

# Unlocking a STEM classroom's potential with cutting-edge video production tools

Ready to take your STEM classroom to the next level with the latest video production technology? We're here to show you how. We'll cover all the essentials to help you use cutting-edge video technology to create captivating learning experiences. We'll examine the current state of video production in STEM classrooms and discover how you can upgrade your existing capabilities with switchers, PTZ cameras and NDI. By taking the time to understand the latest technology, you can create engaging and effective learning experiences for your students.

## THE FUTURE OF VIDEO TECHNOLOGY IN EDUCATION

More and more classrooms are adopting remote and hybrid education models, and STEM classrooms are no exception. Indeed, the technological capacity for remote learning is a huge step in education that enables capabilities far beyond just pre-recorded lectures. Studies have shown that video is an effective way to increase interest in STEM subjects<sup>1</sup>. The right technology will keep students engaged and reveal exciting possibilities in the future of education and video production, whether in-person or online.

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<sup>1</sup> Wyss, Heulskamp, and Siebert, "Increasing Middle School Student Interest in STEM Careers with Videos of Scientists."



# UNLOCKING A STEM CLASSROOM'S POTENTIAL WITH CUTTING-EDGE VIDEO PRODUCTION TOOLS

Adding technology like robotic cameras and live switching to the classroom also introduces students to video production tools used across various industries today, providing them with a work-ready education. With this in mind, let's explore how video technology can enhance the learning experience in secondary and higher education.

## VIDEO PRODUCTION TECHNOLOGY IN SECONDARY SCHOOLS

In secondary schools, video production technology can bring a new level of excitement to the STEM classroom. Hands-on technology learning and experience with professional broadcast video gear open up an array of new learning opportunities. Plus, it gives students insight into the broadcast and video production industries, revealing potential career paths.

### Increased engagement

Introducing cutting-edge video production tools to your classroom can keep students engaged. For instance, equipping your STEM classroom with auto-tracking robotic cameras will help students create more dynamic presentations, allowing them to dig deeper into the course material and present the information to their classmates in new ways. Likewise, livestreaming and switching software can add multimedia elements to the learning experience with multiple camera angles, animated graphics and more.

### More learning opportunities

Bringing video technology into your classroom also gives students additional learning opportunities, especially when it comes to technology and storytelling.

While the link between STEM subjects and storytelling may not be immediately obvious, the right communication techniques are essential when sharing ideas and innovations. Storytelling is a vital skill for any student. Luckily, video production tools can help here, too, since students learn storytelling by creating video content.

Engaging students in the video production process will help them flex their creativity and storytelling muscles. And good storytelling is a boon in various vocations, like videography, editing, journalism and marketing, among many others.

### Career advancement

Speaking of vocations, using video technology in the classroom provides students with practical experience with the latest technology. Being familiar with the most up-to-date tools will give your students an advantage when entering the professional world.

For example, students can use video technology to create professional STEM broadcasts for their school and the community. This experience also gives students insight into how professional setups look and operate, preparing them to use video production technology throughout their careers.



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## Setups that work for secondary schools

Now that we've explored some of the benefits of including video production technology in STEM classrooms, let's take a look at the kind of equipment that works best in the secondary school setting.

We'll start with the switcher. This essential broadcast tool switches between different inputs during a live broadcast. Switchers can also edit multi-camera productions in real time. In the past, the size and expense of video switchers prevented in-classroom use. However, recent innovations in technology have made such tools more accessible than ever. Tablet-based switcher systems, for example, are easy for kids to pick up and use. For that reason, the YoloLiv YoloBox Pro is an ideal classroom switching solution. This all-in-one live production system supports up to six video inputs with minimal setup. It also offers automatic switching, audio mixing, graphic overlays, chroma keying and more.

PTZ cameras offer another way to bring more flexibility into your video production setup. These cameras get their name from their ability to pan, tilt and zoom via remote control. When combined with traditional cameras, PTZ cameras allow students to create more advanced productions without additional camera operators. Plus, many cameras now offer auto-tracking, allowing for further automation of robotic control.

To get started with PTZ cameras, consider USB camera options from brands such as HuddlecamHD, PTZOptics, BirdDog and more. These are easy to set up and control. For more advanced productions, turn to HDMI, SDI and NDI cameras. In addition to more professional connection options, these often offer superior optical image quality thanks to a larger image sensor. Look for offerings from BirdDog, Panasonic, Canon and JVC.

## VIDEO TECHNOLOGY IN HIGHER EDUCATION

In higher education, interacting with video production tools can give students a leg up both in their education and in the workforce. Not only do they gain experience with broadcast technology, but they also develop skills in storytelling, technical setup and project management.

Here are just a few ways video production can enrich learning in various disciplines:

- **Business and finance:** Students studying finance can use video technology to practice delivering a keynote address, business pitch or sales presentation remotely. Having access to



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professional-quality tools will help them explore ways to make their presentations stand out.

- **Marketing:** Marketing majors can learn to create commercials and viral videos.

English: Students in the English Department can practice writing and editing scripts for video productions.

- **Technology:** For students in technological fields, working with video production gear will help them learn how to set up and operate a functional production studio — with all the problem-solving and workflow management that goes along with it.

- **Journalism:** Journalism students benefit from hands-on video production experience in their field reporting work. The storytelling and project management skills they acquire will help them create more engaging multimedia stories on a deadline.

- **Sports:** Students who want to work in sports can gain direct experience setting up a live broadcast.

By investing in broadcast tools like video switchers and PTZ cameras, universities and colleges can give their students the best possible learning experience, both remotely and in the classroom. Setups with cutting-edge video production gear can help educators in every department teach in the best way possible.



# UNLOCKING A STEM CLASSROOM'S POTENTIAL WITH CUTTING-EDGE VIDEO PRODUCTION TOOLS

## Recommended setup for remote higher education

Now that we've seen how the latest video production technology can improve the learning experience in higher education, let's look at some tools that can help you expand live educational productions beyond the studio.

One powerful innovation to emerge recently is NDI. This technology allows you to set up broadcast equipment seamlessly using only a network connection. That means you can use NDI gear throughout campus without installing a new, expensive infrastructure. A single network cable on your LAN can provide audio and video, power over ethernet and camera control to and from your production system. NDI technology helps expand the production system to digital signage or projection systems throughout the school.

If you want to take advantage of NDI technology in your learning environment, the NewTek TriCaster Mini 4K|NDI is a great place to start. It offers multicamera switching and a wealth of handy livestreaming features, all over a simple network connection.

Other switcher options include the Wirecast Gear turnkey production systems for HD and 4K workflows and the Epiphan Pearl family of production systems with ease of use and integration for your lecture management systems.

As for PTZ cameras, the Panasonic AW-UE100/150/160, the Canon CRN500 and 700; and the JVC PZ510 are all excellent options. Each of these cameras offers 4K video capture and NDI connectivity.

Finally, adding technologies like SRT, or secure reliable transport can further expand your broadcasting system for remote contribution. You can also include video feeds from anyone with a camera and a WiFi or cellular signal with cellular-bonded encoders like those from Teradek or LiveU. These are perfect when you need to expand your production outside the school like on the athletics fields or in the surrounding community.

## UNLOCK YOUR STEM CLASSROOM'S POTENTIAL

With the adoption of remote education in more classrooms, it is essential to understand the technology available to take STEM classrooms to the next level. Investing in remote education, such as NDI technology, switchers and PTZs, ensures students everywhere get the best possible learning experience.

To learn more, visit [www.edustreamtv.com](http://www.edustreamtv.com). You can register now for the 2023 Spring Semester Event on March 1st and 2nd for more information and a chance to win live production products for you and your school.

## References

Wyss, Vanessa, Diane Heulskamp, and Cathy Siebert. "Increasing Middle School Student Interest in STEM Careers with Videos of Scientists." *International Journal of Environmental and Science Education* 7, no. 4 (October 2012): 501–22. <https://eric.ed.gov/?id=EJ997137>.

