ZEBRA TECHNOLOGIES

SEE MORE. DO MORE.

MOTOROLA SOLUTIONS

# How the Internet of Things Is Transforming Education

Technology has changed the educational landscape. From the use of tablets in the classroom to the proliferation of open universities, education looks very different today. However, these advancements are minimal compared to the sea change that's to come as the Internet of Things (IoT) reaches critical mass. The IoT—which connects people, processes, devices and data—enhances the volume *and* value of information we can collect, allowing educators and administrators to turn data into actionable insight like never before.

With the advent of mobile technologies, schools can now keep track of important resources, create smarter lesson plans, design safer campuses, improve access to information and much more. From K-12 up to postgraduate programs, the IoT has the potential to impact every aspect of student learning.

As educational organizations begin to leverage solutions like cloud computing and radio frequency identification (RFID) across an IoT platform, they're able to capture, manage and analyze Big Data. This insight provides stakeholders with a real-time view of students, staff and assets. It is this **asset intelligence** that enables institutions to make more informed decisions in an effort to improve student learning experiences, operational efficiency and campus security.

# By leveraging asset intelligence, educational organizations stand to see value added in the following areas:

## I. Enhanced Learning Experiences and Outcomes

The pressure is on to prepare students for an increasingly competitive workplace in a hyper-connected world. With the IoT, institutions can improve educational outcomes by providing richer learning experiences and by gaining real-time, actionable insight into student performance.

Whether it's a tablet they brought from home or a school-issued laptop, more and more student learning is taking place on wireless devices. These online lesson plans have the potential to feature highly engaging interactive content. However, they also have the potential to "crash" archaic internet networks. To prepare, schools must upgrade to secure, high-speed wireless networks that can accommodate bandwidth-intensive programs being run on a multitude of devices.

This investment will pay off in spades. With e-learning applications, students can work at their own pace, which allows the teacher to provide one-to-one instruction to those who need it most. Additionally, assessments can become more seamless, less manual and time-intensive. Educators no longer have to grade every exam or feed Scantron sheets into a machine. Instead, they can spend time focusing on the learning activities that have the biggest impact on students. Finally, when connected to the cloud, these e-learning technologies can collect data on student performance, which can then be used to improve lesson plans in future school years.

## II. Improved Operational Efficiency

Educational institutions are comprised of many moving parts. In order to succeed at what they do, they must be able to keep track of students, staff and resources, all while keeping costs in check. This is possible by leveraging enabling technologies that can easily keep track of people, assets and activities.

Previously elusive resources—such as projectors or lab equipment—can be equipped with RFID readers so that their whereabouts are visible at all times. Real-time visibility means teachers no longer have to spend valuable time looking for these items and can instead focus on more important

ID cards and wristbands allow educational organizations to store the last-known location of a student or visitor, helping to ensure the right people are accessing the right areas on campus.

tasks like teaching and planning curricula. Additionally, educators can monitor the condition of their resources in real time so that if need be, items can be replaced with minimal disruption to the school day.

Tracking devices can ensure that students are accounted for in real time, minimizing time-consuming activities like recording attendance. With RFID-equipped backpacks, students can be automatically checked in as they board the bus. Similarly, the proliferation of smart ID cards and wristbands means students can be automatically marked "present" when they walk through the classroom door.

With mobile computing solutions, operational roadblocks can be dealt with in real time. A maintenance worker who stumbles upon a broken vending machine can use a handheld device to notify school officials of the problem, order the parts needed and/or request additional repair services—while in the field.

## III. Safer Campus Designs

School officials are under increased pressure to ensure their campuses are safe. A surge in school emergencies over the last several years, along with the growing fears over bullying and violence, mean it's more important than ever to keep students safe. The IoT's ability to track objects, students and staff, and to connect devices across campus(es) brings a new level of safety to institutions.

A GPS-enabled bus system means that bus routes can be tracked, so that parents and administrators can know where a given bus is at any given time. In addition to making the school journey safer for students (and a lot less stressful for parents), students can be notified when the bus is near their pickup location; no more waiting outside for a late bus.

ID cards and wristbands allow educational organizations to store the last-known location of a student or visitor, helping to ensure the right people are accessing the right areas on campus. They also enable cashless payments at the school cafeteria or campus store, which creates a more streamlined transaction and has the potential to discourage bullying and theft.

Finally, the convergence of campus communications allows staff to react more quickly in an emergency situation. By connecting laptops, smartphones and two-way radios, staff can instantly talk, text or send an email to any other device in the network. For example, a security guard who spots a fight can notify teachers and administrators immediately, with one simple action. Now, help can come right away, and an escalation of violence can be avoided.

The IoT stands to dramatically change the way institutions operate, protecting valuable assets and enhancing student learning at every level. In addition to the immediate benefits outlined above, educational institutions can harness long-term value from these technologies by analyzing the resulting data to better plan resource allocation, curricula and safety procedures in the years to come.

## Share this.