Addendum to Tablet PC Proposal

Complete Faculty Testimonials

"I love my tablet, but for all the wrong reasons. (Sorry). I do use the "write on the screen" function extensively in some of my classes, and really enjoy it—no wasted time erasing, no worrying about bad markers, and I can face the class while I write. The students like it as well, but I suspect that's a whiz-bang appeal.

The thing I really love about the tablet is that it has saved me a fortune in chiropractor bills: it's /light/. I love that. It just isn't as painful to carry. (That's the wrong reason, and I suspect it won't help your case.) There is also, unfortunately, a crushing fatal flaw to it: I am now on my third hard drive. I lost a semester's worth of PPTs and 500 photos of El Salvador on the first crash. Luckily, everything else was backed up... I have two 8 gig jump drive now for backups, one at work and one at home.

Having said all of that, if it were offered again next year, I would sign up for one in a heartbeat."
-A. Renee Gutiérrez

"I have made use of my Tablet laptop in a number of ways since requesting it in the first round of distributions a couple of years ago. I'm in the Computer Science department.

One of the main ways I have made use of the Tablet PC is to use a combination of the Tablet writing capabilities (in the Journal and OneNote applications) and Windows Media Encoder screen capture capabilities to record lectures as I teach. I post these videos online so that the students can watch them later for review. The ability to capture voice as well as everything I write on the screen allows the lectures to be recreated in a much more dynamic way than if I just posted power-points or the like online. I also post tutorial videos before labs and to explain techniques that I didn't have time to cover in class.

I have also made use of the Tablet to do grading directly on student submissions. In Computer Science, I have to review a lot of student code and annotate it with errors they have made and corrections they should make. This whole process is paper-less with the Tablet, and is much more time-efficient (I can return the papers sooner, because I don't have to wait to see the students to return them by hand; the alternative for staying 'paper-less' would be to type corrections on their code, but that is difficult for both of us to separate from what they originally wrote).

I am active in study abroad, participating in the EuroTour (35 days of travel each summer) the past 2 years. The Tablet, because of it's size, has been a perfect for traveling for work. One might argue that for travel one should move even further to sub-laptops (like the EEE-PC), but many of those are too small.. the Tablet actually feels like a full-size laptop when being used. The long battery life of the Tablet (because it's designed to be carried around) and the ability to swivel the screen and write directly on the screen facilitates teaching on the EuroTour, as I can directly lecture and draw
examples on the laptop in situations where I don’t have access to actual lecture facilities (we spend a lot of time on trains on the trip, so this is fairly common).

Usability issues:

Smaller hard drive (on the X60) fills up pretty fast"

-William Turkett

"I am happy to share with you some of my tablet computer teaching experiences (acquired over the past six years), and hopefully you will find this anecdotal evidence of value to you as you work with CIT to secure some sort of tablet computing program moving forward.

I began teaching with a tablet PC at the University of Ontario Institute of Technology during my one-year appointment there in 2003-04. I was so excited by the powerful teaching and learning tools it provided to me that I immediately wrote a long letter to Jay Dominick about my experiences upon my return to Wake Forest, urging him to consider this option for Wake Forest faculty (and students!). My enthusiasm for the tablet has only grown since then, as has, I believe, my students’ enthusiasm for my use of the tablet in our classes.

The tablet is a unique and irreplaceable teaching tool in the following capacities:

1. retaining a searchable record or archive of hand-written lecture notes that are presented during class (rather than a simple compilation of pre-prepared PowerPoint slides).
2. annotating complex diagrams or illustrations or data tables during their presentation in class (using standard tools like PowerPoint or Word or Excel).
3. more "natural" and constructive hand-written editorial comments and feedback on electronic copies of student papers and assignments than can be achieved using the editing features of Word
4. prelaboratory or prelecture instructional presentations can be recorded using the Tablet and software such as Camtasia, which provide an invaluable resource to students prior to class and frees up more time in class (or lab) to spend on problem solving or experimentation or discussion.

As you know, I have been happy to share my enthusiasm for teaching with tablets, and have presented two instructional sessions for the WFU Teaching & Learning Center (one at the Teaching & Learning Center Fair in Feb. 2008 and one TLC lunchtime workshop in April 2005). I have taken the liberty of attaching to this message a handout that I prepared for those sessions, which I hope will be helpful to you.

Simply put, the value of the tablet in teaching (especially teaching chemistry) cannot be overstated. In a field such as ours, which requires a lot of mathematical derivation and symbolism, and a lot of graphical and illustrative representations of data and molecules and systems, and a sequential presentation of core or foundation principles, the tablet simply cannot be replaced by any other teaching tool that I know of. Perhaps this is why faculty members in my department have adopted the tablet in such high numbers. I
hope with all sincerity that the CIT is able to devise some program that will permit the continued use of this wonderful resource in our classrooms and laboratories."

-Christa Colyer

"I've been using my tablet for about two years now. Primarily, I use it for teaching purposes. First, I use it in the classroom. I don't use it to give the bulk of my lectures, although I know faculty who do so. (And students like it--I have had students comment unprovokedly that the tablet is better than the blackboard for readability and because nothing has to be erased.) What I mainly use it for is to show students a computer-created graphic and to mark it up in class to emphasize important features and annotate it. The main program the math department uses for teaching--Maple--is now compatible with Tablet technology and one can draw directly on plots within Maple. This is an extremely useful function for explain visual concepts in math class.

Second, I use my tablet to write solutions to assignments. Math is very time consuming to type up, so this significantly increases the number of solutions and handouts I can produce. I used to write things on paper, scan them in, and ftp them to myself. The tablet cuts down the time spent by a factor of two at least and, more importantly, allows me to correct typos and make other edits without redoing the entire process. These computerized solutions allow me to save a great deal of wasted paper.

A third use, which I do only in advanced classes, is to comment directly on students' submitted projects without need to print them.

I also use the tablet for research when working with collaborators at other institutions. The tablet enables me to comment directly on .pdf drafts of work and email them straight back to my collaborator. This function is also extremely useful in committee meetings. The amount of paper which I have to print for meetings has dropped dramatically since I got my tablet.

In sum, while I may not be using the tablet for cutting edge innovation, it is a significant help to me in doing my job on a daily basis. It helps me to present complex mathematical ideas in class. Moreover, if I lose it, I will have to print or xerox hundreds of more pages per month and I will lose a great deal of time transferring things from screen to paper and back again, which I currently can just do on my tablet.

Personally, I think it would be reasonable for the university to provide a tablet option with full IS support, but have a "cost-sharing" endeavor with the departments or individual faculty involved. I wouldn't mind having to put up some special funds or ask my department for a small amount of funding to help defray the additional cost of the tablet.

Otherwise, I'm going to have to ask my department to just buy me a tablet, which will cost the department much more, and then that tablet won't be supported by IS. As a side note, even if the university decides to drop tablets completely, I think they need to offer a "small laptop" option. The full-size ThinkPads simply are not feasible for people
who travel a lot. The small size, light weight, and long battery life of my tablet are nearly as important to me as the tablet functions."

-Sarah Raynor

"I will say I love my tablet and don't want to lose it! I would even be willing to pay the difference between the normal ThinkPad and the tablet (maybe I shouldn't say that but it's true), or replace less often to get the tablet.

Mostly I use my tablet as a compromise between writing notes on a chalkboard (or whiteboard) and using PowerPoint. That is, I prepare PowerPoint lectures but then can also annotate my lectures and post them after class so students can have the best of both worlds, as it were. I can pre-load the basics of a lecture for convenience, but they also have the real-time note-taking. I primarily do this for the CHM370 Biochemistry course I teach, where there are a large number of complicated molecular structures that I show, and simply sketching them on a chalkboard doesn't do justice to their structure (I don't mean I'm too lazy to write out the structure, we're talking about protein structures or large nucleic acids, or membrane structures). But when I used to try switching between a PowerPoint lecture and the chalkboard, for example when writing out enzyme mechanisms, where we're zooming from protein structure down to atoms, my students would hate the delay of turning off the projector, raising the screen, etc so I could use the chalkboard. This way I can do it all on my tablet screen and they also have it later for review.

The other main use of the tablet is preparing answer keys for exams, lab reports, homework sets, etc. This saves paper and I no longer need a scanner! Also I save paper by not printing out student papers, I just grade on the tablet and send it back to them.

-Rebecca Alexander

"The tablet PC has proven to be an indispensable tool both on and off campus. The ability to use the tablet in conjunction with an external projector effectively gives me a blackboard wherever I am, even when one doesn’t exist. This is particularly valuable when I am giving professional presentations, which are typically not in classrooms and therefore don’t have the typical classroom tools such as black or white boards. It has also proved incredibly valuable this term as I have been on leave pursuing a Fulbright grant in Austria. The tablet is also very valuable in the classroom at Wake Forest. It allows me to illustrate things in class, and then save those illustrations and distribute them to students electronically. This allows students to focus on understanding what I am talking about, rather than on writing down what I am saying. This has really improved my ability to get my message across to the students."

-Jon Duchac

"I am a paleontologist/ biological anthropologist and the tablet has been a godsend for my research. My classes are purposefully low tech, because I try and do as much hands-on (bones, casts of skulls, etc). as possible. However, having a tablet has made the world of difference in terms of my research and publications. As a paleontologist I sometimes name new fossil species. In fact, I currently have a paper in review at a top journal
(Journal of Human Evolution) naming a number of new species of monkey. The rules for naming new species are very strict (as are editors), and one of the things you must do is demonstrate very clearly that your new taxon is distinct from any known species. The way this is done is by publishing a paper that includes very high quality comparative photographs, and so I spend an enormous amount of time working in Photoshop. The tablet has been a godsend because of the stylus function, and the fact that I can rotate and fold the screen down and use the stylus directly on the screen. This gives me a degree of control over my illustrations that no mouse does. Really, I struggled and struggled with Photoshop using the mouse. I found it really clumsy for the detailed work. But having a stylus that allows me to draw directly onto the screen has made all the difference in my ability to convince people that I have the new species I say I have. Also, competition for space in premier journals is stiff, and the bar for publication is set very high -- even higher than it used to be -- and excellent illustrations are no longer "a bonus" but are now required. Also, all editors know that authors have computers that are capable of superior quality photographs, and so they now simply reject papers where the artwork looks sloppy or is otherwise not "up to snuff". Since having the tablet, I have had compliments from co-authors, editors and reviewers on the quality of my illustrations, including that it was the quality of the illustrations that convinced them I did indeed have a new species.

It would be a big step backwards for me to not have the tablet's functions. I hardly ever use the DVD drive but I use the stylus and touch screen all the time, so having an external DVD drive is fine. To have to have another kind of laptop because it is more cost effective for the University seems to me "the tail wagging the dog". I feel the primary purpose of the technology is to support the research and teaching needs, rather than having us use what is expedient for the University."

- Ellen Miller

"In foreign language courses, the TabletPC offers a wonderful tool that facilitates and enhances student learning. A couple of examples follow.

In my French grammar classes, for example, I use the ink annotation tool: during class I project a PowerPoint document with exercises, and annotate by adding student answers on the computer screen as I would on the traditional blackboard (or whiteboard). The advantage is that I can then save these annotations: the students then have a record of the day's class activities, which I can post on Blackboard for their reference.

In all of my courses, I use the ink annotation feature to correct writing assignments. As in one's native language, writing in a foreign language is a process: students produce and turn in multiple drafts of a single assignment. My use of the TabletPC to edit those drafts thus offers the additional advantage of saving paper, and time: students are not required to print multiple drafts; they submit them on Blackboard or by e-mail; I annotate them on the Tablet; and I return the annotated draft to the student electronically."

-Kendall Tarte
"I've used the TabletPC in three classes I've taught in the past two years - one an introductory chemistry class (CHM111), one a two-semester sequence of major's labs in physical chemistry (CHM341L and CHM342L), and the final one a BS major's class in physical chemistry (quantum mechanics and computational chemistry). The uses that have become most important are different among the three courses.

In CHM111 I use highly-animated PowerPoint slides quite heavily, with interactive questioning and peer instruction via ConceptTests. For the most part, in that class, the TabletPC serves as the PowerPoint displayPC, controlled via wireless connection using a Cingular 8125 PocketPC/phone mobile device that is now called a Smartphone with Microsoft's new nomenclature. (During earlier pilot projects, students were issued similar smartphones, and they could respond anonymously to questions posed by the instructor; and the responses were tallied by the instructor's smartphone using a program called ClassInHand written by the IS R&D group. This gave the instructor very important and timely feedback so that real-time decisions could be made about class understanding and progress on a difficult concept.)

I found PowerPoint's live slide-markup capability too clumsy for regular use, and so I do not regularly draw on top of the slides using the built-in feature of PowerPoint. When I want to demonstrate a "paper-and-pencil" mathematical solution to a chemistry problem (an important aspect of learning introductory chemistry), I switch from PowerPoint to Windows Journal, the TabletPC's built-in note-taking program. That program most perfectly mimics writing with pen and paper. (It also uses an intelligent cubic spline smoothing algorithm, improving the instructor's handwriting in real time.) In addition, the program allows me to print the completed journal file to PDF and then post the file on the class website. Journal also allows picture files to be imported, and I use this feature to import scanned images or publisher-supplied content such as JPEGs of figures, tables, and pictures from the text if I need to use them in a problem-solving demo; otherwise, I import the same pictures into PowerPoint directly. I typically publish on the class website only PDFs of the PowerPoint used in class, after seeing attendance drop when I posted the full-animation PowerPoint slides so that a student could click through the file and feel empowered to skip class. (Recall that these are typically first-year students and they do not necessarily make good decisions.)

One additional program I use - but only outside of the classroom so far - is the third-party, real-time screen/audio capture program called Camtasia. One repeated request I receive from first-year students is to demonstrate more problem-solving in class. A thorough demo can take 10-15 minutes of class time. So instead, I present the problem in class, but tell the students that the full-motion video and audio of my worked-out solution is posted on the class website. I create those Camtasia files in my office using a high-quality studio condenser microphone and the TabletPC, speaking as I write out the problem steps. Working with a minimal script to simulate "live" problem-solving, I record straight through, and then only lightly edit the file to remove the inevitable stammers, coughs, and other annoying audible distractions that you never realized you committed. (Because the audio and live screen video tracks are synchronized, removing audio snippets occasionally leads to distracting visual effects in the text written on the screen.) With practice, I can create a 15-minute video in 30-45 minutes. The benefit is
that the file is reusable the next time I teach chm111, so the return on investment is
reasonable for the instructor. The true ROI benefit is that students extend the time they
interact with the class material, essentially shifting class time into their own time. So far,
I have not had significant push-back on this.

For CHM341L/342L, in the past, the pre-lab expositions were very time-consuming. In
addition, because each team of 2 students did a different experiment during the lab, as
many as 5 different experiments were conducted each week, and pre-lab instruction was
very unwieldy. Typically, 5 experiments were presented in a marathon 2-3-hour "chalk-
talk", and a second such session at mid-semester introduced the second set of
experiments. Student retention of essential details was a problem, since 5-6 weeks
might pass between the pre-lab instruction and the students' conducting the
experiment. Using Camtasia and Windows Journal, I now record the individual
introductions for each lab, post the videos on the class web site, and make the students
responsible for viewing the video for their assigned lab before coming to lab. (Weekly
questioning by the instructor insures that the students take the videos seriously.) This
year I am expanding the videos to include demonstrations of the techniques essential for
the lab, or the operation of specialized equipment in the lab. Again, the recording and
editing time investment is at least 2:1 with respect to finished videos, but after two
years, the instructor breaks even. Again, and more importantly, the instructional impact
is measurably higher than it was with the previous method, as evidenced by reduction in
student question during lab and elimination of common errors during the lab. (Some
students even bring their laptops and re-play sections of the video when setting up some
of the more complex procedures or instruments. Again, the instructor can ask questions
to ensure that students have in fact viewed the videos before class.)

For the CHM344 class, prepared PowerPoint slides are not used, and the instructor uses
Windows Journal on the TabletPC projected on the screen to simulate a "chalk-and-talk
presentation, with which students at this level seem more comfortable. PDFs of the in-
class notes are posted immediately after class, giving students an opportunity to check
the accuracy of their own in-class notes. The instructor often reminds students that the
PDFs are no substitute for the students' own notes! The class is quite math-intensive,
and calculations using multivariable calculus are performed with Maple, the symbolic
math package licensed on campus and used by the Mathematics department in the
calculus classes. Complicated Maple programs are often presented briefly in class,
followed by homework exercises to further engage the student with the calculations.
This is another ideal use of Camtasia to record the Maple window while talking about
the calculation in progress (as before, recorded outside of class in the instructor's office).
Again, providing recorded demonstrations can free up class time to focus more class
time on addressing student questions and more higher-level learning. Similar to Maple,
the computational chemistry modeling program Spartan is demonstrated live in class
and subsequently used for homework assignments. Camtasia recordings are again ideal
for providing students some of the class material in a format that moves some of the
responsibility into the students' out-of-class time. What I find is that my videos are
MUCH longer (often 2X) than the time I had previously spent in class introducing the
particular calculation. So the students are getting a more thorough instruction and
extended engagement with the material.
I have looked at MicroSoft’s OneNote, a more extensive notebook-paradigm screen-capture program. There are many good features of OneNote, and the new 2007 version of the program includes an array of new features. Handwriting recognition is improved, and the "jump-to" feature can take the instructor directly to the hand-written item. OneNote 2003 (the current load version) can record an audio track along with real-time screen capture and other powerful features, but Camtasia's editing ability leads me to prefer Camtasia over OneNote. Others may have had more extensive experience with OneNote, and I'd like to hear about their successes.

Finally, I’ve also tried (and so far rejected) using Camtasia (or even an audio-only recording program) during class with a portable microphone to record the class session. The production values are quite low and the audios/videos are painful to hear/watch. I am of the opinion that the true value of live podcasting of classes, even with accompanying video, is highly overrated (over hyped). Anything that encourages students to cram for a test by watching a mind-numbing sequence of live classroom videos is likely to be unsatisfactory. I know that a number of instructors have differing opinions, and I’m certainly willing to discuss this issue."

-Bob Swofford