3D HD Video Production System

Authors/Innovators
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Showcase/Innovative Practice Description
This showcase will display a 3D HD video production system, including a 3D HDTV, Blu Ray burner/player, and 3 different HD camcorders, including the first 3D HD consumer camcorder. The equipment displayed in this showcase was made possible through a Student Computing Access Program grant award. Please visit our display and try on our 3D glasses as you view a 3D HD example.

Student Computing Access Program Grant Proposal (SCAP) 2010-2011

Student Computing Access Program is a SUNY program to improve access to computing technologies for students. During the early years of the SCAP, it funded primarily laboratory computers. In more recent years, the SCAP program has evolved to support access to innovative computing technologies. This funding has positively impacted the quality of computing technologies on the SUNY Oswego campus. For more information on the SCAP initiatives at SUNY Oswego, visit: http://www.oswego.edu/cts/techboard/scap.html.

Grant Proposal Submitted: October 2010
Awarded: January 2011
Items Received: August 2011

This proposal benefits all 289 majors in the Department of Technology. This proposal is for a 3-D High Definition Video Production and Proofing System. For the past 4 years, Technology Education majors in *Communication Systems* have been creating thematic videos using standard-definition video and iMovie as an editor. However, the video industry has transitioned to high-definition video and output devices. This proposal is to upgrade the video component of the course to high definition, and even 3-D, which is even a more current technology. This will be a significant innovation in course content, and allow students a richer exploration of current technologies, concepts, and processes.

Students will compose videos with the high definition camcorders. They will also be required to add a 3-D component to their videos using the 3-D high definition camcorder. They will then use Adobe Premiere Pro (currently own) to edit their raw video footage into a thematic video. Once they have their videos finalized, they will use Adobe Encore (currently owned) to author a program, outputting that to the Blu Ray burner. They will then proof (e.g, did they have correct video format and dimensions, colors, etc) and critique their video program using the 3-D glasses and 3-D high-definition display. The high-definition display has other items it can be used for in class. For example, students can more realistically critique their high dynamic range photos (composed with currently owned Digital SLRs and edited with Adobe Photoshop) on this device than the current low resolution, standard definition projector and screen. Our technology majors commonly teach video production in high schools and middle schools and need to be up to date on current technologies in processes in this area. For example, a student teacher that I currently supervise wrote about his middle school term problem:

> For the 8th grade computer applications class I will create instructions and demonstrations on how to use the camcorders effectively. The lessons will help them capture the shots that are desired to use in their movies. The instructions will include camera angle, camera shots, camera movement, conversation shots, and focus techniques. The end product will be a video of how to properly use the camera to capture these shots.

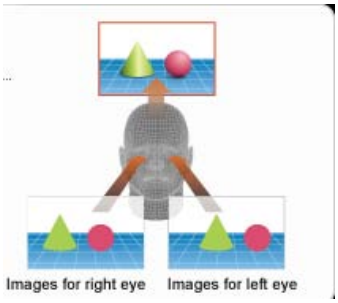
For items purchased through the SCAP grant, please see the next page.

SCAP Items Awarded

Manufacturing	Model	How Many Units	Unit Cost	Total
Panasonic 3D Camcorder	HDC-SDT750K	1	1,399.95	1,399.95
Samsung 63" 3D Plasma TV ATSC - HDTV 1080p - 16:9 - 1920 x 1080 - 1080p	PN63C7000	1	2,488.18	2,488.18
Samsung 3D Active Glasses	SSG-3100GB	2	35.99	71.98
Samsung BDC6900 Blu Ray DVD Player	BDC6900	1	249.00	249.00
LaCie USB 2.0/FW Professional BDR/ BD-RE Blu-Ray Drive	301856U	1	373.99	373.99

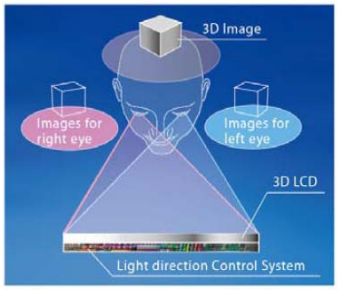
How 3-D Television/ Video Production Works

Although**3-D technology is nothing new to us,** in the last 5 years there have been major advances in it. From projecting movies in theaters to hundreds of people, to allowing the consumer to produce their own 3-Demonsional movies, the availability is at our fingertips. Yet many may not know the simplicity behind shooting in 3-D, or how the viewer is able to see depth in a flat image. The start of understanding this technology begins in our eyes.



img. src.- panasonic.net

What we see doesn't always match up. Because our eyes are located at slightly different positions, they perceive two different images. Usually when an objectis far away, our brain takes those two images coming from each eye and makes one image. But when the same object gets closer, we see the object as two; one eye sees it differently from the other (this is what makes us cross-eyed). While we are struggling to see this object, our brain is attempting to focus on this object through a single eye, which takes effort and time. This is called visual disparity.



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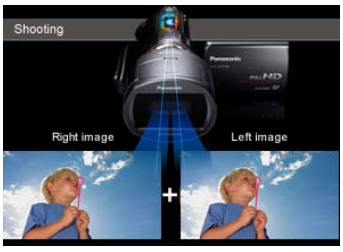
It's all about tricking the brain. The secret is by taking the same image and putting them in two slightly different locations. Because of visual disparity, our brains are trying to focus on one of the images at a time. Because the movements of these images are changing at a constant rate and not focusing on one object at a time, constant viewing of 3-D will cause headaches and dizziness.



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But why the glasses?If you ever looked at 3-D image, you can see the overlapping of two images. However, these two images we see are actually flashing one picture at a time at an incredibly fast rate. The glasses are linked wirelessly through infrared sensors that alternate the left and right lens from being transparent to opaque. This allows, for example, the right eye to see one image while the other eye is blacked out, and then alternated so the left eye can only see the other image. This precisely timed operation happens so fast that we can't see it happening.

Okay, but how can we record in 3-D? This process is very simple. The 3-D Lens Filter has two lenses, the right and left. These two lenses are similar to our eyes. They each capture the same image but in two different locations. These two images are then overlapped slightly and when displayed on a 3-D television, are seen with depth.

For more information on 3-D television, 3-D camcorders, and how it works, visit:

- http://electronics.howstuffworks.com/3d-tv.htm
- http://panasonic.net/avc/camcorder/hd/sdt750/
- http://www.3dtvguide.org/3d-tv-technology.html