

The Wireless Revolution and Schools

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It would be counterproductive for the 21st century student to be harnessed to a computer lab—handcuffed to place and time for learning to occur. Wireless technology frees education by equipping each student with a laptop computer or PDA and a wireless network card that provides an Internet connection.

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INTRODUCTION

The current wireless revolution in our society is increasing the impending need to be able to facilitate communication and have the availability of access to information at any time, place, or medium. This notion of accessing information at any given time is an idea central to the application of wireless technology. This idea has been made into reality with the use of WI-FI technologies and wireless networks. By providing teachers with such tools for teaching to implement in various subject domains and content, schools will equip teachers in their ability to provide quality teaching and learning for the student. With the new wireless revolution, students can participate in collaborative learning that extends their current educational experience.

Amid the current wireless revolution in our society is the impending need to be able to facilitate communication and allow any time, anywhere access to information at the tips of our fingers. Norm Rose, head of Travel Technology Consulting, believes that “people will soon be able to get any information they need, wherever they are—even when, as in the case of last-minute unforeseen schedule changes or the appearance of a tasty restaurant nearby, they didn’t know they needed it” (Botelho, 2003). This notion of accessing information whenever you want it, when you want it is an idea central to the application of wireless technology. This idea can be made into reality with the use of WI-FI (wireless fidelity) technologies and a wireless network. Since increased access to information and

the ease of communication are the main goals of the wireless revolution, the next question is how can this phenomenon impact classroom instruction? With this notion, we can commit to quality teaching and student learning.

BACKGROUND

If we reflect upon the goals of many schools, districts, and universities, they are very similar to the goals of this now popular wireless revolution. Schools and campuses around the world are constantly attempting to provide increased learning opportunities to their students. These opportunities are attained through easily accessible information resources. Instructors must also be able to communicate with all members of the learning community, such as with students, parents, colleagues, and administrators. Since various new wireless technologies have been invented in order to improve and facilitate communication and information retrieval, they seem to be optimal devices to use in educational settings. Wireless devices can provide students with increased access to Internet resources and various computer applications that have been designed to enhance learning situations. In conjunction with a wireless network, the wireless devices can provide all students access to computer technology in their own classroom environments. Students would not need to move to another environment and shift their focus on a lesson or activity when the use of computer technology is desired. Especially with the relatively current release of various mobile technologies, students can each have access to their own computer at their own desks. Schools and universities are now beginning to jump onto the wireless bandwagon by establishing wireless networks within their buildings. Several schools and universities have also adopted some of the new mobile technologies, and teachers have integrated these technologies within their curricular instruction.

MAIN DISCUSSION

Wireless notebooks, also known as wireless laptops, are one of the most widely used forms of wireless technology in schools and campuses today. Many schools and campuses are using wireless mobile labs equipped with laptop computers and occasionally a network printer, all housed in a metal rolling cart. This notebook cart allows for the automatic conversion of any classroom into a fully functioning computer lab.

The use of wireless notebooks in educational settings has many advantages. First, the lack of network cables allows more flexibility in instructional activities. Students can work in collaborative groups with their devices without being confined to a static room layout. They can even move into a different room with the devices, as long as they are in the range of the wireless network. The reduction in cords can also significantly “clean up the computing facility” (McKimmy, 2003). Second, instructional time can be saved because students do not need to relocate in order to use computers within any instructional activity. Also, in the case of using a mobile lab, each student can have access to his own computer and time can be saved because students do not need to take turns completing their assignments on the computer. By comparison, in the higher education setting, instructional time can be saved because “fewer cords means less setup time for class lectures” (DeCerce, 2001). Third, the smaller size of the laptop computers and the comfort of having the computers in their familiar classroom environment can help both students and teachers feel relaxed and not “overwhelmed by big desktop computers that neither student nor teacher can see around” (Rajala, 2003). As Jamie McKenzie (2001), the editor of *From Now On - The Educational Technology Journal*, states, “Finally we have computers that can sit on a desk with no more mess or bother than a textbook.” Having computers at the students’ desks creates a scenario where an instructor can move seamlessly between two classroom environments. When students have the laptop covers down, the room is an ordinary classroom. A computer lab environment results by simply lifting up the laptop covers (Levine, 2002). A fourth advantage is offered due to the increased access of computers among students. At the University of Alberta in Canada, a mobile lab can be checked out and “makes it possible for some classes to get computer access when it otherwise might have been impossible since the regular computer labs

are heavily used, especially by classes that book for an entire term” (Davies, Carbonaro, & Kendal, 2003). This same principle can apply to elementary schools, middle schools, and junior high schools because those students often have to share access to one or two computer labs as well.

The list of advantages regarding the use of wireless notebooks can continue, but there are also a few issues that need to be considered. Price is often an issue that interferes with the availability of wireless devices in a classroom. Most laptops cost between \$1,000 and \$3,000 (Caverly & MacDonald, 2003), costing “50% to 100% more than their desktop counterparts” (McKimmy, 2003). Laptops are also harder to upgrade due to the hardware used is designated only for that particular brand and model, making it difficult to integrate future technologies (McKimmy, 2003). It is also known that laptop batteries can only last for 2 to 5 hours, unless replaced with another charged battery (students must shut down the computer before initiating the switch) or plugged into an electrical outlet with an AC adapter. This may cause a distraction in a classroom or loss of instructional time, as well as an increased need for surge protectors (increasing wires and cabling). Security can also be an issue if a wireless network and security protocols are not configured properly. Most wireless networks, including the more common 802.11b standard, provide “a form of encryption known as WEP (Wired Equivalent Privacy), however it is notoriously weak” (McKimmy, 2003). If configured properly through additional security measures, wireless networks can be relatively safe features. According to McKimmy:

One option is to control access to the network based on the individual machine’s MAC address (message authentication code), a unique number that identifies its NIC (network interface card). Unknown computers may be denied access if their MAC address is not in an authorized list. Other alternative to method listed previously is the notion of the VPN or the virtual private network system.

Another issue that often comes up is that students may begin to use their laptops for purposes other than the classroom task at hand. With the capability of Internet access, instant messaging, and various computer games, wireless laptops can often detract student attention from the lesson. However, Lawrence Levine (2002), a teacher of mathematics, has found software applications, such as CrossTec Corp.’s “NetOp School” and SMART Technologies’ “SynchronEyes,” that help

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