RFID 101: Using RFID to Manage School Assets and Achieve Huge Savings

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Are You Missing Out On Huge Savings through Better Asset Management?

Many schools around the country have implemented wireless networking and mobile technologies to enhance campus connectivity and deliver the latest multimedia and online-based educational resources to students. But many of them have not yet applied wireless and mobile technologies in ways that can generate enormous cost savings and streamline their inventory and administrative operations.

The opportunity that many schools are missing is in radio frequency identification or RFID, which can deliver enormous cost savings by greatly reducing or eliminating losses involving assets such as laptops, tablets, textbooks, and audio/visual equipment. A past study by Quality Education Data, a prominent research firm, highlighted the costs and inconveniences that many schools are facing due to lost or damaged assets.[1] The study found that lost or damaged assets cost the average school system near $80,000 per year in technology equipment alone. Large school districts lose even more, with some facing costs of $1.4 million in a single year.

The QED research also revealed that manual tracking of assets is one of the primary factors in these losses, with schools that use manual tracking reporting a 41% greater annual cost of lost or damaged goods than those using a commercial asset tracking program.

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Exacerbating this problem is the frequent use of multiple systems for tracking and the lack of automation that leads many schools to struggle with finding the time, budget, personnel, and tools to track and protect their assets. 66% of school districts reported that they use two or more different types of tracking systems, and 59% are still using manual inventory systems or simple spreadsheets or databases to track some of their assets.

Beyond these numbers, there is the reality that asset losses can mean that students and teachers may not have much-needed technologies or resources available when they need them the most, which hurts educational quality and opportunity. And this has led some schools to compensate for potential asset losses by maintaining more inventory, which adds further costs and fails to address the root cause of poor asset management.

While these findings point to fundamental problems in asset management and losses for schools, they also highlight the tremendous opportunity to use newer technologies, such as RFID, to solve these problems. RFID technology, which uses handheld or fixed readers and radio frequency ID tags applied to any object, can be used with companion software to automatically track and monitor assets and help schools prevent losses and achieve huge savings. And RFID can also help schools achieve greater efficiency and cost-effectiveness by eliminating manual processes and greatly reducing the time spent by staff on asset management, allowing them more time to spend with students.

By replacing outdated and outmoded manual systems and by establishing a centralized and automated asset management system using RFID, schools can have instant access to their inventory details and the location and status of each asset. And they can even deploy fixed readers and alarm systems to track specific assets and automatically generate alerts if they are removed from their assigned location or if someone attempts to take them off campus. Best of all, with RFID, scanning is largely automated and can be conducted at a distance by reading many tagged items at one time. There is no need to scan individual items and no need to be within line-of-sight of an item and its barcode in order to detect it.

Thus, by applying wireless networking and mobile technologies, schools can not only greatly reduce or even eliminate costs from asset loss or theft, but they can achieve further cost savings by automating their asset management, reducing staff labor, and creating administrative efficiencies.

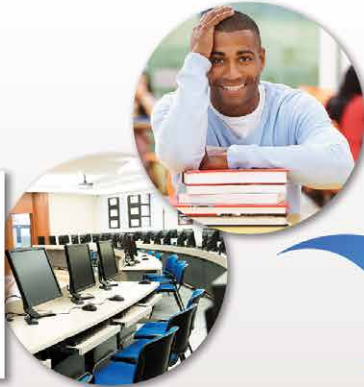[1] Asset Management Failure Costs Schools, Robert Brumfield, eSchool News, June 22, 2006.
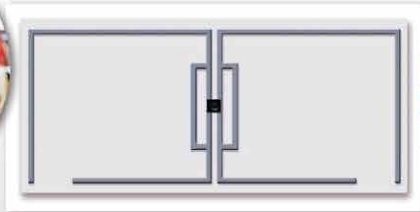
How RFID Technology Works

Radio frequency identification, or RFID, uses radio waves to store and remotely retrieve information from RFID tags that are placed on assets that you want to track and monitor. Each tag will typically store a unique identifying number, similar to a serial number, which is then matched up with the same number in an electronic database that contains all other information and details about the asset that is tagged. Thus, each asset can be correctly identified, tracked, and monitored without storing any confidential or sensitive information in the tag. Instead, the information is stored securely and updated or maintained in your database by your asset management software.

An RFID tag used in school environments is typically a hard plastic tag containing a radio chip and dual antennas, and it can be affixed to virtually any object. With the radio chip and antennas, RFID tags enable much greater efficiency than barcodes and deliver benefits that cannot be achieved through barcoding technology.

The RFID Process Flow

1 RFID tag is affixed to asset: laptops, tablets, textbooks, audio/visual equipment, etc.

2 As tags pass into the read zone of fixed readers or are within the read zone of handheld readers, their tag IDs are captured and associated with asset data in a software database.

3 Readers transmit asset status and location information to the database and to its corresponding software application.

First, RFID avoids the limitations of barcode scanning, which requires line-of-sight access to each barcode and can only be used to scan one item at a time. Instead, RFID tags do not require line-of-site, and multiple RFID tags can be detected and read remotely and simultaneously. They can be read from a variety of distances based on the type of tag and the use of a handheld reader or a fixed RFID reader combined with an antenna.

This means that, even with entry-level handheld readers, multiple RFID tags can be read simultaneously from a distance 6 to 15 feet, and more advanced tags enable distances of 30 to 50 feet or more for select items. So, rather than having to pick up or turn over a piece of equipment and scan its barcode, a user can simply wave a handheld reader within range of multiple assets tagged with RFID, and the device will automatically read and recognize the tags, even if they are located underneath the objects and are not visible. And fixed readers, combined with antennas, eliminate the need for handheld reading entirely and provide a fully automated solution.

...with RFID, your staff can quickly locate and identify any asset virtually anywhere on your campus.

RFID technology not only streamlines asset scanning but also eliminates the possibility of human error. Each asset is detected and identified automatically, and it is matched up with the correct information in your database using its unique ID. There is no possibility of human scanning errors or incorrect logging or updating of information on paper records or in a spreadsheet. This allows your school to maintain a completely accurate inventory of all tagged assets and properly account for current assets and future needs. And, with RFID, your staff can quickly locate and identify any asset virtually anywhere on your campus.

Importantly, passive RFID, which uses ultra-high frequency or UHF scanning, does not require the continuous usage or transmission of radio waves. During passive UHF scanning of RFID tags, the scanner sends a signal to the tag and instructs it to "wake up" and communicate with the scanner. Thus, tags, scanners, and radio waves can be used on demand, which minimizes power usage and the need to transmit radio waves within your school.

Advantages of RFID vs. Barcodes

- **RFID technology automates data collection and vastly reduces human effort and error**
- **RFID supports tag reading with no line-of-sight or item-by-item scans required**
- **RFID readers can read multiple RFID tags simultaneously, offering increases in efficiency**
- **All RFID tags within range can be detected instantly and matched with information in your database**
- **Assets can be cross-referenced against assigned locations and recorded as present, missing, or relocated**
- **RFID can be integrated with active scanning for a totally automated tracking solution**
- **Available scanners support both RFID and barcoding so you can upgrade at your own pace**

Handheld vs. Fixed RFID Readers

RFID readers are available in two varieties: one is a mobile, handheld device that can be carried to a scanning location and can be used wherever an asset may be located, at various points throughout your campus. Handheld readers offer convenience and flexibility in that they can route information back to your database through your Wi-Fi network, or they can simply scan and store information temporarily, in batches, which can then be uploaded to your database at a later time. Thus, a handheld device can be used to scan virtually anywhere that you may need to locate and identify an asset, even if you are outside the range of your Wi-Fi network.

Fixed readers are typically placed in specific locations, where they are usually configured with one or more antennas so that they can capture data automatically and route it through your Wi-Fi network. With fixed readers, there is no need for a person to be involved or to hold a scanner and bring it near assets. Instead, the fixed reader, which is often placed above a doorway or in a similarly strategic location, automatically reads the RFID tags from any assets that pass by the reader. Thus, fixed readers are ideal when you want to track the movement of assets in and out of a particular classroom or location on your campus, or when you want to monitor movement of assets and be alerted whenever they are moved from their assigned locations.

Benefits of RFID Tracking for Private Schools

Automate Your Asset Management and Protection

- **Track and locate any asset throughout your campus**

- **Avoid loss or theft of valuable school property**

- **Control access to assets with RFID tags, readers, and software**

- **Eliminate spreadsheets and manual tracking by your staff**

- **Automate attendance, asset checkouts, reservations, and inventory**

- **Use Wi-Fi to transmit data remotely and automate data collection**

Streamline Your Asset Administration and Save Money

- **Save thousands of dollars in losses and theft**

- **Lower your costs by reducing labor and administration**

- **Eliminate errors caused by manual tracking**

- **Reduce time and labor for your faculty and staff**

- **Streamline your school operations with automated processes**

- **Get affordable, real-time, room-level visibility into your assets**

Getting Free Expert Advice and Consultation

At AB&R (American Barcode and RFID), we've been serving schools and businesses for 35 years, delivering the latest technology solutions and insights. We've helped schools like yours meet growing needs for smarter and more cost-effective asset management, security, and wireless networking. And, in partnership with Zebra, a world leader in RFID, we'd like to offer you free expert consultation to help you assess your asset management needs and explore solutions to help you save thousands of dollars in annual costs while achieving greater efficiency and security on your campus.

Schedule Your Free Consultation

Contact us today to schedule a call or to set up an appointment at your earliest convenience. We'd love to help your school!

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