The Video Technology that Brings Science to Life

An award-winning Arizona science teacher flips her classroom to make learning come alive for students in and beyond her school.

**Nancy Foote** is team lead for the science department at Sossman Middle School in Queen Creek, Arizona. She teaches a unique subject (conceptual physics, which is algebra-based, not calculus-based). “I support my teaching with a HoverCam,” she comments, “which has proven to be an invaluable piece of advanced technology that I have embraced, along with my students and other teachers at our school.”

Nancy (pictured, left) is highly familiar with the use of video in teaching; she has a successful YouTube channel with 1,000 daily views totaling more than 1.3 million views, so she knows how video can add to the teaching and learning experience. “When I began using HoverCam I found that it opened new avenues for presenting the material in powerful and effective ways,” she says. “In physics, the hard work comes when students are doing their homework and trying to solve problems on their own,” says Nancy. “Listening to a teacher’s lecture, and taking notes is the easy part. So I decided to make a drastic change in my teaching style.”

The Best Tool for a Flipped Classroom

What did she do? Nancy ‘flipped’ her classroom; in other words, instead of lecturing students during class, she began to record lectures and had the students take them home to assist with their homework assignments. “As a result,” she says, “day-to-day classroom activities were available for students to view at home as a tool for solving
“Any time a student has a close look at any type of phenomenon, they understand it better. The HoverCam allows us to take our experiences and quantify them so that everyone can see what’s going on.”

—Nancy Foote, Teacher, Higley Unified School District

### In focus, on point.

A student at Higley Unified School District in Arizona uses the HoverCam in his classroom studies. “My students love it when we have an opportunity for them to use the HoverCam,” says Middle School Science teacher Nancy Foote, “so I try to build it into my lessons as often as possible.”

challenging homework problems. Before I began using HoverCam, this required a tremendous amount of my time because I had to make videos on every topic I was teaching. HoverCam changed all that.”

When she decided to flip her class, Nancy talked to her IT department about what kind of document cameras were available. “One of the IT specialists suggested I try a HoverCam,” she recalls. “The learning curve was minimal and I found that when students had trouble with a problem, I was able to record a video on the fly. It was ideal for students who were absent, or those who were struggling and need something to refer back to for help.”

### Exceptional Quality, Repeatable Experience

Nancy also attended an ISTE conference and visited the HoverCam booth. “In the course of our conversation, I explained how I used HoverCam for both my classroom, and my YouTube channel. As I explained to them, my choice of their video camera was due to the exceptional quality of image, the lack of lag time, and the built-in recording software,” she says. Instead of having all her students gather around as she does a demonstration, “I now use my HoverCam, so they have a video of the experience they can view at home. We rarely use books in class, but I still like to show an image to display the concept we’re talking about. Having a document camera means I can do that—easily,” says Nancy.

She can also record any and every lesson — critically important not just for absent students, but for students who may benefit from re-watching what was done. “I no longer hear my students complain that they thought they understood the problem at school, but when they got home they did not remember how to do it,” says Nancy.

HoverCam offers a picture-in-picture feature that allows students to see the teacher as well as the work the teacher is presenting. “I’ve discovered over the course of my YouTube career, that it’s very important that the students see the teacher,” Nancy comments. “Teaching is as much about relationships as it is about content, and students relate better to content when they have a visual on who is teaching.”

### Looking to Learn and Do

One of the challenges any teacher faces is determining if the students are actually watching the videos. “Luckily, there are plenty of apps to play policeman for me,” says Nancy. “In addition, by simply looking at my students’ notes, or mentioning a key word from the video in class, I can tell whether they’ve watched them or not.”

As Nancy points out, “Any time a student has a close look at any type of phenomenon, they understand it better.
The HoverCam allows us to take our experiences and quantify them so that everyone can see what's going on. Physics is a lot of math – math that can sometimes be challenging. But if I can show the students step-by-step how to work through the math, it becomes reasonable."

"Mastery of any science is in the doing of science," she explains. "It's not in the reading of science, not in the watching of science, but in the doing of science.

The HoverCam allows me to have time to focus on doing science. I don't have to repeat a problem over and over, so that every student can understand it. They have the ability to learn at their own pace. The pace of the learning is in the hands of the student. HoverCam allows me to do that."

Helpful in Any Classroom

Nancy believes that the HoverCam would be helpful in any science class. "I can especially envision its use in Biology," she says. "If you are dissecting something, you can zoom in with a HoverCam. Also in Chemistry, if you're working with a substance that is potentially dangerous, the teacher can do the demo but the students can see it very clearly. I can remember what it was like being in middle and high school – the students who got to see the demos were those in the front inner circle. If you're short like me, or sat near the back, you rarely get to see what's going on. With a HoverCam, that will never happen."

"I have seen a dramatic increase in student engagement when I use the HoverCam. You can see and hear what's going on, and that gives you buy in. In addition, there is the video feature, which I use consistently, and, if I may say so myself, masterfully!"

Tools of engagement. "I have seen a dramatic increase in student engagement when I use the HoverCam," says science teacher Nancy Foote. "There are many tools that I use to get my students emotionally engaged with the material we are studying. The HoverCam allows students to be masters of their learning."

"My students love it when we have an opportunity for them to use the HoverCam, so I try to build it into my lessons as often as possible. I'd actually like to have more HoverCams in my classroom. I'd use them as an assessment tool. I would have the students make their own videos, explaining some phenomenon or another. In the meantime, we take advantage of the one that we have. Daily, students explain how they've solved the Warm-Up question, or show their solution to other problems using the HoverCam."

"My students can't wait to come to class, mostly because they never know what to expect. In my evaluation last year, my principal wrote, 'no one even leaves to go to the bathroom because they don't know what they're going to miss!'"

Masters of Learning

"There are many tools that I use to get my students emotionally engaged with the material we are studying.

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The HoverCam allows students to be masters of their learning, to be able to learn at their own pace, and not the pace I have set for them. As I frequently tell them, I've learned this material already. I know physics. Now it's your turn. In the process, I want them to learn about themselves. I want them to learn what they need in order to learn. I want them to be advocates for themselves when it comes to their academic progress. The HoverCam helps me help them."

“I frequently find myself reworking videos. I also often find new words to describe something or new ways to explain something. It’s so easy to sit down at my desk and turn on my HoverCam. Ten minutes later, it’s done. I can quickly and easily make videos answering questions from either my face-to-face students or my international students. It didn’t take a year to become an expert, it didn’t take a week. It probably took a day. A school day – working with kids.”

“Technology such as HoverCam gets the kids involved and enthusiastic about what they are doing. You can't get students to do ten problems for homework, but give them the same ten problems digitally, and they will work even harder and with greater focus – especially if you take those ten problems and make it into a game,” says Nancy.

**A Genuine Concern**

As Nancy explains, “one of the cool things” about HoverCam is that “they are so confident that you will like the product that they will give you a free trial,” she says. “That's confidence. I encourage anyone to try working with the HoverCam in his or her classroom. You won’t be disappointed!”

“HoverCam is more than just a document camera,” says teacher Nancy Foote. “It's people who are authentically interested in the success of students,” she says. “They seem to be concerned about kids becoming the best people they can be.”

And why is that, exactly? Nancy becomes pensive. “HoverCam is more than just a document camera. It's a company that stands behind what it makes. But more than that, it's people who are authentically interested in the success of students. Yes, they are trying to sell a product. But more than the bottom line, they seem to be concerned about kids becoming the best people they can be. About helping teachers successfully communicate the contents that they've been hired to teach. They're just nice people.”

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