How to Move Your Classroom Into the Future — No Matter Where You Are Today

Executive Summary:

The rapid pace of technological change has brought two major issues to the forefront of teachers' minds. First, they need to be able to seamlessly connect a variety of student devices to the internet and to each other to facilitate learning — a daunting prospect as districts experiment with new devices, 1:1 technology and BYOD models. Second, pedagogical expectations are also changing, forcing teachers to come to terms with how best to use technology to enhance both teacher- and learner-centered lessons. The intersection of these needs means that teachers need customizable solutions for utilizing classroom technology.

As a leader in educational display technology, Epson empowers teachers by reimagining the projector as a hub of information in the classroom. With new software and apps that empower teachers to see, share and collaborate seamlessly across devices, Epson encourages teachers to understand their teaching styles and the ways in which technology can solve problems to enhance what they already do best.

White Paper Text:

The past several decades have brought about rapid changes in the world of classroom technology. In less than one generation, teachers have had to move from a completely computer-free space to one in which students have cell phones and tablets in hand and laptops at home. With the exception of all but the most impoverished students, today's children enter school as "digital natives"[1] — that is, people who have been immersed in the language and culture of technology from birth. These students aren't merely comfortable with technology; they also have high expectations around a seamless interface between tech and their everyday lives[2].

That can be intimating if you're a teacher born before 1980 (the general line of demarcation between Generation X and Millennial birth years). While you most likely have leaned to use technology with fluency regardless of when you were born, it's difficult to feel confident about meeting students' needs when it seems like they're always a step or two ahead with the latest app or internet craze. Adding to the challenge are rapidly shifting expectations around the use of technology in the classroom as state learning standards continue to be revised and individual school systems purchase new equipment that may or may not integrate with existing hardware or curriculum.

The Problem

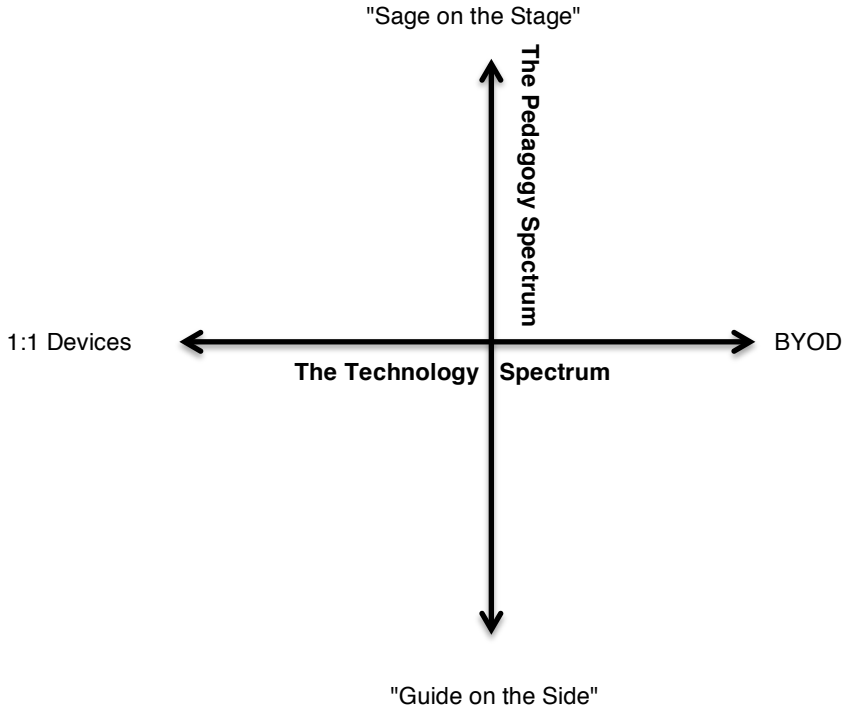
The rapid pace of change in educational technology leaves individual teachers to wrestle with two different issues. First, you must deal with changes in your hardware and the equipment students bring into the classroom and make sure that everything works together — an especially difficult task for teachers without a background in computer science.

Second, teachers enter the digital world with different pedagogical skills and needs. While some may be excel at delivering lessons to a large group, others want or need to differentiate lessons for individuals or small groups. Different subject areas also require technology that helps students build collaboration, research and presentation skills — and sometimes all three.

So where are you now when it comes to classroom technology — and how do you get where you want to go?

You Are Here: Where Technology Meets Pedagogy

You can't choose a technology solution until you understand exactly where you are right now in terms of both classroom hardware and your own teaching style. To determine your needs, it's helpful to determine where you fall on the technology-pedagogy graph:



The Technology Spectrum

Every school system has its own collection of hardware and devices that form the backbone of their technology program. Depending on the budget and resources, the hardware may be upgraded or replaced on a regular basis, or changes can happen in a more piecemeal fashion, with the oldest equipment being replaced on a rotating basis as hardware ages.

In general, there are two ends of the spectrum when it comes to devices in your classroom: 1:1 technology provided by the school or a BYOD (bring your own device) model, in which students use their own smartphones or tablets. Apple has always been on the classroom computer scene[3], and 1:1 devices became the gold standard with the release of the iPad in 2010[4]. Tablets promised interactivity and increased engagement with their easy-to-use apps and portability. Not long after, Chromebooks and other cloud-based mini-computers became a viable alternative[5] for schools that wanted to provide a more traditional computing experience for less money than a set of traditional laptops. Schools that can't afford a complete 1:1 device program often create portable labs with a class set of matching devices to be shared among teachers as needed.

On the other end of the spectrum, some schools have begun to implement BYOD policies that allow or even encourage students to bring their own smartphones, laptops and tablets from home. While fewer than half of K-12 schools allowed students access to the network in 2013[6], the number is growing rapidly as districts look for ways to provide access to technology with budgets that still haven't bounced back from the Great Recession[7].

Challenges With 1:1 Devices

- In schools that have invested heavily in a 1:1 program, there's often an expectation that the technology is integrated into every lesson to justify the expense. ***Teachers need to devise lesson plans that meaningfully use technology while still allowing students to participate in teacher-led and collaborative learning.***
- When students work on individual devices, it's harder to share what they're working on with others. ***Teachers need a way to display individual screens for the whole class.***

Challenges With BYOD

- In schools that allow students to use their own smartphones, teachers will have a wide range of devices in use at any given time. This makes communication and file sharing a challenge, as not all operating systems

are compatible. ***Teachers need a way to seamlessly push information to a wide range of devices and allow for sharing among different systems.***

- With less control over the apps on individual devices, teachers are often forced to become gatekeepers that monitor students' internet usage. This is particularly difficult when 25-30 students are working independently. ***Teachers need a way to preview student content and monitor off-task behavior.***

The Pedagogy Spectrum

Just as there has been a revolution in the technology that allows teachers to bring images and information from around the world into the classroom, the way teachers deliver lessons has also changed. As students have been able to access more material online than ever before, teaching methods have evolved in part to deal with the sheer glut of information.

In the past, teachers almost exclusively used a "sage on the stage" model, in which they were responsible for delivering information and teaching skills that students could not encounter on their own[8]. This method relies heavily on traditional lecture, but it also can incorporate the teacher's role as the moderator of class discussion, the model of appropriate behavior and skills, and the knowledgeable expert in the room.

Concurrent with changes in classroom technology and the rise of the internet, K-12 pedagogy has embraced a "guide on the side" model of teaching that seeks to put the learner at the center of the process. In this model, the teacher is meant to be a facilitator that ushers students toward a deeper understanding of the material while allowing them to explore and practice on their own. The flipped classroom is perhaps the ultimate example of "guide on the side" teaching: In this model, students read new information on their own first, then bring questions to the teacher for help and practice as needed.[9]

While "sage on the stage" and "guide on the side" methodologies are often pitted against each other, the truth is that most teachers employ a bit of each in their work. Both methods have advantages, and teachers will likely choose a mode based on a blend of personal style, subject matter demands and school culture.

Challenges With "Sage on the Stage" Teaching

- Teachers who prefer to deliver important information to the class as a whole rely on white boards and projectors to display important information where everyone can see it. To make the most of all the internet has to

offer, ***teachers need a way to seamlessly link web browsing to their display technology.***

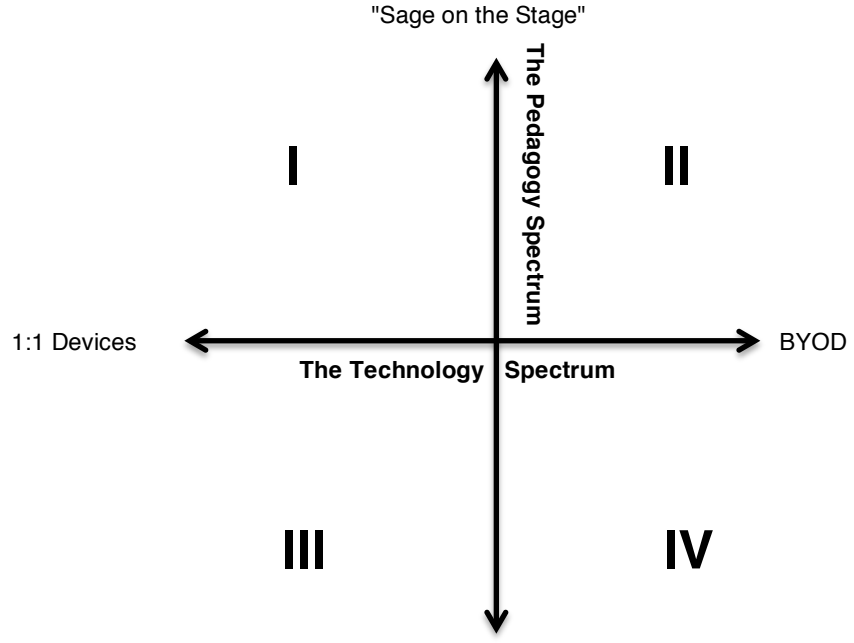
- Students today are accustomed to finding and sharing information quickly on their own. They have also been raised to multitask and expect learning to be entertaining. ***Teachers working in the front of the classroom need to find ways to keep digital natives engaged in the learning process.***

Challenges With "Guide on the Side" Teaching

- Teachers who are comfortable allowing students to do their own research and practice during class time often have trouble tracking student participation and progress, especially in large classes. ***Teachers need a way to make sure students are staying on task during collaborative group work.***
- Differentiating lessons to meet individual needs often means that many different things are happening in the classroom at once. In some cases, students are often responsible for teaching each other important themes or reporting their findings. ***Teachers need a way for students to share and present individual work with the whole class without disrupting the flow of the lesson.***

Defining Your Needs

To understand how to get the most out of your classroom technology, take a moment to determine where you are on both the technology spectrum and the pedagogy spectrum. Your personal needs will vary based on which quadrant you fall into:



It's important to consider your intersecting needs as you search for a solution that allows you harness the power of technology in your classroom to craft the most effective lessons for your students. Though individual circumstances vary and your teaching style is unique, your quadrant points to specific needs when it comes to getting the most out of classroom technology.

Quadrant I: The Master

Perhaps the most teacher-centered model, the Master likely has years of accumulated subject expertise and is most comfortable delivering new information to students all at once before breaking into discussion groups and independent practice. The Master usually prefers to streamline technological tasks and views computers as tools, not toys. This may mean having students work on the same tasks on their devices, but at their own pace.

What You Need: The Master needs technology that links 1:1 devices to a central display to bring students together at the beginning and ends of lessons to recap important information and make sure the thrust of the lesson is clear. The Master may also need help differentiating lessons and sending varied online material to different students.

Quadrant II: The Guru

The Guru also prefers to deliver important lessons directly to students by explaining new ideas directly, but they have a range of devices in their classrooms to deal with. Much like the wise man on the mountain, students will approach the Guru with burning questions — often about something they've found on the internet or about how to make their particular device work.

What You Need: Above all, the Guru needs helps dealing with the wide range of devices and operating systems their students bring to the classroom. The Guru wants to have all the answers to troubleshoot technology problems, because these issues can so easily derail the Guru's carefully planned lesson if not everyone can access an image or website. The Guru needs software that allows all devices to connect seamlessly to save class time for learning rather than IT.

Quadrant III: The Coach

The Coach encourages students to work at their own pace and practice skills to reach mastery. As a "guide on the side," the Coach is most comfortable providing a menu of options to students and allowing them to choose which items to complete on their 1:1 devices, checking in with individuals to monitor progress.

What You Need: The Coach is usually comfortable with differentiation and allowing students the freedom to show mastery in a variety of ways, but this makes recordkeeping difficult. The Coach needs ways to monitor student progress from a central computer to make sure they aren't surfing the internet when they should be working. The Coach would also benefit from display technology that allows them to see several student responses at once.

Quadrant IV: The Shepherd

The Shepherd is most likely to enthusiastically embrace all the possibilities that the internet and technology bring to their teaching. The Shepherd encourages students to share their personal learning by bringing to websites, games and the latest news to the table. The Shepherd may not be familiar with every device students bring to the classroom, but they're willing to learn and to find ways to make technology work for all students.

What You Need: The Shepherd needs a way to seamlessly connect a wide range of student devices to allow individual learners to share their findings with the whole class. The Shepherd spends time following the students' lead, so easy communication between devices is also important. The Shepherd will also benefit from being able to monitor students' app use to make sure they stay on task during independent work sessions.

The Solution

As classrooms and teaching methods change to become more interactive and engaging, Epson has been working to help educators manage content around the classroom. Epson is a leader in building display tools specifically for education, but we're about more than just projectors. We see our role in the twenty-first century as a steward that empowers teachers to see, share and collaborate by offering a seamless experience across devices and teaching styles.

Classroom projectors have always been a favored solution for "sage on the stage" teachers who want to capture the imagination of the whole class by sharing bright, colorful materials at the front of the room for all to see. We're taking this popular solution into the future by developing software and apps that turn that projector into a connected intelligence hub for all the devices in your classroom.

Imagine being able to:

- Manage projector images from anywhere in the classroom by turning your personal smartphone into a remote control
- Connect your computer to the projector to easily access images and webpages to share with the class
- Push content directly to your students' devices so they have all the information they need to work on their own time and terms, no matter what type of smartphone, tablet or Chromebook they're using
- Connect a whole classroom's worth of devices so students can instantly project their screens to the whole class — without leaving their seats
- Preview students' screens and select whose work you want to share on the large screen in front of the whole class
- Monitor students' off-task internet behavior on their devices when they're working independently or in small groups

At Epson, we've heard teachers' most pressing concerns about classroom technology, and we've responded by reimagining the projector as a hub of information in the classroom. That's why we developed our free Moderator software and iProjection app. Both work with Epson projectors to sync with a wide range of devices, from iPads to Chromebooks, laptops and individual smartphones.

The solutions you're looking for to make information flow between you and your students — and all the devices in between — could be at your fingertips already. Epson projectors have a home in about half of U.S. classrooms[10], so you could be just a simple download away from getting the most out of your school's and students' hardware, whether the devices all match or are a patchwork of brands and operating systems. Once your devices are talking to each other through your projector, you're free to make the most of your preferred teaching style — or to experiment with bold new ways for engaging your students through technology.

If you have an Epson projector already, it may be compatible with iProjection. To learn more about Epson projectors and software solutions, visit us at epson.com/business-solutions-education-market-products.

---

[1] Prensky, Marc. "Digital Natives, Digital Immigrants." https://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf

[2] Myer, Kate. "Millennials as Digital Natives: Myths and Realities." https://www.nngroup.com/articles/millennials-digital-natives/

[3] Watters, Audrey. "How Steve Jobs Brought the Apple II to the Classroom." http://hackeducation.com/2015/02/25/kids-cant-wait-apple

[4] Hu, Winnie. "Math That Moves: Schools Embrace the iPad." http://www.nytimes.com/2011/01/05/education/05tablets.html

[5] Nelson, Jeff. "Inventing Chromebook." http://blog.jeff-nelson.com/2012/11/on-inventing-chromebook.html

[6] Coulombe, Michelle. "New Survey Finds 85 Percent of Educational Institutions Allow BYOD Despite Security Concerns." https://www.bradfordnetworks.com/new-survey-finds-85-percent-of-educational-institutions-allow-byod-despite-security-concerns/

[7] Camera, Lauren. "State Education Funding Hasn't Recovered From Recession." https://www.usnews.com/news/blogs/data-mine/2015/12/10/state-education-funding-hasnt-recovered-from-recession

[8] King, Alison. "From Sage on the Stage to Guide on the Side." https://faculty.washington.edu/kate1/ewExternalFiles/SageOnTheStage.pdf

[9] Brame, Cynthia J. "Flipping the Classroom." https://cft.vanderbilt.edu/guides-sub-pages/flipping-the-classroom/

[10] Epson internal research.