

THE IMPACT OF TABLET PCS ON EDUCATION

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Abstract

This article deals with the use of tablet personal computers during the educational process. It covers the advantages of tablet PCs in terms of the educational process and describes some basic possible ways of implementation of tablets during classes and lectures.

Mobile computing is gaining momentum for today's educational organizations because of a new class of devices – tablet computers. Immensely portable, tablets serve as eReaders, video repositories, and Web-browsing devices with instant access to thousands of applications — often replacing the need for physical books.

Inside the classroom, tablets are transforming traditional lessons. Schools are increasingly seeing the potential of mobile devices. Not only are the devices themselves less expensive than most laptops, they need less infrastructure to support them.

The tablet PC has the potential to dramatically alter the educational process. This device significantly changes the way students and teachers interact. It adds completely new dimensions to classroom interaction by providing digital ink and drawing tools for writing, sketching, and drawing; and for real-time collaboration.

The advantages of using tablets for educational purposes are quite obvious:

- **Form factor:** anyone that has used a tablet can attest to its compelling form factor. It just feels right. Light, portable and easy to hold or lay in your lap. As opposed to a laptop where the upright screen acts as a barrier between people in classroom settings, a tablet tends to be used more organically; it's small, lays flat and is easily shared and passed around.

- **Long battery life and instant-on:** continuous, transparent access to information is a key educational goal and these are two core requirements. The long battery life of tablets allows you to charge them overnight and use them throughout the day without any need to pull out messy power cords or search for sparsely located electrical outlets. Additionally, they power up almost immediately. Teachers have little class time to meet increasing demands and don't need to be wasting five or more minutes every lesson waiting for students to open laptops, power up and log in or shut down. A tablet simply flips open and it's on. Importantly, as with other mobile devices, this also enables natural, almost transparent educational use. You're more likely to just spontaneously turn to it for information in the course of a discussion. Students can carry it around easily and instantly access and integrate information and tools into discussions and educational activities.

- **Price:** the cost of computer implementations has been a stumbling block for many communities and countries. The advent of cheaper alternatives – netbooks, smartphones and tablets – are closing the digital divide and making computing increasingly accessible to more people.

- **Touch interface:** when combined with the simplicity of the screen layout, the touch interface is a key element of tablet's popularity. Most notably, you will observe how young children instinctively take to it without instruction – the Internet is replete with examples.

- **Improved digital reading:** the crisp quality of the display, especially when combined with the light weight and portability, enables a far superior reading experience than currently exists on desktops and laptops. Along with light weight and portability, this finally

opens the door to the possibility of utilizing eBooks in education in place of their far heavier and more expensive paper counterparts.

- Integrating multimedia: We live in a society that increasingly expresses itself in images and video. There is an abundance of apps delivering high quality multimedia content to tablets, allowing for integration of fantastic media experiences into educational activities. This is especially applicable to news events where fresh, sharp video footage and images are easily accessible and can spark valuable class discussion.

- Special education: Increasingly we are hearing how tablets have been a huge success within special education. The simplicity of the touch interface is making it an extremely popular device for students with special needs.

- Connecting: The educational value of social networking lies in its ability to facilitate the growth of impromptu virtual learning communities – connecting people around the globe to share opinions and experiences. Social networking applications are an integral part of tablet usage – whether connecting users to news events, industry experts or video-conferencing with students and classes in other countries.

Tablet PC technology provides many advantages over traditional notebook technologies. The pen-computing stylus and digital ink functionality of the tablet PC helps instructors introduce students to the countless diagrams, drawings, and equations that are integral to engineering study. To encourage participation, instructors will ask students to get involved, completing the drawing of a design or solving a problem on their tablet PC. The instructor can then transform the classroom into a virtual design studio environment and project both correctly and incorrectly completed diagrams for class discussion and critique. This method has been proven to be a powerful teaching tool and is only possible in the engineering learning environment due to the power of the tablet PC.

The pen-computing capabilities have also proven to allow engineering faculty to be more efficient in their copious use of engineering drawings and impromptu sketches in class. Instructors create diagrams in advance of the lecture and use them as a guide that only they can see during the lectures. Instead of drawing a diagram from memory, the instructor will use the pen stylus to trace the existing drawing, while for students it appears that the instructor is creating the drawing from scratch. Because instructors no longer have to commit these diagrams to memory, they are able to concentrate their time on developing more interaction during the lectures.

On the other side of the lectern, students are using tablet PCs and tools like Microsoft OneNote to take notes during the class. Because the notes are in electronic form versus handwritten in a spiral notebook, students are able to search and organize information more easily.

Tablet PCs enable fluid interaction with previously static artifacts. Textbooks can be powerful tools for learning, enabling students to explore subject matter at their own pace and on their own time. However, textbooks are also fundamentally isolated and static—lacking communication links to the instructor and other students and presenting unchanging content. However, with an e-book, students can communicate through shared annotations, and instructors can highlight or modify content. Through these mechanisms the textbook transforms from an individual lump of pulp into a communal artifact and provides a central context for a learning community. While it may be possible to use other devices for sharing textbook annotations, the physical form factor of the tablet PC (comfortable to hold and as easy to manipulate as a textbook) and digital ink (allowing highly individual annotations and mimicking students' existing "interface" with the textbook) together make the interaction fluid and natural.

Electronic distribution of lecture materials creates the possibility of tailoring course materials to meet the needs of individual students. For example, handwriting recognition

software could be used to make ink-based presentations accessible to blind students. A range of different vision conditions could be accommodated by alternate rendering programs on the student's mobile PC. Electronic distribution could also enable deaf students to submit (in real time) written questions about the lecture materials. An example is LiveNotes which was initially developed to support note taking for deaf students.

The tablet PC has the potential to revolutionize the way education is provided. It is an exciting opportunity for many different educational communities — teachers, learners, and researchers—across all grade levels. However, research and development of tools and systems to accomplish this must proceed jointly across these communities — with input, standards, and interactivity being sought across user groups.

List of references

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