3.01C Multimedia Elements and Guidelines

3.01 Explore multimedia systems, elements and presentations.

Multimedia Fair Use Guidelines

Guidelines for using copyrighted multimedia elements include:

- Text
- Motion media
- Illustrations
- Music
- Internet

- Numerical data sets
- Copying and distribution
- Alteration limitations
- Citations

Multimedia Fair Uses Guidelines

Multimedia Elements

Multimedia Elements

- Text
- Graphics
- Animation
- Audio
- Video
- Menus

- Hyperlinks
- Virtual Reality

Multimedia Elements: Text

Text should be:
- Appropriate for the target audience.
- Easy to read.
  - Serif typefaces are preferred for printed material.
  - Sans serif typefaces are preferred for on-screen display.
- Formatted consistently throughout the presentation.

Multimedia Elements: Graphics

- **Graphics** are an important part of the communication process.
- They can be used to:
  - Highlight information
  - Set a mood or tone
  - Provide examples
  - Serve as backgrounds
- The two types of graphic used in multimedia are raster and vector.
  - Vector graphics are made up of arcs and lines.
  - Raster graphics are made of dots.

Multimedia Elements: Graphics

When using graphics, the multimedia designer must:
- Determine the best balance between the size and quality.
- Use appropriate graphics for the intended purpose and audience.
- Choose appropriate file formats
  - Standard for the internet:
    - JPEG (Joint Photographer Experts Group)
    - GIF (Graphics Interchange file format)
    - PNG (Portable Network Graphics)
  - Most popular
    - TIFF - Tagged Image File Format
    - BMP – Bitmap
    - PCX - Windows Paint
    - PICT - Macintosh

Multimedia Elements: Graphics

- Graphics editing programs allow designers to draw, paint, or edit images.

- A combination of different graphic programs may be used in creating multimedia presentations.

Multimedia Elements: Animation

- 2-D and 3-D animations are useful in multimedia in the areas of entertainment, education, and training.
- They can be used to create simplified illustrations of a simulation or dramatization.
- They can be much easier to understand because they are less complex than video.
- 2-D animations have smaller file sizes that video files which means quicker loading or downloading of the files.

Multimedia Elements: Sound

- **Sounds** in multimedia presentations could include:
  - Music.
  - Narrations.
  - Sound effects.
  - Original recordings.
- Sound waves are vibrations that are created when we speak.
- Sound waves are analog signals because they are continuous, fluctuating waves with no interruptions.

Multimedia Elements: Sound

- Computers are digital machines, meaning that they represent data with 1s and 0s.
- To use sound on the computer, the sound waves must be converted from analog to digital form, or digitized.
- This conversion process is called sampling.

Sampling

- Sampling is a means of reproducing a continuous event, such as sound or motion, by recording many fragments of it.
- It involves taking "snapshots" of a sound wave in rapid intervals.
- These samples, or bits of information, are saved as numbers to allow the computer to process them.

Sample Rate

- The sample rate is the number of samples taken per second.
- It is typically expressed in hertz (Hz), or samples per second.
  - 16,000 samples per second = 16 kHz
  - 44,100 samples per second = 44.1 kHz (CD quality sound)

Sample Rate (continued)

- The higher the sampling rate, the more samples taken per second.
- This means:
  - The digital sound will more closely match the analog sound.
  - The quality of the audio will be better.

Sample Size

- Sample size is the number of bits used to store one sample.
- It is also called resolution.
- The more bits used per sample, the closer the digital copy sounds to the original analog sound.
- The larger the sample size, the bigger the file size but the better the quality of the sound.
- CD-quality sound has a sample size of 16 bits.

Sample Size (continued)

- Sample size can be changed in Windows Sound Recorder by clicking on the File Menu and then clicking on Properties.
- It can be set for:
  - Recording
  - Playback

Audio File Size is Determined By:

- Sampling rate – the number of samples per second.
- Sample size – the number of bits used to save one sample.
- Channels recorded – mono or stereo.

Audio File Formats

- AU – (Audio) file created by Sun Microsystems and used on computers running the UNIX operating system.
- MP3 – (Mpeg-1 Audio Layer 3) very compressed file that is popular for music stored on portable players and on the Internet because it can reproduce near-CD quality audio in small file sizes.
- MIDI – (Musical Instrument Digital Interface) file format for creating and/or playing music with instruments using synthesizers and sound cards.

Audio File Formats (continued)

- WAV – (Waveform) file format developed jointly by IBM and Microsoft as the native format for Windows sound files.
  - Produces high-quality sound.
  - Generates large file sizes because it is uncompressed.
  - Commonly used to edit sound which is then saved in a different compressed format for distribution.
- WMA (Windows Media Audio) proprietary file format developed by Microsoft originally to compete with the .MP3 format.
  - Produces high-quality sound.
 - More compressed than .WAV files.

Multimedia Elements: Video

- **Videos** allow the audience to view actual events instead of just reading about or listening to them.
- Sources for videos include web sites and stock film companies.

Multimedia Elements: Video

- Videos can be used in:
  - CD-ROMS
  - Games
  - Presentations
  - Video simulations
  - Videoconferences
  - Websites.
- Videos vary in quality.
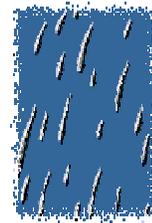
The Video Format

The file format of the video determines:

- Which programs can open and play it.
- How much storage space it occupies.
- How fast it travels over an Internet connection.

Video File Formats

- **AVI** (Audio Video Interleave)
  - Windows format, plays in Windows Media Player
  - Very good quality, even at smaller resolutions
  - Large file size – not recommended for delivering video over the Internet.
  - Popular format for videos stored on a computer.

- **MOV** (Movie)
  - Apple format, plays in the QuickTime Player
  - Very good quality
  - Popular format for videos downloaded from the Internet.

Video File Formats

- **MPEG** (Moving Pictures Expert Group)
  - The standard for compression and storage of audio and motion video for use on the World Wide Web.
    - Creates video small file sizes.
    - Popular format for videos downloaded from the Internet.
  - Its biggest advantage is that It will play in many different media players.

- **RM** (RealMedia)
  - Plays in the RealPlayer player.
  - Typically contains a movie clip.
  - Popular format for streaming video viewed over the Internet.
  - Real Player is generally supported by many different computers and operating systems.

Video File Formats

- **WMV** (Windows Media Video)
  - Proprietary video format developed by Microsoft.
  - Plays in Windows Media Player.
  - Popular format for streaming video viewed over the Internet.

- **FLV** (Flash Video)
  - New file format widely used on the Internet.
  - Plays in Adobe Flash Player.
  - Very small file size.
  - Popular format for streaming video viewed over the Internet

Multimedia Elements: Availability

Stock clips of animation, sound, and video are:

- Available for free or for a fee:
  - On CD's which can be purchased.
  - In presentation software programs.
  - On web sites.

- Made available by vendors (for sale) or individuals (created as a hobby).

- Available in several formats such as MPEG1, Quicktime or Streaming Quicktime.

Review

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Review (Continued)

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