WHITE PAPER

On Behalf of Panasonic

The Classroom of the Future is Here Today
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SUMMARY

One of the key challenges facing today’s schools is figuring out ways to better integrate technology into their classrooms. While it’s generally acknowledged that technology-based products like PCs and tablets can drive better learning experiences for students, the specifics of how to best drive those improved outcomes is still up for debate. Many schools have tried to piece together various individual products, but the results haven’t always been satisfactory. What school administrators need to consider are options that combine multiple hardware, software and service elements into a complete solution for an integrated classroom. From ruggedized, kid-proof computing devices, to software tools that enable teachers to analyze the work students are doing on those devices in entirely new ways, to tech-based recording and safety-monitoring tools, and more, the tools and support necessary to create a connected classroom of the future are here today.

“By putting together all the critical pieces necessary to create an enhanced learning environment, the Panasonic classroom solution offerings can make teachers more effective, students more engaged and administrators more pleased than ever at the outcomes from their institutions.”—Bob O’Donnell, Chief Analyst
INTRODUCTION

The heart of any educational system is found in the classroom. It’s the classroom where a teacher can bring the day’s educational topics to life, engaging students and creating an environment that’s ripe for learning.

But despite their importance, many of the key elements within classrooms haven’t really kept up with the times. Sure, we’ve seen the introduction of computers and, in some cases, projectors or interactive white boards, but almost all of these devices are independent additions and don’t really work together as a coordinated whole. In many classrooms, these different technology solutions aren’t even connected to one another or only are in a limited way. The result is they aren’t living up to their full potential as teaching tools and students aren’t receiving the full benefits that these tools can offer.

To really get the most out of them, schools need to figure out a way to connect all these devices together and get them to function as a unified system. In fact, one of the key characteristics a school of the future needs is fully integrated classrooms, where each of the different devices in the classroom can communicate with the others. For example, classrooms with connected technology should be able to allow the teachers to monitor in real-time what each of the individual students are doing on their respective devices. Similarly, individual students should be able quickly and easily share their work with their fellow students via the classroom projector through a simple, wireless connection. Teachers should also be able to record their lectures for later viewing by absent students or those who want a refresher on a certain topic. Leveraging the same connected cameras, administrators should be able to undertake classroom monitoring for evaluation or even safety purposes without interrupting the class.

All these capabilities might sound like something that’s still a few years off, but they’re actually available today as part of Panasonic’s classroom solution. Best of all, they’re all available as a single solution, or can be flexibly put together in a variety of combinations to meet the needs of individual districts. The company has a team of consultants that work with schools to provide the support and services they need to craft a solution that works specifically for their environment. This is critically important because as compelling as this vision may sound, the thought of trying to piece together all the necessary components to enable this classroom of the future is daunting, particularly for the lean IT environments often found in today’s schools. One of the key benefits of the Panasonic Classroom is that it comes from a single source, can be customized to include the service and support that schools need, and has been thoroughly vetted and tested to work together seamlessly. This ensures that teachers can focus their time and attention on teaching and not trying to fix the fancy new tech products that have entered their classrooms.
For school administrators and IT staff, this also means a single point of contact for support, which is especially important in environments where multiple products need to work together seamlessly for the solution to be effective. In addition, Panasonic offers several different services associated with their educational offerings, ranging from Professional Development courses helping educators use the bundled software to meet core curriculum requirements, training IT staff on how to effectively manage hundreds or even thousands of devices, linking all the different elements together, and more. For schools with limited IT support staff, these training services can be very important and very effective, ensuring the success of a large deployment.

**INTEGRATED CLASSROOM BENEFITS**

The future of technology is in connectivity. The ability for various devices and people to connect adds tremendous benefits to each individual and each device in the world outside the classroom, and it can provide similar benefits inside the classroom as well. In fact, connected technology in classrooms can help educators teach more effectively, students learn more efficiently and administrators manage their school environments more easily.

For teachers, a connected, integrated classroom can help them track individual student performance dynamically, ensuring that each student is receiving the appropriate instruction and help as they work through different materials. A properly configured classroom can also free the teacher from having to worry about time-consuming efforts to connect their various technology components together and concentrate all their efforts on teaching. Finally, teachers can be more effective if they have tools that help engage their students in more compelling ways. Several of the components included with Panasonic’s classroom solution provide fresh new ways to deliver material, particularly for STEM-related subjects.

For students, an integrated classroom lets them get immediate feedback from their teachers and it helps them learn from their fellow students, both of which can help them learn new material more easily. By enabling students to quickly share their work on the classroom projector, for example, other students can easily see how a fellow student solved a problem or view that other student’s work, which can inspire them even more than a teacher, in some instances. In addition, by putting engaging STEM-focused software onto ruggedized student devices, students can get more engaged and administrators can be less concerned about breakage. The integrated temperature probe and optional microscope functions offered on Panasonic’s student devices, in particular, in conjunction with the STEM software offers a uniquely engaging set of capabilities for today’s students.

For school administrators, connected classrooms can provide easy, non-disruptive access into classrooms, making things like teacher evaluations more effective. More pragmatically,
connected classrooms enable administrators to have fast and easy access to student grades and evaluations, without requiring any extra effort on the part of teachers.

**THE PANASONIC CLASSROOM SOLUTION COMPONENTS**

The classroom solution from Panasonic consists of several different key components, starting with the student device, the Panasonic 3E.

**INTELLIGENT (AND RUGGED) STUDENT DEVICES**

Personal computers and tablets have been touted as offering tremendous advantages to modern classrooms, particularly if they’re offered on a 1:1 basis with individual students. While that can be true, there have also been instances where the reality of these devices hasn’t always lived up to their promise. One of the key reasons is that teachers are often given devices with little or training on how to best utilize them in the classroom. The assumption often is that the devices are so intuitive that they don’t require any training. While that may be true for the operation of the device, it’s rarely the case for how to best use them in a teaching environment. One of the key differentiating elements of Panasonics classroom solution is the included teacher professional development offerings, which ensure that teachers who use these devices in their classroom will be able to use them to their full potential.

Another challenge has been the relative fragility of the student devices. Grade school and middle school students, in particular, are notoriously rough on their devices, often leading to very expensive repairs or outright replacements. In fact, the need to maintain a large supply of loaner or replacement devices can turn what at first appears to be a reasonable expenditure on student devices into a significantly more expensive endeavor that may even put it out of reach for some schools.

What schools need are rugged devices that can withstand at least most of the day-to-day bangs and bumps that these kinds of devices can sustain. The Panasonic 3E offers just that kind of ruggedness. Leveraging the company’s world-renown expertise in creating ultra-rugged notebook PCs and hardened tablets, the 3E offers the extra level of toughness you’d expect from a Panasonic computing device in a kid-friendly clamshell notebook design. The 3E earned an IP51 certification for ruggedness, which means it resists dust and spills and can withstand a three foot drop. While not indestructible, they are better equipped to handle the harsh treatment they’re likely to face from students than other, non-toughened devices.

Even better, the 10” screen separates from the keyboard, letting it function as either a standalone touch tablet, or a more traditional notebook PC. This 2-in-1 design, which is powered by an Intel Atom processor and runs Microsoft Windows 8.1, gives students the best
of both worlds and lets them use different modes for different types of classroom work: tablet mode for reading or taking notes or making sketches with the integrated pen, and PC mode when typing out writing assignments or other keyboard-focused work.

The 3E is also a great tool for STEM-focused curricula as it includes a probe that can be used to measure temperature, a light sensor and three-axis accelerometer. In addition, an optional, low-cost add-on lens for the integrated camera turns the 3E into a large-screen microscope with 30x magnification power. Integrating the sensors into every device, as well as software specifically designed to use them, not only reduces the cost associated with purchasing these peripherals, it allows every student to do their own work without having to wait for a shared device that only a few students get to actually use. This ensure a higher level of engagement for every student and helps foster an environment of experimentation and inquisitiveness—key to building a positive experience for students learning science. In fact, this innovative design helped the device win the “Best of Show” at the ISTE TECH learning conference.

**Connected Whole Group Instruction**

A key element of any educational environment are the display tools used to demonstrate the lessons. From projectors, to white boards to large touch monitors, Panasonic also offers a wide range of display options for whole group and even small group instruction. Projectors specifically designed to wirelessly connect to the 3E computers, for example, help enable a more interactive environment where teachers can easily allow students to share their work with the entire classroom prompting new kinds of learning experiences. Interactive whiteboards and large touch-screen interactive LCD monitors let students interact with classroom materials through touch, and lets teachers offer multimedia materials in a more interactive way.

**Intelligent Software**

Another challenge that PCs and tablets have faced in the classroom is the lack of purpose-built software specifically for K-12. Without the right software solutions, even the greatest hardware devices can end up as little more than fancy educational toys. Not only do you need good applications, you also need access to high-quality electronic textbooks, interactive tools and, leveraging the classroom-wide connectivity discussed previously, software that can help teachers quickly see where their students may be struggling (or conversely, encourage them to move faster if all their students are easily learning new material).

A key component of Panasonic’s classroom solution is the software that’s bundled with their 3E devices. The company partnered with Microsoft, Intel’s Education arm, leading textbook publishers and more (see the table “Bundled Software” for more details) to include top-notch solutions that take advantage of some of the unique capabilities of their devices.
In addition to more traditional software offerings, Panasonic is bringing the concept of analytics into the classroom through Intel's KNO Software. As hinted at above, the classroom-wide inter-connectivity of technology isn’t just a convenience, it actually enables new kinds of insights that teachers can use to become even more effective. By connecting to all their students’ work in real time, the KNO Insight analytics software included on the teacher’s device can help teachers see potential patterns in their students’ work and thereby discover a series of connected mistakes or problems that are holding a particular student (or group of students) back. Armed with this information, teachers can more quickly diagnose the potential issues and help students get past certain stumbling blocks.

This “enhanced intelligence” is one of the key differentiating factors of Panasonic’s classroom solution. Within the right environments, it adds important modern-day tools to age-old challenges of keeping students motivated and learning and can provide teachers with an entirely new way of thinking about their educational methods.

**VIDEO CAPTURE FOR SAFETY AND LEARNING**

In addition to video displays through connected projectors and monitors, Panasonic offers connected video camera tools for use in the Panasonic classroom.

An unfortunate reality of today’s school environments is a greatly heightened need to increase the safety and security of the classroom for both students and teachers. Studies have
shown that in-classroom video recording tools can be a key enabler in not only improving safety, but even improving the behavior of students.

For teachers, Panasonic offers a wireless lanyard that incorporates a microphone which can be used for audio recording purpose or as a mean to amplify the teacher’s voice evenly throughout the room. In addition, the lanyard is equipped with a discreet button to instantly and silently start streaming the classroom video camera feed to either a school office or even a local police station. This can help provide an important sense of safety for teachers, administrators and parents. In addition, in serious situations, the speed of the solution can enable critical time savings for respondents and help provide a more accurate picture of any potential problem.

As with other aspects of integrated classrooms, these Panasonic wireless video cameras are enabled through the connectivity solutions that the company can bring to the classroom. Plus, they can be integrated into the other pieces of the solution, such as the teacher’s device, enabling the cameras to be used in a pedagogical function. Teachers can record their classrooms during non-emergency situations for analyzing the effectiveness of teaching styles or as a mentoring tool for new teachers. As mentioned, the cameras can be used for recording of lessons to be played back by students at home on their 3E device at a later date, as well as remote monitoring of classroom activities that enable teachers to send students messages and tips even when they are not in the classroom.

CHALLENGES

As with any new technology designed for the classroom, there are potential challenges that teachers and administrators need to be aware of when it comes to connected classrooms. First and foremost is cost, as these capabilities will require investments by the schools in order to realize the full benefits. However, in the case of the student devices, their increased ruggedness should ensure that they are less prone to breakage than alternative device offerings. Panasonic also has a variety of warranties for the individual hardware in the solution that can alleviate replacement costs.

Also, while the software offerings are wide-ranging, they may not meet all the specific demands of certain teachers. However, they have been specifically selected and designed to meet the new core curriculum requirements put into place by many state governments.

Some schools may have certain elements of what Panasonic offers already in place and may not need to purchase everything. For schools in that situation, Panasonic enables you to purchase only the elements that the school is interested in.
The Classroom of the Future is Here Today

CONCLUSIONS

The idea of an integrated classroom may sound like science fiction to some, but the fact is, it’s available today. Leveraging innovative, ruggedized student devices, a powerful collection of intelligent educational software, video recording capabilities and an underlying web of wireless connections across devices, Panasonic’s classroom solution and services bring new possibilities to today’s schools.

In the case of the device component of a connected classroom solution, one of the key challenges in an educational environment is getting the kids excited enough to actually want to use the devices they’re offered. With its integrated microscope function, measurement sensor and built-in package of useful, helpful software, Panasonic’s 3E is a device that kids will quickly understand is more than just another tablet like the one they may play games at home—it’s a dedicated, learning device. By having that distinction, schools are likely to find the device is well accepted by students in the role for which it is intended.

Tieing a compelling device like that into an integrated solution that the teacher can use to monitor students’ progress and even uncover potentially hidden issues makes Panasonic’s classroom solution uniquely well suited for a variety of different school types. Though it may sound a bit clichéd, the real beauty of the system is that it combines multiple independent elements into a complete solution that really is greater than the sum of its parts. Even more importantly, by offering consulting and services that allows individual schools or teachers to customize an offering to meet their unique requirements, as well as training teachers and administrators how to fully utilize the new equipment, Panasonic can offer much more than a simple collection of devices.

By putting together all the critical pieces necessary to create an enhanced learning environment, the Panasonic classroom solution can make teachers more effective, students more engaged and administrators more pleased than ever at the outcomes from their institutions.