Integrating the Tablet PC as a Teaching Tool

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Introduction

In August 2003, the Kaneb Center for Teaching and Learning and the Office of Information Technologies at the University of Notre Dame began a one-year collaborative initiative to explore the potential impact of tablet PCs as a teaching tool. Fourteen Notre Dame faculty members received a tablet PC with basic productivity software and initial training on its use. Staff from the OIT Office of Information Technologies, and the Kaneb Center for learning, worked with them on strategies for using the tablet PC in the classroom and provided assistance in preparing materials. The participants made the tablet PC the primary computer for their teaching role, using it regularly in at least one undergraduate course. They also participated in a study of the project, which included class observation and the sharing of a weekly journal entry detailing their use of the tablet PC. I was one of the initial fourteen.

I must acknowledge the efforts of Chris Clark of the Kaneb Center and Kevin Abbott of Office of Information Technologies at the University of Notre Dame, who developed and oversaw the project. It is their hard work and vigilant assistance that made the project an enormous success and this valuable information possible.

Beginning

I was extremely excited about being chosen to participate in a campus-wide experiment that facilitated drawing, that is, utilizing a drawing interface on a laptop computer. A portable computer to boot, something I could take with me as easy as a pad of paper. I was skeptical that the use by this device [which I felt was close to perfect for design needs] by other fields would be limited and conservative. I was impressed by what I observed and surprised by the creative nontraditional methods employed. I did know of and was interested how basic programs such as PowerPoint and Adobe are utilized by other fields and improved with added features to make impressive presentations. What I learned was impressive.

The strongest potential of this device is the possibility of increased interaction between student and teacher through the technology. That is the focus of all involved in this study.

My experience with most computers and software is that a layer of interface is added making the delicate ethereal learning condition ponderous and clumsy. Tablet PCs are lightweight, highly mobile computers the size of a legal pad. Users interact with them by tapping, writing, or drawing on a touch screen with a stylus, and they are capable of wireless access to the Internet or the campus network. Tablet PCs are full-blown computers with plenty of memory and lots of storage space. They also run Windows XP and all the usual applications. The tablet used for this survey was the Acer Travelmate 110 hybrid laptop/tablet.

The information that follows is a summary of the experiences of the faculty members involved in this project. I have edited the comments and insights to follow a structure of advantages, limitations, and future use. I have tried to keep the comments as brief as possible but included
individual scenarios that capture the spirit of the instructor’s personal experience and approach. Please note that TPC, TabPC, Tablet, and Tabby all refer to the same model of tablet PC.

Advantages

Scenario 1: Editing Papers and Developing Composition

Javier Rodriguez, English professor

*It is relevant how this technology can assist and intervene in the process of developing student composition. Having students submit drafts in and placing in digital drop boxes [Class Web drop box file] allowed response to rough versions immediately without having to wait to "hand back papers" in class. Final papers in “literary methods” class went through a process in which I received digital file of paper, marked up a proposal on tablet with stylus and "returned" it [e-mail] immediately, giving students more time to work, and setting up an ongoing dialogue in some cases with students as the papers then went to the first draft stage. These were marked up as well, without grading them, and sent them back to students immediately via e-mail.*

1. Grading papers with the stylus. It’s faster than having to repeatedly type in comments into a student document, which you can do with just about any computer now. Having the stylus feature makes it possible to grade with electronic ink in a way that replicates the intimacy and immediacy of the handwritten note...writing "Great point!" has more impact that typing "Great point!"

2. Editing corrections is easier. Crossing out misspelled words, unnecessary commas, etc. or adding the necessary ones, etc. This is a simple process with the stylus.

3. Digital file management. It is far easier to carry a load of fresh essays in the computer than carrying them around in a large brick of paper.

4. Portability of this little computer makes this kind of work easier than it might be with the paper versions, or even with larger laptops. The wireless technology allowed remote transfer and return of papers to students' papers from remote locations off campus.

5. Holding all drafts in one convenient location makes comparisons with earlier papers and drafts quick and easy.

6. Projecting passages of literature on a screen and using the stylus to annotate it as part of a lecture in class.

7. Taking roll. By setting up a Windows Journal page with a class roster, you may keep attendance that allows adjustments quickly and neatly. Someone comes in late to class or an absence is later determined to fall under the excused category—these kinds of changes can be made quickly and the roster looks neat and clean. Set up as a template or create your own.

8. Taking notes during meetings. The stylus makes this possible where other laptops would cause a distraction, especially in a meeting with a small number of people.

9. Present complex sets of figures and equations in PowerPoint files.
10. Presentation of in-class discussion problems and working them out using the tablet with students.

11. Posting the lectures to the Web as PDF files is easy.

Scenario 2: In-Class Discussion of Complex Concepts

Paul Helquist, chemistry professor
Doug Schauer, PhD student

Our main use of the tablet PC was to present complex sets of chemical figures as PowerPoint files. A second major use was the presentation of in-class discussion problems. We would ask the students for immediate input by having them write their answers on the tablet PC for the entire class to see in real time. [LCD Projector]. This in-class working of problems was facilitated by using the wireless feature [WiFi] so that the tablet could be passed among students throughout the lecture period. Students were asked to participate while seated at their stations, in providing and explaining portions of the lectures. The main benefit of the tablet PC is that it made for a much more interactive teaching environment than is normally possible with more than 100 students in a cramped, old-style lecture hall. With more than one instructor sharing the teaching load of this course, [faculty plus graduate student] the tablet PC made it much easier to hand off notes lectures and attendance to each other within or between lecture periods. All of the course materials were preloaded on the tablet.

12. PowerPoint Tools

12.1 In classes, such as biology and marketing, there is a reliance on canned presentations of material, with little or no student interaction. Real-time emphasis of images and illustrating points by writing on PowerPoint slides with stylus and saving a notated version serves as a valuable lecture tool. This provides better visibility for students, [projected on screen] and it is easy to scroll between differing parts of the lecture.

12.2 The possibility to mix live notes (using Windows Journal) and prepared segments (using PowerPoint) allows for in-depth coverage of concepts. Using "jump" pages—links that let you jump around in your presentation—adds flexibility.

12.3 Adding comments to PowerPoint slides make the use of PowerPoint possible in an advanced engineering class. Without this ability, toggling between the PC and a blackboard happens on a continuous basis.

12.4 The ability to illustrate concepts, derive equations, and annotate slides—and then save those notes for posting on the Web—was a big plus.

13. The wireless connection allows location anywhere, such as standing front and center on stage, in order to command the attention of the students (they look at me when I lecture and over my shoulder to the screen). It also facilitates the spontaneous learning, no matter where you are.

Scenario 4: Interface
David Ruccio, economics professor

I was not part of the original tablet PC program. I stumbled upon it at the start of the spring semester, in search of a different technology (a whiteboard, which I had used at other universities in giving presentations). When Kevin showed me what a tablet could do, I jumped on it and decided to use it in my Econ 101 class (with 270 students). Basically, the tablet replaces the use of an overhead projector with a transparency roll. Aside from two PowerPoint slide shows, I mostly used the tablet live, writing notes and equations and drawing diagrams as I lectured. (Yes, I too suffer from poor handwriting but it’s no different on the tablet from the overhead or blackboard.) I also use music in my class (at the beginning of each lecture, with lyrics projected on the screen) but for that I needed to use the other computer in the classroom (and then switch to the tablet). Unlike many of you, I do not save lecture notes for later posting (that's so students actually come to class!).

Scenario 5: Graduate Teaching with Multimedia

Dinshaw Balsara, physics professor

If my use of the tablet PC in undergraduate teaching was a mixed bag, my use of the tablet PC in graduate-level teaching was a dream come true! Phys 626 is a course in computational astrophysics. This is a very visual subject where concepts can be illustrated by movies. I had always wanted to integrate movies into my lectures and the Tablet PC enabled me to do just that. I was also able to break problems up so that students had to supply the intermediate steps in mathematical examples and the reactive screen proved a big asset when filling in those steps. It was also fun to pass the tablet around to the students so that they could roll the movies for themselves as many times as they wished and pick out the different nuances that were being explained to them. Best of all, I would leave the tablet behind after each class and ask the students to gather round it and discuss the movies/lecture that we’d gone through. This spurred some very interesting discussions amongst the students. The tablet PC was certainly a very positive contributor to student learning and happiness.

Part of my lecture notes consist of embedded movie clips of different numerical methods into my PowerPoint presentations. I find that movies convey a kinetic sense that simple plots do not. Because of the tablet PC’s small size and decent battery life, it is easy to take it to class. I like to pass the tablet around to the students. Each student gets a chance to run the movies as many times as he /she likes right in the lecture. This would not have been possible with a larger machine. Another useful mode in which I use the tablet PC is as a catalyst for student discussion. At the end of my lecture hour, I leave the tablet PC behind with the students and just exit the class. The students are encouraged to discuss the day's lecture and rerun the movies. Several of them have come to me and told me that they find that process very helpful. The tablet PC does provide several advantages: chiefly, the ability to seamlessly integrate the PowerPoint presentation with Web-browsing. I found this very useful when showing students virtual demos from the Web.

This has been an effort at balancing bleeding-edge technology with the sometimes conflicting demands of maintaining student happiness. I found the latter to be more important, especially in the teaching of our youngest students.

Scenario 6
Elena Mangione-Lora, assistant director, Spanish language program, romance languages

Like most of the group, I have used my tablet primarily for presenting material in class (mostly Web pages and music and video clips). Part of my syllabus this semester is built around Web sites related to readings, subject matter, or techniques covered in our text (Spanish Composition and Stylistics).

I'll be trying the paperless compositions this semester, too, I'll be using the tablet to show and mark up model compositions (What does an A composition look like and why? How can we rework this particular conclusion to make it stronger?, and so forth) I think this will be a superb tool! My teaching routine has definitely spiced up. The old routine: present, ask questions, have students work in groups to practice or apply new skills and then report out. I use the same format, but the presentation part is more varied. Rather than solely bringing in realia, I'm able to surf the Web, play loaded music/audio and video clips, and show images (including student work) and, though not totally into PowerPoint, have also used PowerPoint in my presentations. (It's been easier so I've been more inclined to present various media). It has also been invaluable in giving timely feedback to TAs and colleagues during classroom observations. In a new conversation/composition course being developed for the fall in which I will require several oral presentations, I plan to extend the instantaneous feedback to the students.

The biggest impact for me has been its use as a tool for presenting and critiquing writing samples with the entire class. Rather than simply present a grading rubric for successful papers, I have been able to show how the rubric applies to sample papers and work with the class to suggest modifications and improvements for those that fall short of excellence. This has been especially important as a tool for teaching effective feedback for peer review.

In terms of student reactions, they were mixed. On the positive side, the students were very eager to have my final, marked-up PowerPoint slides on the Web (so they could access them).

Scenario 7

John Caruso, industrial design professor
Digital Brainstorming Exercise

I gave a lecture regarding thinking strategy and methodology from idea to development in the advanced product design studio. It started with a PowerPoint presentation with the tablet, and then I wanted to provide an example of an Edward De Bono alternate-thinking strategy with the class and initially started on the chalkboard. I realized I would like to record these results and save them, so I switched to the journal program on screen (projected to LCD) and began to write in real time on the tablet and record student thoughts and ideas with my writing on screen. These results were then e-mailed along with the PowerPoint program to the class before class was dismissed. I was able to import the journal entry notes into PowerPoint as an image. All I did was select page of journal notes, copy page, and then paste in PowerPoint on a blank slide template. The students had a record of the entire brainstorming session, which effectively showed the intellectual process demonstrated. Next class, we reviewed process and I emphasized process and underlined salient points directly in PowerPoint.

This device streamlined the process of answering questions that came up in class, providing immediate data via Web wirelessly accessed for an informed initial design concept development process. In simple design assignments exploring what exists, is often a natural first step of the empirical knowledge process. This machine could harness the minds of all students, who were
encouraged to use the tablet. It would be passed around from student to student easily and could then be set to beam info to the projector so all could see. This does require an investment in LCD projection capability and 2 tablet computers: one to run the projector hardwired in [A], and one that is remote and is passed around that has cloned the projector unit wirelessly transmitting information to it. [B]

Scenario 8

Kristin Lewis, general biology lab coordinator, biological sciences

I don’t think that I will ever be able to go back to a regular computer for PowerPoint presentations. As a former user of overheads, I had dreamed of a technology that would combine PowerPoint with the flexibility of writing on the screen. For this task, the tablet has been perfect and I use it every class. I can collect brainstorming ideas, work through problems, and annotate diagrams, all in a flexible and archived fashion. I do have an advantage here that I am giving short lectures (20 –30 minutes) before students begin an experiment. This means that the volume of material that I need to cover is relatively small. I can see how working through very extensive problems or examples may be more difficult.

Part of my hope was that my active writing would encourage my students’ active note taking. I think this has been a partial success, but even the tablet cannot fully overcome the PowerPoint spectator mode. I am sure that this is something that I can improve upon pedagogically, or with more constant reminders of “You should be writing this down.” Students made many favorable comments about the tablet on course reviews.

Originally, I had hoped to use the more mobile features of the tablet once students transitioned into the lab. I have tried this a few times, but this has not been as successful as I had hoped. I think part of this has to do with the poor resolution of the screen at odd angles. It is not easy to show a group of people what you have just written on the screen. After a few tries, I resorted to the blackboard, or scribbling in the students’ lab books. I used the tablet in class as a type of resource center and as a way to have all my class material at all times. With the tablet, I was able to meet with my students right away, (for those with quick questions), and also look up their grades and help them with their research for class projects.

Scenario 9

Matt Bloom, associate professor, management

Innovation Class

I too have found the tablet PC to be an indispensible tool for both teaching and research. I take it to every class to use as a mobile white board, media player, Internet tool, sketchpad, notepad, communicator, and more. I’ve become so accustomed to it that it is hard to remember how I could have worked without it. It is also my main tool for grading student work and for communicating ideas and information to them. For example, if we are working through a problem or idea and need a place to jot some thoughts or sketch an idea, the tablet is the place we go to. My students love playing with it, too. They would use it during brainstorming sessions to draw and record ideas. It also became a great way to surf the Web for info wirelessly as we were working in class. I want to try out a slate to see how that works.

It is so great to be able to download PDFs of articles and highlight/mark them up digitally. I carry around about 1,000 articles on my laptop. I scan in book chapters and mark them up too. I can
scan in material for class and project it on the screen to show students exactly what was in the readings. I got rid of two four-drawer files and two tall bookshelves because of this.

I have had fun with using the tablet in my undergraduate class in two ways. First, whenever I wanted to show a concept or a diagram that built upon the previous iteration, I would draw a part of it and then let the students help me with their input. Once I am able to find a way to eliminate the wire, it will be even better to pass it around and have them write on it. In a second example, I used the tablet to plot on a matrix the students’ input about where they thought certain companies would fall. It made for an interesting exercise where the latter ones would try to plot closer to where the cluster of where the others were.

What had got me interested in the tablet PC among other things (discussion follows) was the ability to draw and annotate things without having to go on the board. I am terrible with the blackboard because I find that I have no sense of proportion when I writing or drawing on the board! To get a feel for that, I have to step back to look at the diagram or the model. Going back to my first day of taking the tablet PC to class, I found that the students were just interested to see and touch the tablet PC as I was in using it. I utilized the tablet PC to incrementally build upon a concept as we went along in class. The difference between using PowerPoint and tablet PC here was that even though I know what the end diagram would look like, I wanted it to come from the students, which is why I did not use the custom animation feature in PowerPoint to get to end point. I think that it worked quite well.

Another application of the tablet PC was when in an interactive discussion we plotted various companies on a matrix and had an open discussion. In the end, some students changed the locus of their choice. An interesting study here might be to see how such a discussion leads

The tablet PC can be really useful for controversial topics where people do not want to openly admit their opinion but when a tablet PC is passed around can anonymously enter their response. Then the class as a whole can see the true response. As a general lecture format, since there is no textbook that really covers all the topics for this course, I am developing many things from scratch. The lectures involve a lot of equations where notation is quite important so the lectures have to be clear. As a result, with or without the tablet, I would likely be using PowerPoint as a means to create a neat and achievable set of lecture notes. The tablet has expedited that process considerably. I am able to inset the ink and drawing objects into power point to quickly create schematics that would be otherwise very difficult to generate using the limited drawing tools traditionally available through Microsoft.

Scenario 10

Tracy Kijewski-Correa, assistant professor,
Department of Civil Engineering and Geological Sciences

During lectures, I enjoy using the tablet pen and highlighter options while PowerPoint is in presentation mode to emphasize a term or add some comments. This is especially nice when going over mathematical derivations to cross out terms that cancel or go to zero. What’s nice is that the augmented presentation can then be saved permanently once you exit presentation mode. I recommend saving the uncommented and commented lectures as separate files so they can be archived for student’s reference via WebCT, etc. Finally, during lectures, I like to use Windows Journal (much like John) as a virtual chalkboard for breakaway examples, elaboration of concepts or derivations. These are nicely achievable and to avoid the creation of multiple tiff
files, can be nicely exported as a PDF document that can be uploaded to WebCT for both your reference and your students. I was able to lecture sitting down using PowerPoint as my primary presentation mode and Windows Journal as my blackboard. Who would have thought that this mobile technology would actually be a lifesaver for the immobile! [due to knee surgery] I was able to lecture with PowerPoint and archive all class materials on WebCT (lectures, notes, assignments, and keys). The tablet has allowed me, via augmentations to PPT using the pen features and through Windows Journal, to solve problems live, and then save these modified notes or PDFs of examples on WebCT for future reference by the students. The ability to archive the answer to in-class questions, examples, and side discussions is something you could not really do before, particularly since once a blackboard is erased at the end of the day, the information is gone. I find this useful not only for the students’ reference but also my own, so I can review the questions that arose and use them to improve future lectures.

As many have noted, the ability to mark up documents electronically is a great advantage for both teaching and research. I used the capability to do an e-conference this year. I downloaded the PDF of the program and then used Windows Journal to highlight the sessions I wanted to attend and take notes on what I observed. Thus, I was able to move from room to room with my tablet and external battery (see 5) all day without flipping through proceedings, notepads, and programs. This also has been useful for journal papers and reviewing collaborative documents. I used the same idea for grading student assignments in CE 598S [Civil Engineering class]. As many conference journals now prefer submissions and reviews in PDF format, I used this approach in class. I had students write up their experimental findings in the format of journals common to our profession and submitted them electronically. I marked up the documents and submitted reviewer’s comments using the tablet, all digitally in Windows Journal. This approach was very attractive as it avoided lugging papers everywhere, particularly when traveling. Then the reviewed papers were returned by e-mail with comments and students responded to the comments through a resubmission of their papers. It was good practice for their future work as researchers.

Scenario 11

John Caruso, industrial design professor

In-Class Drawing Demonstration

I teach a design drawing and thinking class called Visual Dialogue. The students are involved in drawing techniques and the illustration of objects and, essentially, objects that do not exist. They are, in effect, drawing the virtual, the idea. We start with observation and life drawing then quickly begin techniques of altering the reality based on student insights and individual experiences. I have struggled with the addition of introductions to drawing software due to cumbersome interface and physical requirements in this class. What the tablet allows me to do is merge traditional drawing techniques with digital manipulation, all on one computer, in any classroom, and in real time. Drawing demonstrations [in Alias sketch pro], on the tablet are effective as I can get the projection on screen via an LCD projector for all students to follow progress. Currently I do this after the actual [physical] drawing demonstration as a recap of what they have just seen. I further use tablet to “draw” on scanned in images of my drawings in PowerPoint. I then pass the tablet around for the students to view the drawing and try drawing on the screen. First, they started with my examples, and then I asked them to draw an idea utilizing what they learned.

Limitations
Screen visibility. Screen viewing angles were limited so that students standing near in the lab were not able to see what was being written on the screen. This prevented using the Tablet like a piece of paper to sketch out problems spontaneously.

Battery Life. While the Centrino mobile technology does surely extend the battery life of this PC, it still only lasts a few hours.

Set-up Time. The use of computers in the classroom increases class set-up time. Fifteen minutes early to get all the components working (PC, tablet PC, projector, and so forth) and fifteen to tear down at the end of class.

Classroom physical limitations. Because of spatial limitations, it is not possible to use the main screen and the blackboard simultaneously. However, for the problem-solving skills students had a strong preference for the blackboard. The limited brightness of the screen required us to dim the lights, and the students were unanimous in complaining that dimming the lights puts them to sleep!

Data Transfer. Due to no disc drives, a data stick device is extremely helpful in transferring data.

Scenario 12

Stephen Silliman

In general, I found this combination to be awkward at best and a major distraction at worst. The screen is so small that, with poor handwriting, final diagrams may appear confusing and unclear. A larger screen would help here.

It felt awkward to work on a computer screen while the students viewed the result on a screen. This was partially because I was continuously in the way. More importantly, however, I am an extremely active lecturer and tying myself to making comments on the screen really limited my lecture style. As you have heard me rant about before, I like to move around, wave my arms, point to earlier diagrams, draw lines all over the place, and throw chalk-caked erasers at students who doze.

With the exception of the eraser, I found that the tablet PC really cramped my style. This was particularly problematic in the fall semester as I had to jury rig a technology solution in a zero-technology classroom. This meant that I did not have wireless capability there to send my images to the projector. Hence, I was stuck standing directly in front of the projection screen when I was using my tablet.

Poor handwriting. “My handwriting is terrible! As I tried to write on this teeny-tiny little screen, my handwriting went from terrible to beyond description (and beyond comprehension).”

During this semester, my tablet’s monitor wiring was somehow compromised so that the screen was shorting out and only able to display a few colors. The onset of this was rather sudden. This may have been related to one of the clasps breaking. I had a similar fatigue issue with a traditional laptop a few years ago but this occurred after years of opening and closing the laptop. Since I frequently use my tablet mode, it is possible that the repeated swiveling accelerated this damage scenario.
Future Potential

Essay-teaching possibilities. Devising new ways to intervene in the writing process. One thought is to have small teams of students revise the same idea or paragraph as it is projected on a screen. The marks can be preserved, then erased, and then the same material can be revised on the screen.

Speed of returned work. Many faculty want to develop a faster way of sending students their papers or work. This can be done if students have access to Windows Journal so that the projects do not have to re-save and send in Adobe PDF.

Using tablet PC in silent discussion mode and then posting the results.

Student dialogue through the computer. Working on essay drafts does not exhaust the potential of this tool. It seems as if more might be done with, for example, having them send scanned images of a page of literature they have already annotated, and then review their annotation process, how they identify special words; what connections they make; what ideas they jot down in the margins. Overwriting on these with a different ink color, for example, shadowing their thinking then engaging in periodic cyberchats with students or teams of students.

Transforming the grade book. “Typically, we chart grades on a large expanse of paper. But, what I want to do is establish an individual page for each student where I can place notes, grading commentaries, absence issues, and the actual grades. It's basically the index-card system converted into TabPC tech. My thinking here is that this kind of record keeping might actually be best done through the stylus rather than the keyboard, although I would have to experiment with both. But, for example, I could have individual meetings with students about their papers during which I could take notes directly on these pages without having the annoying distraction of typing while they or I spoke. Writing is simply a little less intrusive/threatening. This would also possibly make such meetings more concrete and useful for the student, rather than just informal chat sessions.”

Making learning fun. Generally, digging around for more fun, creative, effective uses. “Everything from work-shopping student papers to developing multimedia presentations. I found PowerPoint to be ineffective in my classes, so I wouldn't recommend it for anyone teaching in the humanities. Also, although the tablet PC is great for writing lectures, it doesn't really help in giving lectures in any material way. So the benefits are limited there. On the other hand, there might be something to using a blank page to brainstorm an analytical response to a problem. I could, for example, walk in and ask students to examine imagery in Stephen Crane's Red Badge of Courage, and function as a scribe for their thoughts randomly locating bubbles of ideas and letting them draw lines of connection having them develop connections.”

Developing an open-learning classroom. This will mean that the students will need to lead most of the discussion, derivations, and learning. “While this may sound like a no-brainer to those of you in literature, student-led derivations are generally not the style in engineering. In this case, I hope to use the tablet PC to allow the students to contribute to recordable discussions and derivations. Combined with the Audience Response System, my students will probably either love this approach or stone me.”
Use the tablet during office hours. Part of the problem is that students still come in with papers printed out on paper, rather than electronically. One solution would be to have students send files electronically before they meet in class. Once in my office connect the tablet to a regular screen so that student could see what was being worked on.

Utilization of new tablet specific software. Classroom Presenter® is a tablet-specific software that seems complicated but does address many of wishes that people had expressed. The advantage is that the program offers multiple views while in presentation mode.

Summary

This technology necessitates the need to rethink the teaching pedagogy of individual classes. I feel that the improved interface allows for the best possible situation regarding quick and efficient gathering and presenting of raw data and information. It allows for immediate sharing and group collaboration via wireless networks. However, the best scenario requires in class LCD projector, classrooms installed with wireless routers [or wireless networks], and, ideally, all students having a tablet. New software is becoming available to read and open Windows Journal files on standard PCs. In any event, the speed of learning and covering information is impressive with this device. It certainly improves the efficiency of the instructor regarding collecting, collating, and dispensing data and information as well as recording progress of intended goals of learning. As a drawing person, this is a natural fit for me. I now am now in progress of testing the dedicated tablet Slate PC. I am very happy with this device as I feel the keyboard is archaic and outdated in its interface, especially involving spontaneity of the creative process.

Additional Information

Classroom Presenter is an alternate method for using tablet PC in lecture. Link to the download and information: 
http://www.utexas.edu/computer/tabletpc-rap2002/
http://www.uic.edu/depts/accc/seminars/tabletpc/index.html
http://esd.mit.edu/HeadLine/tablet_pc_article.html
http://www.cs.washington.edu/education/dl/presenter/
http://einside.kent.edu/?type=art&id=100
http://appl003.lsu.edu/ocsweb/emergitech.nts/$Content/Contact?OpenDocument
http://www.cs.brown.edu/research/graphics/research/music/tpc.html
http://www.tabletpcuniverse.net/
http://www.microsoft.com/windowsxp/using/tabletpc/default.mspx
http://corp.zinio.com/tabletpc.html
http://www.zinio.com/main  Downloadable magazines
www.xthink.com  Math calculator and problem software [you write, it solves]

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