



REFERENCE PAPER

K-12 Video Communications Connecting Beyond the Classroom

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LifeSize Video Conferencing for Education:
Limitless Learning

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Better Education Via Video

Few industries have the ability to impact every aspect of our future the way education does. Teachers have long been touted as heroes, and decades of presidents have listed learning as one of their key initiatives. Yet, few industries have seen so little change, such disappointing investment, and so many missteps in our lifetime. No matter how much we all want to “fix” the problems in our schools today, we’ve all begun to realize the uphill battle that lies ahead.

In other industries, technology has been the answer. And truth be told, our schools do finally have computers in classrooms, show educational DVDs to make subject matter come to life, and use closed circuit television to extend communication. But with budget cuts, teacher layoffs and other industry-wide challenges threatening K–12 education, improving classroom technology is not always a priority.

Ironically, some schools have discovered that investing in video conferencing technology is a surprisingly simple, cost effective way to improve K–12 education right away. By extending learning beyond the classroom in a truly interactive and immersive way, even teachers with limited resources are opening their students’ eyes to a world they did not know existed. From taking virtual fieldtrips to trading language skills with students around the globe, to offering subjects that some schools simply cannot afford to invest in on-site, video communication technology can help any school offer its students the best education available.

In this article, learn how teachers and students can use video conferencing tools to express themselves collaboratively, develop critical thinking, solve problems more effectively, and extend learning beyond the classroom to the home and other environments. Video communication solutions also help learning become a more customized experience, enabling students to learn at their own pace and encouraging them to stay challenged without becoming frustrated. In a world where education problems must be addressed, teleconferencing solutions are an affordable and attainable answer.

The Versatility of Video

Video conferencing can be valuable anywhere interactive communication makes sense—which is just about anywhere in the world of K–12 education. For students, teachers and administrators, sharing audio, video and data in real time or on demand has countless applications. By expanding teaching and learning opportunities beyond school walls and offering global access to information, video communication instantly makes learning more relevant, exciting and accessible.

Video conferencing also provides administrative benefits for organizational meetings, collaboration with other districts, connection to other schools’ classrooms, teacher in-service training and access to subject matter experts in a variety of fields. A simple video communication system instantly eliminates excuses that budgets, resources and geographical challenges are keeping your curriculum from becoming competitive.

Below are just a handful of benefits schools may realize through video communication solutions:

Major Benefits of Video Conferencing

- Distance learning (teaching classes not available on site)
- Virtual field trips / virtual learning events
- Development of student-produced content
- Learning assessment
- Independent, self-paced learning (using recorded content)
- Ability to time-share scarce talent / access subject matter experts
- Teacher professional development
- Broadcast and recording of administrative and community meetings
- Parent-teacher meetings
- District, school and departmental meetings
- Community outreach / public access
- Greater participation with no incremental costs

While some of these applications may feel like a stretch, video conferencing is not as cumbersome as many think. In fact, it can work on anything from a computer to a personal hand-held device, smart phone or television, and can be accessed anywhere you can connect. Today's video communication solutions are extremely flexible to set up and easy to use, offering options in the classroom, at home and just about anywhere students and educators can be found.

Technology for the Masses

Many schools will admit that they are not exactly the most technology friendly environments. With tight budgets and resource constraints, IT support often comes in the form of a forward-thinking, tech-savvy teacher. Combine that with concerns about online security and student access and you have facilities that often don't find new technology solutions to be worth the hassle.

Thankfully, video communication can be simple—in some cases, not much more of a challenge than making a phone call. The key to a successful call is a system that has five underlying components:

Senders/Tranmitters — cameras, microphones

Receivers — monitors, screens, speakers, and whiteboards

Controllers — keyboards, touch-screen panels, and remote control devices

Processors — codecs and bridges

Carriers — Internet, fiber optic cable, microware, satellite



Senders/Transmitters

Video conferencing systems include at least one camera, with an option for additional cameras as needed (i.e. document cameras, presenter cameras, multiple cameras to cover various angles, etc.). The quality of a camera can vary greatly and the quality selected can impact the images sent and received.

In addition to at least one camera, there is a need for at least one microphone to allow the receiving site to hear what is spoken. There are a variety of microphone types and placements (i.e. table top, lapel, hand-held, etc.). The number of microphones used will often be determined by the size of the room and the number of people needing to be heard.

Receivers

Examples of video receivers include monitors, screens and electronic whiteboards. Many video systems have two receivers: one for the video image and one for the graphics image. For audio reception, speakers are required. These can be permanently mounted or in a mobile unit as part of the sound system.

Controllers

Every video system has at least one type of controller. The controller can be a keyboard to manage the system and manipulate camera angles. It could also be a touch-screen panel or a hand-held remote control.

Processors

The brain of a video conferencing system is called a codec (coder/decoder). It is a computer that codes and compresses the outgoing signal and decodes and decompresses the incoming audio and video signals. A bridge is used to link multiple sites together to enable multiparty calling. Bridging technology can be built into the video conferencing equipment, or as a separate appliance server installed in your own or your carrier's network.

Carriers

A telephone or cable company supplies the "pipe" that carries the video from one point to another. There are a variety of network types (i.e. Internet, satellite, wireless, etc.) that all do roughly the same job—though not at the same level of quality. Video quality depends both on the bandwidth available and the latency, or delay, of a call. If calls hop over multiple networks to reach a site, there may be a significant delay, and thus a poorer video image.

The above pieces of the video conferencing puzzle may sound complex, but their installation and use can be easy. In fact, most of the components are resident within a single video system, and can be installed by your integrator or technology provider. As a user, it's important that you have all of the parts necessary to see and hear people, share information, and control the technology during a call. With those pieces in place, starting a video conference can be as straightforward as making a phone call—dial a number and the experience begins.

The Importance of Broadband

The U.S. Department of Education has recognized the value of a nationwide broadband network. Its development of the National Broadband Plan has been instrumental in helping schools unlock the power of data, improve transparency and modernize the educational broadband infrastructure.

The Department of Education created the plan so that teachers and administrators could expand instruction beyond the confines of the physical classroom and traditional school day. Broadband can also provide more customized learning opportunities for students to access information when they need it.

Purpose of the National Broadband Plan

- Ensure digital data and interoperability standards are consistent with the needs and practices of the educational community
- Allow students to take more courses for credit online across state lines
- Provide support and funding for research and development of online learning systems
- Consider investments in open licenses and public domain software for online learning solutions
- Establish a program to fund development of innovative online learning solutions

“Classes are now held every day using video conferencing due to its ease of use and high quality.”

—Dr. Aaron Turpin
Executive Director
Hall County Schools

Visionary Video

Video on the Internet has not always been an obvious teaching tool. But in recent years, innovative projects such as Kahn Academy and iTunes U have proven that when used correctly, video can be more effective than classroom learning alone. It is no longer about watching people talk—it can foster self-paced learning, accessibility to the best educators out there, and collaboration among students, teachers and administrators. It is offering K–12 classrooms the benefits that only top universities have had in the past.

From real-time viewing to recording for on-demand education, to streaming across many sites at the same time, the flexibility of video communication is now engaging, enabling and empowering all participants in and out of the

classroom. Whether using a Learning Management System (LMS) with plug-in modules for embedded video or engaging with the technology in its most simple form, here are some examples of how video conferencing systems are being used by schools:

Instructional Uses

- Collaboration between classrooms inside and outside the district
- Interaction with students unable to attend class in person
- Curriculum development
- Continuing education
- Time sharing of scarce talent of experts

Administrative Uses

- Departmental meetings
- Organizational meetings
- Staff development
- Job candidate interviews

CASE STUDY

Barrow County Schools, Georgia

Goal: Increase bandwidth to offer video to 12,400 K–12 students across the county.

The Georgia Department of Education understands that investing in a digital curriculum can vastly improve student learning opportunities at a fraction of the cost of physically offering courses in each district. It’s why they developed ABLE (Advanced Broadband Learning Environment), a program to explore the educational and economic return of providing unprecedented bandwidth to K–12 systems throughout the state.

With the help of ABLE, Georgia’s Virtual School is utilizing college professors to teach science to grade school children. French Horn teachers are giving lessons at a distance to students who have grown interested in the instrument through concerts that have been piped into their schools. And the Georgia aquarium is now entirely online, showing the aquatic life to children across the state. With increased bandwidth and growing experience with video, students and teachers are becoming more and more creative—and the applications continue to grow.

And the impact reaches beyond education itself. “Because we live, work and compete in a global networked environment, bringing K–12 and universities onto a common, not-for-profit network dedicated to research and K–20 education will also have a strong positive impact on economic development,” explains Ed Morrison, Director of ITS for Barrow County.



CASE STUDY

Hall County Schools, Atlanta Georgia

Goal: Offer 26,000 Students a Customized, Blending Learning Education

In an environment where most schools offer “customized” learning simply by tracking students or offering a limited number of elective classes, Hall County Schools has gone a giant leap beyond. The schools are transforming into a blended learning environment, which bases each student’s education on needs, abilities, voice, passion and learning style.

With teachers adopting new roles as facilitators of the learning, video conferencing systems are connecting students to U.S. troops in medical units in Afghanistan. Three middle schools, located twenty miles apart, are taking Mandarin Chinese classes. Other children are speaking to their peers in Chile. The learning in these schools is only limited by the creativity of the students and teachers, according to Dr. Aaron Turpin, Executive Director of Hall County Schools. “Classes are now held every day using video conferencing due to its ease of use and high quality.” Hall County Schools also have District Instructional Coaches online to answer questions.

The systems are being used to engage teachers as well. Model lessons, small group discussions and student work are all being shared among the schools’ teachers and staff. Hall County School teachers are working on a nano-technology project with Georgia Tech, as well as viewing a human lung at Georgia Medical College. By growing teachers as well as students, Hall County Schools will continue to improve even more over time.

Beyond the Classroom

With today’s technology, a classroom is not defined by its walls or roof. In fact, there is no ceiling to what can be taught or where the learning may happen. From traditional teaching settings to online sessions, collaborative conversations or virtual get-togethers, “school” can now be accessed by computer, hand-held device or even television. Students and teachers now have access to resources that were once an impossibility for all but a very privileged few.

Scenario

A classroom is using video conferencing to learn from a guest lecturer located across the country. Five of the students are unable to make class. Two other classes find out about the guest, and want to hear what she has to say. Video conferencing is used between the classroom and the guest lecturer. Three students at home are viewing the presentation on their PCs and laptops, but one without his own computer is watching from his TV, and another is participating on his smart phone. One of the two additional classes is having the lecture streamed to them live. The lecture has also been recorded for future viewing, so the other class will view it at a more convenient time. Because it is recorded for on demand viewing anytime, individual students who cannot attend, or who may need multiple viewings to comprehend what the lecturer is saying, will have access to the content to review at their own pace. The best part is that these students needing extra repetition can get it without any embarrassment or concern about holding up the class.

This scenario is not difficult to arrange, but it does require preparation and buy-in on every level. Administrators must support and encourage new teaching methods, teachers must enthusiastically incorporate video communication into their teaching styles and curriculum, and students must understand they will have more personal responsibility for learning. Once these three pieces come together, the possibilities are virtually endless.

Proper Planning for Successful Video

Video conferencing is an impressive and useful tool, but it is not a silver bullet, nor does it change the core content of the material being taught. When used effectively, it can dramatically enhance traditional teaching and provide access to information that was once out of reach for most students and educators. Effective use relies on proper planning, which may involve any or all of the following steps:

Integrating Video Conferencing within the Classroom

- Define objectives for use of video conferencing
- Define needs and objectives for teacher training
- Set realistic goals
- Establish technology requirements and support infrastructure
- Create budget and procurement cycles
- Develop curricula that best utilize the technology

- Develop a rollout plan
- Conduct a trial run with a small subset of the final audience
- Design a training project for hands-on experience with the technology
- Consider a train-the-trainer approach to training
- Provide incentives for training (i.e. college credit, professional development)
- Create peer mentoring opportunities
- Commit to ongoing assessment
- Implement improvements and best practices
- Document the process, applications and benefits
- Provide ongoing support through staff development, networking, and attendance at conferences
- Plan to integrate video into the core Learning Management System

Preparing the Presenting Site

- Plan lessons and lead instruction
- Hold roll call of participating sites
- Review video conferencing etiquette and classroom procedures
- Provide opportunities for student participation, allowing student communication with distant site(s)
- Be enthusiastic
- Design and produce class materials
- Communicate problems or concerns
- Modify and adjust instruction and activities as needed

Preparing the Receiving Site

- Turn on equipment before class begins
- Obtain supplies and materials
- Have students seated and ready
- Assign responsibilities and communicate procedures
- Allow students to speak and ask questions
- Communicate enthusiasm, encourage students, support lead site
- Notify technician and other site of technology issues
- Communicate any problems
- Publish or display student work

Student Planning

- Come to class prepared
- Complete assignments on time
- Participate in class discussions and activities
- Ask questions to clarify instruction
- Show enthusiasm and interest
- Share and publish work
- Encourage classmates
- Communicate any problems or concerns

While a long list of “to do’s” can seem overwhelming at first, it’s important to realize that K–12 video education is already happening. Schools around the world have created impressive content and have figured out best practices. And for most, proper preparation and practice have made videoconference use second nature.

With so many school districts embracing the value offered by video conferencing, usage of the technology will undoubtedly continue to expand to meet the educational, multimedia needs of students and staff. In fact, these technologies are leaving the realm of “nice to have” and becoming a true necessity for preparing students to learn on a global scale from a variety of resources; resources that are now available anywhere, covering any subject, at any time.

Universal video collaboration enables genuine human interaction over any distance. IT-friendly, enterprise-class technology makes it as easy as making a phone call and as immersive as being there. What was once a futuristic feature of our wealthiest schools can now be a reality for anyone who is ready to change the definition of school, and open up to a new world of learning.

About LifeSize

LifeSize is a pioneer and world leader in high definition video collaboration. Designed to make video conferencing truly universal, our full range of open standards-based systems offer enterprise-class, IT-friendly technologies that enable genuine human interaction over any distance. Founded in 2003 and acquired by Logitech in 2009, LifeSize, with its commitment to relentless innovation, continues to extend the highest-quality video conferencing capabilities to anyone, anywhere.

LifeSize HD video communication systems shatter the barriers of time, location and culture in education. Students, instructors and administrators have limitless opportunities to learn, educate and collaborate—anytime, anywhere. For more information, visit www.lifesize.com

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