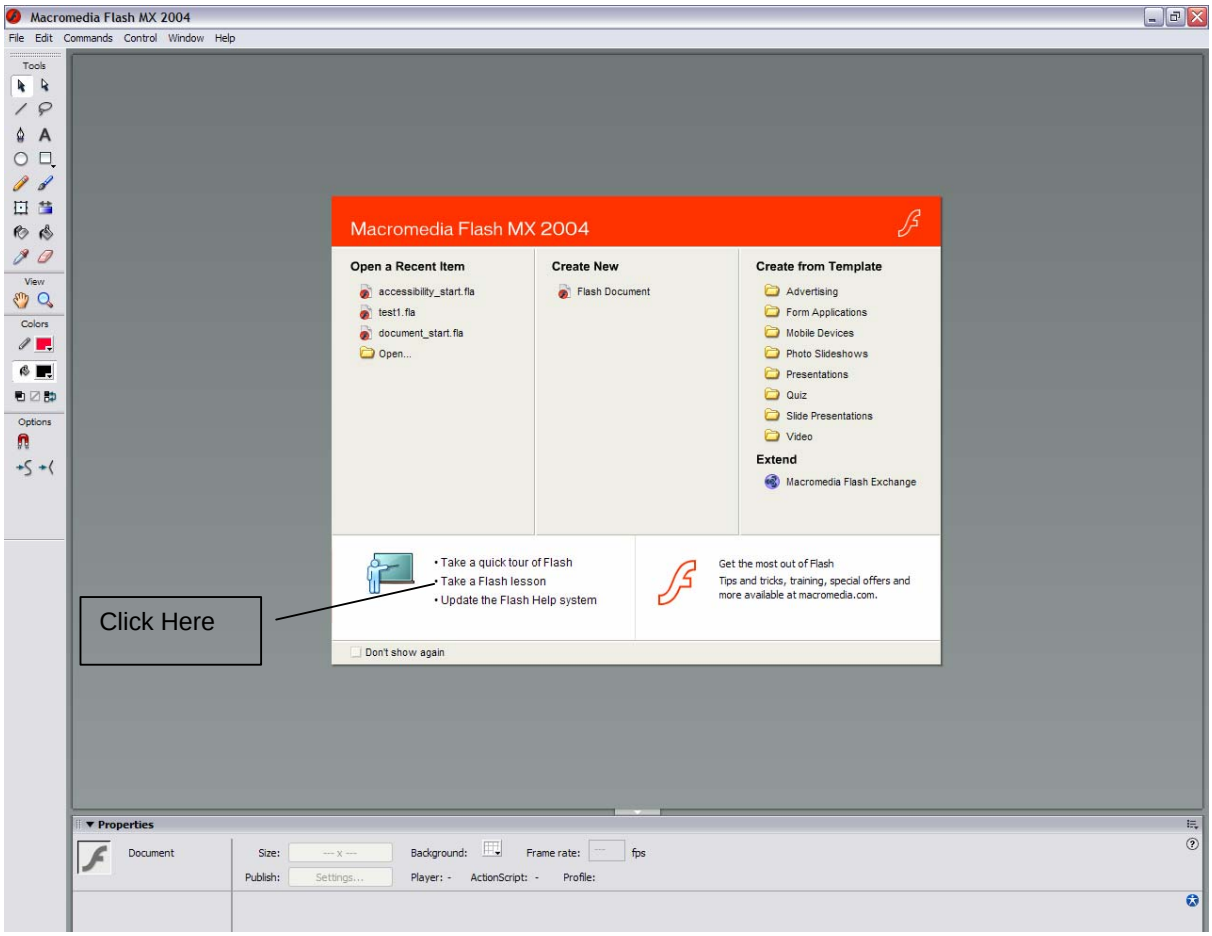
Overhead set 5

Introduction to *Flash MX 2004*

To fully gain an understanding of Macromedia *Flash MX* 2004 you need to work through a number of built-in lessons the programme provides.

To access these lessons:

- Open the programme by accessing it in the Start menu.
- Then you should see a screen that looks like the image below. Click on **Take a *Flash* lesson**.



Now follow the on-screen instructions for the lesson.

Stage 5 Graphics Technology

Elective module 3: Computer animation

Module Major Assignment

Outcomes examined: 5.1.2, 5.2.1, 5.3.2, 5.4.1, 5.4.2, 5.6.1

Course weighting: 25%

Due date: Term 3 Week 10

You are to create a 20-second *Flash* animation that displays the movement over and around a CAD image of a household appliance drawn on *ProDesktop*. Your *Flash* presentation should incorporate a play button, a pause button and a rewind button. Create a banner for the page and a brief text explanation for what is happening.

You also need to provide a folio showing the development of this animation. Your folio should be in an A4 display folder and have the following:

- title page
- this assessment sheet
- screenshots of your CAD image
- storyboards for your animation
- design layouts for the *Flash* animation screen
- screenshots showing your progress (evidence of project development)
- an evaluation of the project.

Marking criteria

Criteria	Marks available	Marks awarded
Fulfil requirements	10	
Performance	30	
Presentation (Visual Impact)	25	
CAD drawing	10	
Folio	25	
Total	*100*	