



Exploring the use of the InFocus TechStation in a K-12 Environment

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Introduction

Flexible use of digital devices is essential as schools continue to move to a 1:1 environment. Educational pedagogy should focus on improving student outcomes and embracing efficiencies that facilitate learning design and delivery. Today's classrooms encourage students to be active participants in the learning process and empower teachers to personalize learning using technology. These experiences can leverage the student's own strengths and deliver extra help as needed. Because technology enables progress monitoring in real time, teachers can quickly intervene or offer new challenges and opportunities.

This white paper evaluates and discusses the use of the InFocus TechStation projector in a K-12 Environment.

Problem Statement

The traditional projector tethers the teacher to the front of the classroom for instruction. Depending on the number of students and the size of the classroom, students in the front benefit from their proximity to the teacher while others may be easily distracted or too far away to be engaged in the learning. The teacher cannot easily walk around the room and check progress while continuing to teach. Tethered instruction also places too much emphasis on the teacher's instruction and delivery and not enough focus on student accountability and collaboration. Providing students with the opportunity to share their work using traditional projectors usually involves a disruption to the classroom environment, movement, and repeated switching of cables.

Advantages in Educational Settings

Untethered instruction using the InFocus TechStation projector allows for more mobility (for both the teachers and students), creates accountability for students to stay on task, encourages collaboration among students, may assist in evaluation and assessment, and allows schools to customize their projector with devices they may already use.

Mobility

One of the main advantage of using TechStation in the classroom is it allows the teacher the mobility to teach from anywhere in the room while still connecting to the projector from their mobile device. This allows the teacher to maintain eye contact and be in close proximity to every student – not just those who sit in the front of the classroom. This ability to maintain the academic integrity of the classroom is key when teaching with technology, especially for those who are easily distracted.

Having the option to move around the classroom not only increases classroom management, it allows teachers to check in on the progress of students throughout the lesson. The information gathered from these informal check-ins allows the teacher to change or modify instruction as needed. While moving around, the teacher can easily see if students are on track or ask a student to share their screen so everyone can see their work.

Instead of the teacher being the center of attention at the front of the room, the content on the screen is now the focus. All the students can visually collaborate together. When the teacher shifts from teacher-centered instruction to student-driven or learning-focused instruction, the educational environment is less about what the teacher is doing and more about what the students are learning.

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Accountability

Students using Chromebooks – which are prevalent in schools – can share their screen with the entire class through a ChromeCast-enabled TechStation projector. This creates an instructional setting where every student's ideas and work can be shared and valued, while increasing the level of accountability because students know that at any time they may be asked to share their work. It's a very powerful experience for a student to stand in front of the class and talk through a math problem or share their opinion on a current event. In today's technology-driven world there is a lot of criticism of mobile devices creating isolating experiences for our students so I get excited when I see tools like TechStation that encourage collaboration and sharing.

Collaboration

Here are some specific examples of when showing student work to the whole class can be really beneficial to not only the student sharing, but the whole class:

- **Art** students often document the process of creating an art piece with images and text. It would be so helpful if the student could easily share their work with the entire class and talk about how they started and explain their thinking throughout the process.
- Students in **Social Studies** classes need to locate evidence within a piece of writing or research to support a claim. During a class discussion, the teacher could ask the student to cast their supporting evidence and specifically indicate the sentences, images, or documents that support their point of view.

- Throughout the **writing** process students revise and look for ways to improve their word choice or sentence structure. A teacher can have students cast a paragraph and ask the whole class evaluate the piece and offer suggestions.
- When groups of students in **Health** class are working on a project together, the teacher can create intermittent check points for groups to share what they are working on and how it is progressing. This not only keeps students on task – because they know they will be asked to speak in front of the whole class – it provides examples for other groups who may be struggling or need ideas to get going.
- **World Language** lessons use a variety of different language modes: written, oral, grammar, games, etc. to reinforce the learning process. Students could write a piece in the language they're studying, cast their writing to the class through the TechStation-enabled projector, and lead the class in a reading of their work – or leave out important vocabulary terms and have their classmates fill in the blanks.
- During a **Science** lab, different groups could cast the results from their experiment, which could lead to a discussion of how their results were the same or different than other groups' findings.

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Assessment

One of the challenges for teachers who use “Standards Based Grading” is the need to provide multiple opportunities for students to meet specific learning targets and then to report grades for each opportunity. For example, a teacher might need to report on: *I can make use of visual displays/multi-media to express information and enhance understanding*. Getting around to all 30+ students who are working on multimedia projects can be hard, but if the teacher has students take advantage of the TechStation to share their progress publicly, the teacher can multi-task by giving feedback and support to one student while discussing what they see with the entire class. The more feedback and direction the teacher can provide throughout the teaching process will positively impact the quality of work. In this case, the ease of use of sharing with the TechStation projector could impact learning outcomes.

Flexibility

The flexibility of customizing the TechStation with a Chromecast, Chromebit or Intel Stick provides additional options for classroom use. Most schools use a variety of devices (laptops, iPads, Chromebooks) and with TechStation projectors each department can decide which hardware would work best for them–, while still feeling confident that their device is stored securely and out of sight and able to be switched out if needed.

Schools that are 1:1 with devices use some type of Learning Management System (LMS). Google Classroom is popular in schools with Chromebooks because it allows teachers to automatically assign and share documents with students, who can then work on them and turn them back in to the teacher. Google Classroom is part of the GSuite for Education platform and can be used with Chromebooks or the iPad app.

Google Cast for Education can only be used in the GSuite for Education environment. This Chrome extension allows teachers to automatically share their computer's screen from one Chrome browser to another -- basically it allows them to turn their computer into a wireless projector for screen sharing from another device. I haven't seen it used widely and some have reported it laggy. Secondary schools may choose to use a more robust LMS like Canvas or Schoology instead of Google Classroom because it creates a similar experience to what students will use in college.

Either way, the 1:1 experience and ability to share directly through a device such as TechStation creates a dynamic situation where the content being delivered to students in a digital format and they interact and collaborate using the device and the platform.

Classroom Design

The importance of the physical layout of the classroom is an increasing focus. You see fewer classrooms laid out in rows and more emphasis on flexible furniture. The TechStation short throw projector allows the projector to be positioned close to the screen and out of the way of classroom traffic, with lumens bright enough for classroom use without the need to darken the room, and runs quietly to keep down on classroom disturbance. The projector is also sturdy enough to be placed on a cart and rolled around for flexible placement. Add in the option to share directly to the projector through the TechStation-enabled device, and the projector becomes a mobile learning station adding to a flexible learning environment.

Challenges and IT Buy-in

School districts who are willing to support the setup and customization of their own broadcast devices to use with the TechStation projector are key to making this all-in-one solution work to its full potential. The main challenge to using the TechStation in a school environment involves integrating with a networked environment. Many school district IT departments have their networks locked down to prevent devices from broadcasting, and so teachers who expect to use any type of Chromecast, Intel Computer Stick or Android solution will need to make sure they receive approval beforehand.

Schools that primarily use iPads may need to use an HDMI-supported device like an Apple TV to connect to the projector instead of the Chromecast, Chromebit or Intel stick. Unfortunately, Apple TVs are much larger and more expensive than the other devices that are hidden inside the TechStation. These schools may also use alternative ways to connect to their displays using AirPlay and so wouldn't take advantage of the TechStation features.



Schools will find the projectors can be a valuable asset, since they are easy to use and allow individual schools or teachers to personalize their own teaching and learning experience. Districts may also want to use the ProjectorNet software (or their own network device management software) to monitor and manage the projectors.

Conclusion

The ability to customize the TechStation projector to fit the needs of the classroom is a huge benefit to teachers who are looking for ways to engage their students in authentic learning experiences. Moving beyond just using the device to project a lesson, the TechStation projector transforms a classroom into a collaborative experience where students are empowered to contribute to the learning of the entire class through untethered options. The wide screen and bright lumens, along with the short throw lens, help contribute to a conducive learning environment.