



## TEACHING AND TECHNOLOGY

by David Vinson, PhD

### Maximizing Learning Experiences with Presentation Technologies

For those of us who witnessed first-hand the explosion of the Internet from a fringe technology to a global phenomenon, it was nearly impossible not to marvel at the manner by which a single innovation transformed daily life, fundamentally altering how we communicate, work, learn, navigate the roads, and entertain ourselves. But for our undergraduates, it is a technology they have always known, a reliable source of comfort and information as commonplace as the light bulb.

Our students know only a world suffused by technology and media, one marked by access to an abundance of information, rapid changes in technology tools, and the ability to collaborate and make individual contributions with both remarkable immediacy and accuracy. Technology, as such, has inevitably influenced the ways in which professors teach students in higher education, not least of all because our students are comfortable using it. They also enjoy it and know how to maximize different learning tools to their considerable advantage.

A great deal of scholarship has been produced regarding the benefits of activity-based learning, where students are encouraged to use technology to develop their own original ideas, as opposed to lecture-based learning, which provides a more passive learning experience. Isa Jahnke and Julia Liebscher provide an example of a group of students in a history class who developed an app that virtually teaches users about the history of the Berlin Wall. Rather than simply lecturing the materials to the students, Jahnke found that

allowing them to use technology in a collaborative way enhanced the students' creativity and understanding of the content. (For the article, see Jahnke and Liebscher, "Three Types of Integrated Course Designs for Using Mobile Technologies to Support Creativity in Higher Education," 2020.)

Presentation technologies now available on the market can transform a standard, lecture-based classroom into a fully-functioning, mobile, and interactive classroom—and it is safe to say that our students not only prefer a tech-based classroom, but that they expect it. Teachers are also enjoying the benefits of interactive classrooms, which allow for pedagogical flexibility and multimodal learning opportunities. Any classroom that embraces presentation technologies as a core component of the learning process is equipped for engaging presentations, high definition video, student response systems, and video conferencing. Presentation technologies likewise empower teachers to equip students with the collaboration, critical thinking, and technology skills needed for successful careers in today's workplace.

## Teachers College at Columbia University: Teaching Technology with AV-Friendly Classrooms

Teachers College, a subsidiary to Columbia University in Manhattan, continues to remain at the forefront of higher education audiovisual innovation. Recent installations of twelve new classrooms on the campus include an intuitive one-touch, fast-working control system in each room, and this commands dual projection systems, multiple cameras for lecture capture and streaming, interactive displays, wireless collaboration, video conferencing systems, and more. The fully optimized, AV-friendly classrooms help augment the learning experience, offering flexibility and innovative teaching opportunities, thereby improving students' and teachers' experiences in the learning environment.

The presentation technologies available in the classrooms at Teachers College make possible the sort of curriculum that not only embraces technology but also teaches it. For instance, this past summer students could take a course called "Digital & Interactive Media

for K12: Incorporating Design and Code into Your Teaching Practice." The course is oriented around the concept that today's young learners are drawn towards newly available digital, interactive ways of learning and creating. Students are taught new ways of incorporating design and code into K12 teaching practices, and the curriculum teaches such skills as documenting with video, animation, creative coding, as well as 3D scanning, modeling, and augmented reality (AR). At the conclusion of the course, all students are given the opportunity to showcase their lesson plans and to receive critical feedback from peers and mentors.

## Barnard College's Science Auditorium and Microscopy Lab

Barnard College, a New York women's liberal arts college and an affiliate of Columbia University, redesigned and upgraded an existing theater audiovisual system in early 2014. The space functions as a science auditorium, one that facilitates in-class experiments, demonstrations, and hands-on activity, all of which need to be seen by the entire theater.

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The system includes three 8,000 lumens and high definition projectors that function in two modes. The first mode features one large image on a center screen, and the second mode features two smaller independent images on outer screens. Multiple sources can be displayed on one or both screens, including wired and wireless laptop connections, a PC, a document camera mounted in the ceiling, and three high definition, pan-tilt-zoom cameras mounted around the auditorium. A podium with an interactive display allows presenters to annotate over PC or laptop content. The space also features a networked digital audio system that contains main speakers, wireless microphones for presenters, a variety of microphone

inputs at the podium, a live mixer for events, and an assisted listening system. Both the projection booth and the podium feature touch control panels, providing multiple points of full-system control.

In addition to the science auditorium, Barnard provides a microscopy lab equipped with four PCs, each connected to a microscope, a 70-inch interactive display, and a multi-viewer. This allows any PC to be shown on the display full screen, or all four PCs to simultaneously occupy a quadrant of the display. In single-view mode, users can annotate over the content on the display, as well. The system also allows dynamic viewing and annotation capabilities for microscopic content.

## PC Labs at St. Francis College

Students at St. Francis College (Brooklyn Heights, New York) can access six PC labs, each equipped with a standardized, high-tech AV system. The system is easy to use and features interactivity, multiple types of media, and lecture capture.

The standard system is based around a matrix switcher that allows any system input to be routed to any output. Inputs include a PC, a Blu-ray player, an Apple TV, a laptop connection, and a document camera; outputs include an 87-inch interactive whiteboard with a 2000 lumens projector and a PC for lecture capture. A multimedia lectern features an interactive pen display for annotation as well as a touchscreen control panel for full system control. Presenters can also use a microphone linked to full-range loudspeakers.

In addition to six PC labs, St. Francis College offers a video conferencing room that features a similar system to the PC labs, plus a high definition, H.323 video conferencing codec and a high definition, pan tilt zoom camera. This

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### Rethinking Older Technologies

Over the past year, the educational technologies market has raised more than a billion dollars. For the consumer, one may feel overwhelmed by the vast selection of innovations and new technologies—but it is worth noting, too, that we are witnessing exciting upgrades to familiar gadgets, those such as projectors and smartboards.

Projectors on their surface are a simple technology, and they have been available for decades. Typically used to project lecture notes or multimedia presentations, these classroom cornerstones are capable of so much more. Recent innovations allow projectors to display interactive images on almost any flat surface, thereby transforming a wall in any non-descript room into a learning space where students and teachers can engage and collaborate freely. Multiple projectors now exist that eliminate distracting shadows and glare, also providing

high brightness as well as wide-aspect high resolution, both of which increase readability for expanded content.

A step beyond interactive projectors are the wide range of smartboards being utilized in classrooms. Some smartboards operate like a whiteboard, allowing a person to write on them with real or digital markers. Smartboards, as such, surpass their simple whiteboard ancestors by recording what is written, or by turning a digital marker line into a tangible visual element. Moreover, other versions of smartboards are akin to touch-enabled digital computer screens. Students can manipulate images or guide an online exploration; even better, the images can be mirrored through the internet, opening up engagement with students anywhere with access to the signal.

### Teaching in the 21st Century

The needs of our students are always changing, and we know the incorporation of presentation technologies into the classroom is vital to the growth of higher education. To prepare students for a workforce that has already embraced technology

of all kinds, their education must utilize the most advanced tools and techniques available.

Presentation technologies allow for greater differentiation, individualized learning, real world integration, and varied assessment. It is especially useful to remember that our students inhabit a 21st-century world for the majority of each day, and it should be no surprise if they feel a tremendous disconnect if and when we expose them to old, outdated learning models. By offering them flexible learning spaces where they can easily connect to and use technology in the classroom, our students are provided the tools necessary for success.



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Dr. David Vinson has a PhD in English with specializations in transatlantic literature and cultural studies. He is a committed scholar, teacher, husband, and dad. If you ever meet David, avoid the subject of soccer. His fandom borders on the truly obnoxious.



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