Cel Animation

This project gives students a chance to combine traditional art and music skills in a digital format. Visual art provides primarily visual and tactile/kinesthetic experiences. GarageBand adds auditory stimulation in a way that is both interesting and motivating for students. This project also provides an opportunity for career exploration.

Author: Chris Cooper, Art and Digital Graphics teacher
Grade level: High School
Curriculum areas: Visual Arts and Digital Graphics

Project Overview

Students create hand-drawn and computer enhanced cel animation, a GarageBand soundtrack, and an iMovie project that combines the animation and music. The movie can be burned onto a CD and used as part of an animation festival, shared with other students, and added to a digital portfolio of students' artwork.

Project Steps

1. Have students view examples of traditional cel animation and 3D digital animation on videotape, CDs, or DVDs. Lead a discussion about the similarities and differences between these two types of animation, including information about how professional animators do their jobs. Topics could include creating storyboards, recording professional dialogue and sound, inking and finishing, and so on. You can also discuss related career possibilities with students.

2. Have each student brainstorm and sketch a character to animate. They should then compose a series of sketches that show the figure in movement. This preliminary work is done in sketchbooks.

3. Have students complete a storyboard to guide them through the action in their animations. This is also done in sketchbooks and acts as a blueprint for the entire project. The storyboard should include keyframe drawings that outline the action sequence and can also include a preliminary time outline.

4. Introduce students to Wacom graphics tablets that they can use for drawing cels (frames) directly onto the computer. Alternatively, they can draw each cel on paper and scan them into the computer.

5 Students can create the animations using either Adobe ImageReady or iMovie.

When using Adobe ImageReady to animate, students should follow these steps:

a They should drag each cel onto a separate layer in a single Photoshop file. Students need to keep these layers in order and number them to correspond with the sequence of action to avoid confusion later.

b Have students create Photoshop backgrounds for their animations, line the layers up with each other (using lowered opacity), clean up the sketches, and apply color consistently throughout the sequence of layers.

c Students should drag each layer to a separate ImageReady frame to animate them. Introductions and credits need to be created as separate frames at this time.

d Students can export their completed animations as QuickTime movies.

When using iMovie to animate, students should follow these steps:

a Students should create each cel in a single Photoshop file, as described for ImageReady, but the background must be part of each individual layer.

b Students should save each layer as a separate Photoshop file, all contained in the same folder and then imported into iMovie as stills. (Number layers should correspond with the order of cels in the animation sequence.)

6 Students should set the timing for each still (in iMovie) or frame (in ImageReady). If they used iMovie, students should now create the introduction and credits, and can insert transitions if appropriate.

7 Have students spend time learning GarageBand, either on their own or working in pairs. They should experiment with combining different instrumentation, rhythms, and effects, and composing original music with a MIDI keyboard, if one is available. Students should keep in mind that they need to select sounds that will enhance the action in the cel animation.

8 Have students import the completed animation into iMovie if necessary. They should double-check the timing. Have them view the clip and check for the timed location of any keyframes that need to be coordinated with the sound sequence.

9 Students should use GarageBand to combine layers of sound to create a unique, rhythmic, cohesive soundtrack that enhances the action of the cel animation sequence. They need to check the timing of the soundtrack against the length of the clip and location of keyframes to coordinate sound and action.

10 Have students export the completed GarageBand sequence into iTunes, and then bring it into the iMovie file as a soundtrack.

11 Students should record any needed voiceovers or dialogue and drag vocals into a separate iMovie track.

12 Have students add their completed iMovie project with soundtrack to their digital portfolio. They can burn their completed animations onto a CD or DVD or record them on videotape to share with various audiences.

Outcomes

After completing this project, students will be able to:

- Understand the history and development of traditional cel animation and the difference between 2D and 3D animation techniques and products
- Create original digital cels and sound files
- Better understand career opportunities in animation and sound editing
- Use critical thinking skills needed when putting together animation frames, editing sound, and synthesizing the two into a single product
- Apply the basic elements of art and principles of design to computer graphics, specifically form and balance

Technology Skills

After completing this project, students will be able to:

- Have learned or improved their use of digital graphics, animation, and video editing software
- Operate peripheral devices such as a scanner or graphics tablet
- Apply their knowledge of traditional hand-drawn cel animation and frame sequencing to use software to produce the same
- Use GarageBand to synthesize sound with action sequences

Assessment Suggestions

Students can be assessed effectively with a rubric. Cel animation can be assessed separately from the soundtrack. The cel animation can receive a major grade for preparation and a major grade for the product, while the soundtrack can receive a major grade for the product alone.

Preparation and Duration

- Art experience is helpful. To help those students who don't have art training, you can present a basic elements and principles of art unit before students do this project.
- This is a lengthy project. The suggested timeline is two to three weeks for animation and three to five class periods (50 minutes) minimum for the soundtrack. (One month could be spent on the project.)

Tools and Resources

Internet

- http://www.apple.com/support/garageband/
  GarageBand resources from Apple
- http://www.apple.com/education/music
  Apple digital music website

Tools

Macintosh computers, flatbed scanner (optional), graphics tablets (optional), MIDI keyboard (optional), light table (optional), GarageBand, iMovie, Adobe Photoshop, Adobe ImageReady (optional, included with Photoshop), sketchbook and other art materials for drawing cels, blank CDs, videotape, or DVDs

Prerequisite Skills

Before beginning this project, students should be proficient with graphics software. Previous work with GarageBand and iMovie would be helpful, but not required. Basic art and composition skills are very helpful for drawing cels.

Facilitation Tips

- You might want to pair students with art experience and non-art students when drawing cels.
- You might want to pair students with music experience and non-music students for learning GarageBand.
- You can use a sign-up, rotation system when only a small number of computers are available. (This project is designed to be done in a graphics lab.)

Technology Tips

- You should work with small file sizes when working with G3 computers and smaller hard drives. Cel animations are usually in the 400 x 500 pixel size range, 100 dpi.
- Animations and audio tracks can be done in sections. Once either gets too large, it can be difficult to save.
- Have students save often and make a backup copy of their work in progress.