Making Movies: The Science Myth Busters!

By Jan Harding
MACUL Grant Recipient

“Mrs. Harding, can you suggest some websites that would help us answer our question?”
"Would you look over our script and give us some suggestions before we shoot our video?"
"Can we come in at lunch to do some filming?"
"Can I stay after school today and work on our video?"

Every teacher wants to engage and motivate their students. Having kids ask for extra time to
research, write, create, edit, and share their work is part of the daily routine in a classroom where
students use video as a tool for learning.

**Introduction and Project Background**

Using small, hand held video cameras to produce a video on a science “myth” or “fact,” I hoped
that my seventh grade students would become more involved in their study of a science subject
(in this case, waves). I began with a desire to obtain video cameras and accessories for my
students to produce video projects as means of engaging them with science content. I knew that
using video projects in the classroom would allow students to experience learning in multiple
modalities—audio, visual, and kinesthetic. Producing a video on a topic and discussing the work
of fellow classmates would help students to explore a topic through research, writing,
acting/presenting, editing, and sharing their ideas.

Originally, I had tested out this idea of engaging students in science topics through video by
teaching a four day summer technology camp at Macomb Intermediate Schools (MISD) in 2008
entitled, “Making Movies: The Science Myth Busters!” where students researched a science
“myth” or “fact” as suggested by several websites. My daughter helped me create a science
“Myth Buster” video to be used as a sample to show at camp, which can be seen at:
http://jharding.weebly.com/making-movies.html. Several of the handouts developed for this
camp were useful in presenting the project to my students.

**Project information**

I applied for a MACUL grant to obtain 10 digital camcorders (RCA Small Wonder EZ200,
obtained through the REMC bid), 10 small tripods, 8 monopods (more on those later),
rechargeable batteries and battery chargers (an important item to keep the power supply
constant), and several SD mini cards for additional storage. It’s important to note that while this
plethora of equipment from the grant was a wonderful bonus for our classroom, one of the
important insights I had from the grant was that you can work video into your classroom with
much less equipment. Even one camera (an $80 to $100 investment) paired with a $10-15 tripod
and a battery supply is sufficient to produce videos for a classroom of students working in
groups. To make it work with fewer cameras, a teacher just needs to be flexible with video
production time and find a quiet location for shooting video.

I selected “waves” as the unit of study as it was one of the few units in our seventh grade science
curriculum that was not being rewritten as part of the new grade level content expectations
(GLCEs) by the state. Although the unit was modified somewhat, it was a unit I had taught
before. Starting with a familiar unit seemed to be a good way to jump into a new project.
I began by asking students to use Survey Monkey to take a survey prior to the unit (see http://tinyurl.com/kpsm9d) to gauge their prior knowledge about waves. We had talked about them in a general way (what is a wave?), but students had no other previous experiences with studying waves in the science curriculum. I gave them the same survey after the unit concluded to help measure the results of the work they did on the videos. They also received a traditional test on waves and wave function and they shared their videos in class and online in Blackboard.

Students worked in table groups of four and were randomly assigned one of the science “myth” or “facts” listed in the survey to research. These “myth” or “fact” statements were developed by looking over the science GLCEs and researching common science misconceptions about waves on the internet. Examples from the survey include statements such as: All of these are examples of waves: waves on a beach, light, a "wave" created by people at a baseball game, seismic waves from an earthquake, or When waves meet, they bounce off each other and travel in the opposite direction. They were given a text chapter from a science book on waves, World Book Online (which our district purchases) and allowed to use other internet resources to verify or dispute their science statement.

After storyboarding a possible video and writing a script, students shot their “Myth Buster” style video and edited them by adding titles, credits, images (both internet and still images taken from the cameras), music, and (if needed) voice over using Windows Movie Maker. Students enjoyed using slinkys, science animations, and images to help illustrate their concepts.

In addition to working with science standards (GLECs) in this project, students were involved with a number of technology standards (NETS) that were woven into the project by the use of technology. We discussed the need for evaluating internet resources, and students were encouraged to consider sources from educational or governmental websites (such as NASA or other .gov or .edu websites) or to verify the background information from commercial websites. We also discussed the need for copyright protection of images and music. While music did not present a problem (there are a number of royalty free music sites that offer free clips), finding science specific images or animations for physical science concepts sometimes is more challenging. Limiting the viewing of the videos to a password protected space such as Blackboard allowed students to use some copyright protected material in a manner consistent with fair use principles. Sites for copyright free music and images are included in the resource section at the end of the article.

Some Project Considerations

I knew from previous video experience in the MISD camp that finding quiet places for video production is essential. These small cameras pick up background noise, making simultaneous taping by multiple groups challenging. I used the science labs directly across the hall from my classroom as they were easy to monitor as taping stations. I also encouraged kids to come in during lunch or after school, when I would be around working on lesson plans or classroom work, to do their video production work. It had the advantage of making me available for small group consultation (or as a stand in for groups that were a little short handed, if needed). Some groups came in almost daily over a period of several weeks to collaborate on their projects, while others were satisfied with less out of class time to work and came in sporadically.
Desktop tripods were essential to boosting the quality of student production. We demonstrated the “shaky hand” effect that hand held panning and zooming, or even just hand held taping produces in class. Monopods were also useful. I reproduced some materials from the American Film Institute (see the suggested links in the Power Points listed below) and talked just briefly to the kids about various kinds of shots they might want to use in production. The monopods, while not necessary, allowed students to use the cameras more easily when filming in custom situations, or as a video “boom” for filming things from above (a slinky demonstrating a transverse wave on a lab table, for example). They are also great for filming from unusual angles or perspectives, as students in my technology camp found out. Elementary students at camp enjoyed trying them out as well as the older kids.

Devoting one class period to camera instruction and practice as well as setting out the rules of use was helpful. I used the document camera to show students how to use the simple controls on the camera and had them sign a use and care contract that listed important items such as using the wrist strap to avoid accidents and gave procedures for putting away cameras. Each group was assigned a camera, making it easier for students to control what happens to the videos. In a classroom with fewer cameras, downloading videos as soon as possible would help prevent data loss from accidental erasures.

Having a rubric for production to guide students from the start was essential to encourage quality work. I also used rubrics at various times throughout the project to help guide students as they worked through their productions; for example, to evaluate their scripts before shooting the videos. A sample video rubric is included in the MACUL Power Point listed at the end of the article.

I learned several important technology tips for using the Small Wonder cameras in conjunction with Windows Movie Maker. The first is to have students upload videos directly from the camera to a common location before opening Movie Maker (in our case, this was a shared folder that all students can access and upload to but not modify). This eliminated the need to plug in the video camera every time the students worked in Movie Maker. Once the videos were uploaded, they could access them from the computer and students no longer needed the cameras. This tip would also free up cameras in a classroom that has fewer cameras to use. Most importantly, it avoids the “Red X” syndrome that you get if you upload to a MM project directly from the camera and don’t have the camera plugged into the computer when you go back to work on your project on a later date.
A second tip I quickly learned was to make sure students UNCHECK the box that asks them if they want to “Create clips for video files” when they are uploading video. This was a problem I ran into with earlier versions of Windows Movie Maker (including the one installed on our classroom computers) as it would result in fragmenting students’ videos into many mini-clips.
**Project Results**

Students created video projects on each of the topics listed in the pre-project survey. We found that a few of the questions I had developed had nebulous answers, so the results were mixed on the post-project survey. For example, one group found that sounds waves are emitted in space, but that there isn’t enough matter to compress for our ears to detect them. In fact, scientists have found that black holes emit a constant B flat note! Students understood that waves were travelling disturbances and that something moving in the water could create a wave, although waves are more commonly created on the water by wind. The kids and I both learned from some of the investigations they did on the survey questions. The percentage of students who increased their understanding of certain key concepts went up in various areas. For example, most students gained understanding that waves do not “bounce off each other” but interfere with each other in various ways, and that particles of matter do not travel with a wave but merely vibrate. I think it’s also worth noting that the class average on the pencil and paper waves test they took was 84%, demonstrating mastery of physical science concepts that were new and challenging for this age group.

**Some Final Project Thoughts**

If you are reading this and thinking, “Is video in the classroom worth the time?” I would encourage you to consider this question: What kinds of projects can you do with your students that can help meet content standards AND help students gain experience with most strands of the NETS to help them progress as 21st century learners? Here are a few other compelling reasons from my MACUL Power Point:

- Time needed for production decreases with practice
- Your students will use multiple modalities for learning
- Creative endeavors = better long term learning
- Videos can be posted/archived for review
- It engages both “underdogs” and “overachievers”
- You can integrate subjects to cover multiple objectives
- Plus, it’s FUN!

The main suggestions I have are to start small, expect a few speed bumps, and build in a little extra time for video work. It’s important to understand that getting the cameras in the kids’ hands and getting them started is more important than worrying about production quality. They will learn as they go how to improve their efforts. Keep the focus on the concepts you are teaching rather than on endless editing and special effects.

If you would like to have your students begin video production, I have put together several website pages with Power Point presentations and documents you might find useful in the resource links below on my teacher resource website. The Power Points include suggested classroom projects for all levels, tips for getting started, and a variety of resources including the American Film Institute materials for students (free for Discovery Streaming users). What are you waiting for? Lights…camera…action…HAVE FUN!
**Resources**

Teaching with Technology: [http://jharding.weebly.com](http://jharding.weebly.com). This is my teacher resource website, which includes these tabs:

**Making Movies** (summer technology camp, MISD, 2008-09)
**MACUL Presentation 2009: Making Movies!** (Power Point presentation on the grant outlined in this article)
**Making Movies in the Classroom** (teacher workshop with Power Point on using handheld video cameras in the classroom)

Sources for science myths, misconceptions, and facts:

The Seven Deadly Sins of Filmmaking: [www.videomaker.com/article/1356/](http://www.videomaker.com/article/1356/)
Older students can read this, or you can just keep it in mind as general dos and don’ts when working with video.


Introduce your class with Windows Movie Maker:
[www.microsoft.com/education/moviemaker.mspx](http://www.microsoft.com/education/moviemaker.mspx)


Resources: [www.misd.k12.mi.us/technology/dig-video.html](http://www.misd.k12.mi.us/technology/dig-video.html)

Sound effects: [http://simplythebest.net/sounds/](http://simplythebest.net/sounds/)

Royalty free music, images, etc.:
[www.royaltyfreemusic.com/free-music-resources.html](http://www.royaltyfreemusic.com/free-music-resources.html)

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