

An Interactive Animated Flash Module to Teach Animation Principles

to Community College Digital Media Students

Literature Review

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Digital Media (DMED) 140 The Principles of Animation is a required course for all Digital Media students at Leeward Community College (LCC) that wish to graduate the program with a degree. The core concepts of DMED 140 are the Seven Principles of Animation. These seven principles are the following: (1) *Arcs*, (2) *Timing*, (3) *Squash and Stretch*, (4) *Reversal of Curves*, (5) *Successive Breaking of Joints*, (6) *Secondary Motion*, (7) *Overlapping Action*. These concepts are difficult to learn. In their classic book on Disney Animation Frank Thomas and Ollie Johnston summarize, “The problem is not a single track one. Animation is not just timing, or well-drawn character, it is the sum of all the factors named” (Johnston & Thomas 1981, p15). This complexity of the concepts they allude to makes teaching them difficult to the community of learners that comprise the typical LCC DMED 140 class.

Many of the LCC students have short attention spans. The students’ ability to focus on abstract concepts for an extended period of time is limited. One study suggests that due to the high pace of modern society many people suffer from a pseudo Attention Deficit Hyperactive Disorder (ADHD) (Geist & Gibson, 2000). Multiple streams of simultaneous information have become standard for modern learners. The ability of a single stream of spoken information as in a traditional lecture, today holds limited appeal. The ability of this pedagogic system to engage the learner is continually challenged. It is further suggested that basic ways of commanding attention involve using novel devices

such as animation (Gagne, Golas, Wager & Keller, 2005). One study attributes part of limited attentions spans to media programming people are exposed to when young (Geist & Gibson, 2000). The standard lecture format makes much of the content of DMED 140 *Introduction to Animation* ineffective for many students who fall into this category of learners with short attention spans. In addition many of the students have learning disabilities including psychological, motor skills and sight impairment challenges. Research indicates that students with enhanced spatial skills benefit from graphics and animation as a method of relating key concepts (ChanLin, 2000). Russell A. Barkley PhD states in the case of ADHD adolescents "...increasing the novelty and interest level of the tasks through the use of increased stimulation..." (Barkley, 2005, p236) can enhance attention improving student performance. Restrictive classroom management and standard curricula is said to "...impede the development of independent thinking..." (Anastasiow, Gallagher & Kirk, 2000, p156).

As Gagne's first event of instruction, Gaining Attention may require the use of novel approaches including the use of animation (Gagne, et al., 2005). The virtual three-dimensional world of Second Life has become one such educational novelty. Second Life is an animation interface, utilizing animation, audio and text elements as users interact in a complete 3-D animated environment. The popularity of Second Life as an educational device is now widely accepted by many institutions of higher learning (Kelton, 2007). It takes a catalyst to change a system and push it forward with innovation (Havelock, nd). Havelock urges in his writing for changes in the status quo of education and new innovative approaches. It has been observed that animation can be useful in conveying dynamic information (Betrancourt & Chassot, 2009). It is also observed that

many traditional practices in education can lead to large problems and therefore a new mindset in educational design is needed (Lebow, nd). Animation helped bring instruction to life “grabbing the attention” of the learner in one classroom study (Schaffhauser, 2008).

The question this project focuses on is “Is an interactive Flash module an effective method for teaching the elementary animation principles of Squash and Stretch, Timing and Arcs to LCC Digital Media students?” The instructional design object will be a Flash Movie file that uses graphics, animation, buttons, sound, text and video to deliver the key animation concepts of Squash and Stretch, Arcs and Timing.

In the *Event of Instruction* labeled *Presenting the Stimulus Material* it is noted that the proper stimuli must be used as determined by the material being presented (Gagne, et al., 2005). Animation concepts are based on movement and would in such a context therefore require a stimulus involving movement. This seems to support the idea of a learning module for animation that involves moving image sequences. Animation as a means of demonstration is seen as a safe alternative in the observation of many events that in reality may pose a danger to students (Thinkquest, 2009). Many animation demonstrations would prove impractical in a classroom, particularly a computer lab environment. For instance dropping balls of various weights to illustrate the principle of Timing may pose a danger to students or equipment. Animation can also be used in instruction as a mnemonic device (ChanLin, 2000). Other research has indicated that a use of interactivity coupled with animation is a more effective educational device than the use of animation alone (Hasler, Kersten & Sweller, 2008). The ability of the learner

to control the playing and repletion of the instructional animation had a measured impact (Hasler, et al., 2008).

In the opposite respect, some information revealed in the articles reviewed included the concepts that animation is not always effective, as some had assumed. In the study involving special aptitudes, it was noted that students with low spatial aptitudes did not benefit from the use of animation and graphics in the instruction (ChanLin, 2000). The students with low spatial aptitude experienced more cognitive effort in integrating the graphics and animation than was required to work with instruction that was void of these enhancements (ChanLin, 2000). In another study it was noted that instruction without the aid of animation yielded the same result as instruction enhanced with animation, with the exception to this being only when user control of the animation was available through interactivity (Hasler, et al., 2008).

It was fortunate that resources we found in three main categories while conducting this literature review. The first were writings on the subject of animation itself and its dissemination. The notable world-renowned authors on this subject are Frank Thomas and Ollie Johnston. Their book *Disney Animation the Illusion of Life* , is considered by many professionals to be the quintessential book on animation and its principles. The second category was the use of novel approaches in education including the use of animation and graphics. These resources provide a basis for the development of this design project.

The last category was resources that focused on the cognitive aspects of modern learners. These resources were particularly helpful in supporting observations made of the LCC Digital Media Student through direct interaction. Two of the resources

address the needs of exceptional learners including ADHD learners. ADHD learners are part of the LCC Digital Media Department demographic. Often misunderstood, it was useful to find resources addressing the needs of learners with this particular disability.

The intent of this module is to present animation principles through the use of interactive flash technology. With this goal in mind, part of the literature review focused on web resources that were currently using digital tools to present animation principles online. The web search proved to be challenging, but several uses of digital tools as presentation devices were found. Several sites used a web page approach with simple text and images to present content; *awn.com*, *makemovies.com*, *karmatoons.com*. One resource used hypertext as an interactive way to link pages of text and images; *amazing-kids.org*. One resource used a blog-style approach incorporating embedded movie files to show short animation clips; *johnkstuff.blogspot.com*. Lastly, one resource not only used text and images but also used interactivity through buttons, allowing the user to scroll forward and backward one frame at a time, through sample animations; *amazing-kids.org*. The accuracy of this final site however is in question with many key points on animation being misrepresented. The result of this search for quality interactive resources underscored the need for new materials. The construction of this module will go beyond the simple uses of web pages and text, working with buttons, embedded videos, audio components and animation. The scale of this module goes far beyond what was revealed during the literature review. This module will present three principles whereas modules found covered only one.

Animation has traditionally been an art form passed on through apprenticeship but many universities now offer classes and full courses of study in the subject. With the

increasingly short attention span of community college learners, and the increasing capability of technology to cater to individual learning styles, there is a clear opportunity for the use of interactive technology to aid in the delivery of course content. Due to the lack of existing interactive modules there is a need for the development of such modules for animation curricula. Animation may in the end be best taught using animation graphics and interactivity. This design project will bring together traditional knowledge from the animation community and present it to students in a new way. It is important to remember in the end that this module is only a small part of the learner's larger objective to learn how to animate well. This alpha level objective is beyond the scope of any single learning module or device. As Frank Thomas and Ollie Johnston aptly state in their seminal book *Disney Animation the Illusion of Life*, "Animation is not just timing, or a well drawn character, it is the sum of all the factors named...whether force or form, or well drawn characters, timing or spacing – animation is all these things – not any one." (Johnston & Thomas, 1981, p15).

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