Tablets in the Classroom

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6 June 2012

Disclaimer

The views expressed are the author's alone and do not represent those of the Defense Acquisition University, the Department of Defense, or any U.S. government agency.

Outline

- Context
- Our Findings
  - Capabilities & Limitations
- Value Proposition
- Student Feedback
- Considerations
- Summary
- Questions and Discussion

Context

- Executive-level course at Defense Acquisition University
  - 10 weeks long
  - Large amount of printed material – Five Binders (~2,100 printed pages)
- Students
  - Over 90% have one or more Masters degrees
  - Typical age – 38-44 years old

Pilot Events

- Market research on leading devices
- PMT-401 student (early adopter) – April 2010
- Pilot hardware
  - Five each: Nook and Kindle DX
  - Ten iPads
  - Two MacBooks
  - Temporary use of MiFi device for iPad set-up
- Assessed device capabilities/limitations
- Assessed preparation of content
- Initial student pilot in September 2010

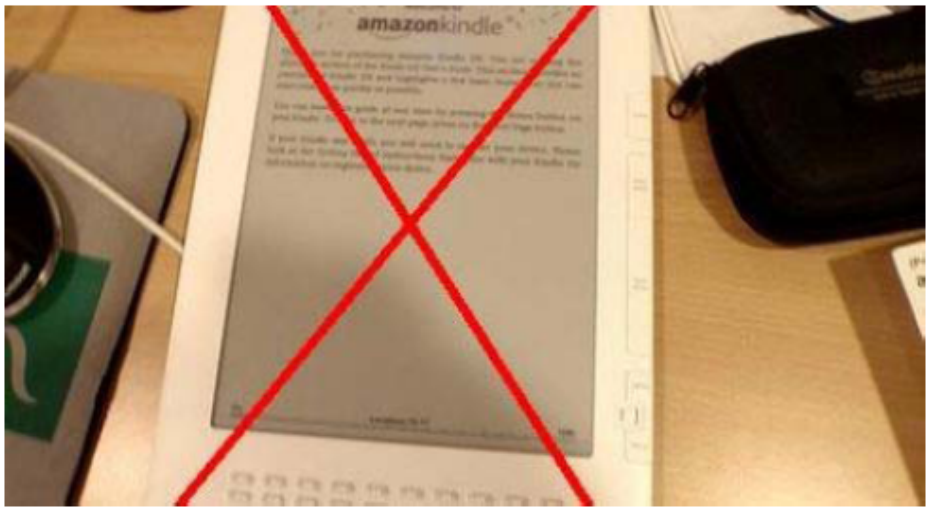
Experience at Other Schools

School stories > Business School News

Business School News: Kindle DX Fails Darden Business School Test

Darden students say "no" to Kindle DX and a Dubai monarch delivers speech at first EMBA cohort

Submit a story



Princeton, Arizona State University and now Darden Business School at the University of Virginia have all given the Kindle DX a big thumbs down. Darden Business School MBAs were given the chance to test run the second generation e-reader device, as part of a strategic move by Amazon to branch out into the education world. According to Ars Technica, when Darden MBA were asked if they

Value Proposition

- Convenience
- Cost
- Effectiveness

Convenience

++Portability

- Battery Life/Charging
- Readability
  - Bright sunlight: + Nook, Kindle; - iPad
  - Eye Strain
- Scrolling through documents
  - eReaders optimized for linear consumption; not well suited for jumping back and forth as done with studying

Convenience - Portability

Before

After

Photos courtesy of CAPT Jamie Engdahl, Nook user

Cost

-- Limited cost saving compared to printed books
  - PMT-401 analysis
    - Five student binders, ~2,100 pages cost <$10 for DAPS printing + $4/each for five binders = <$30/student/offering
      - Kinko's retail – about $110/student/offering
  - SSCF analysis
    - $15 savings for 10 books ($138 paperback vs $123 eBook)
    - Two titles not available in eBook format
- Capital Cost (incl inexpensive case)
    - $100 (Kindle w/o ads) to $860 (64GB iPad 3 w/3G)
    - Non-DAU computer(s) to convert materials & load content
    - Classroom charging infrastructure
- Connectivity Cost (if needed)
    - 3G plans cost $25/month or more
- Time and effort to convert and manage eContent

http://schoolsdatabase.org.uk/will-apple-create-the-all-ipad-classroom/

Effectiveness

- Study habits
  - Reading for pleasure – linear consumption
  - Studying – non-linear consumption
    - Highlighting & Annotation functionality – a must
- Ability to quickly go back and forth between documents
  - Nook & Kindle – very limited
  - iPad - better
- Concern for learning distractions

Issues & Challenges

- Content
  - File Conversion
    - Highlighting and annotation capabilities
    - Formatting, incl rendering of tables and graphics
  - Loading Content
    - USB connectively for Sony, Nook, Kindle
    - WiFi connectively for iPads
  - Configuration Control
  - Support for different eDevices (Sony, Nook, Kindle, iPad, ...)
- Administrative Workload
  - Inventory control
  - Support & Maintenance
- Technology Refresh
  - Fastest evolving consumer electronics category
- Student preference for paper-based materials
- Americans with Disabilities Act concerns if use is required?

Level of Effort

- File conversion
  - 0.5 to 3 hours per case study, depending on length, content and complexity
- Loading content
  - 1-3 minutes/document to load on Blackboard
  - 10 minutes/student to load Nook/Kindle (USB) every two weeks
  - 1-3 minutes/document to load iPad (WiFi) once connected to Blackboard
- Content management
  - Increases with the number of eDocuments under management

Lessons Learned

- Limited benefit to just providing electronic versions of existing paper materials
  - Few students own eReaders (7 in 10-05; 4 in 11-01)
    - Typical PMT-401 student is 38-44 years old; graduated from college in 1980's, early 1990's
  - Overhead exceeds benefit
- Supporting multiple devices in a rapidly evolving consumer electronics category
- Loading content
  - USB (Nook/Kindle) versus WiFi (iPad)
- First pilot failed to consider netbook/laptops users
  - Solution: Adobe Digital Editions and MobiReader

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Are Printed Textbooks Disappearing?

More and more students are learning on iPads

5 March 2012

Photo: Yunus Arakon/iStockphoto

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A recent PC World article reported that an increasing number of preuniversity schools are using iPads in the classroom. Teachers interviewed said the tablet computers are especially helpful for students with special needs. Although they are still in the minority, some teachers use iPads to introduce or enrich textbooks' content. And Apple recently launched a new section of its e-book app store specifically for textbooks. The article quotes college students as saying that they've

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REGION NEWS

http://theinstitute.ieee.org/opinions/question/are-printed-textbooks-disappearing

Where We Are Today

- Over 70 (of about 90) case studies have been converted to ePub & MOBI formats
  - Not all cases planned to be converted due to complexity of details or copyright issues
- Blackboard used to distribute eCases for iPad users
- Researched alternative methods to load iPads
  - Email content to personal email accounts
  - Web-based file server
- Advise incoming students of availability of eCases
- Offered loaner devices to student volunteers wanting to try eCases – solicit feedback
  - Only a few students seems willing to try it, fewer last more than a couple of weeks

Approach Going Forward

- Provide eContent, not hardware (hardware agnostic)
  - Getting content on the devices
  - Managing content - 70+ cases*, plus presentations, handouts, supplemental materials
- Additional devices to support – i.e. Motorola Zoom? Samsung Galaxy? RIM Playbook? Kindle Fire? Google Tablet?
- Future: Develop content that leverages device capabilities

*Complexity of some cases exceed current capabilities of eReaders

Summary

- Tablets, for learning, are like electric cars
  - Lots of promise
  - Likely to supplant the status quo
  - End result likely to be different than we can imagine today
- It's not about the technology**, sort of**
  - The technology is an enabler
  - The technology, in and of itself, is not the solution

Questions & Discussion

Links

http://schoolsdatabase.org.uk/will-apple-create-the-all-ipad-classroom/

http://theinstitute.ieee.org/opinions/question/are-printed-textbooks-disappearing

Back-up

Will tablet computers completely replace printed textbooks in the classroom? Why or why not?

The answer is a qualified maybe. Handheld devices are ubiquitous. Publishing textbooks electronically is much more cost-effective than their paper counterpart. Correcting errors is easy. I.e., download an update And, one can easily search an electronic book, while searching the traditional medium takes a lot more skill - and persistence.

However, **I need to interact with my books**. I want to write comments on the pages, make corrections, fold corners, etc. One comes to love a well-worn text. I can't see myself loving a well-worn PDF, nor enjoying the tactile feedback I get from reading it. And, another thing. Electronic texts seem to have a "shelf life." How can a book have a shelf life?

Maybe? Books are more than tools. If you want to replace the book, make the new thing so much better that it's obvious that we should switch. We're no where near that yet. So, give me an electronic book I can enjoy and make mine. The format needs to be right. **The interaction needs to be right.** And, because it's just bits and bytes, it costs five bucks.

Bottom line? Thanks, for the moment I'm good with printed texts.

http://theinstitute.ieee.org/opinions/question/are-printed-textbooks-disappearing

"Will table computers completely replace textbooks when I'm learning a subject?"

The answer would be no. My preferred method is to have a printed book that I can thumb through and mark on, all of which is augmented by access to the internet with a computer. This is the method that I've found allows me to learn the subject most quickly and to the depth I desire.

http://theinstitute.ieee.org/opinions/question/are-printed-textbooks-disappearing

Will tablet computers completely replace printed textbooks in the classroom? Why or why not?

Having used an eBook in a classroom last semester, I found the bigger questions to be: How do digital formats change the absorption of content and the retention of information? **With eReaders there is a cognitive shift in how you see a text** -- the actual layout of the page. As someone who remembers where to find something in a book based on the layout of the page, I found eReaders to be almost impossible to skim and find relevant passages. Similarly, the dynamic pagination that adjusts to readers' preferences, such as with font size, create problems for class discussion grounded in the reading. How do you draw attention to the diagram on page 22 when, quite literally, everyone is on a different page? Digital books have already invaded the classroom; professors now have to catch up on how they affect their teaching.

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Student Feedback – Nook User

I did not like the eReader concept at first until I developed specific workarounds to compensate for the deficiencies below. On the positive side I had developed a usable style during the third case and now actually prefer the eReader to the binders for the cases where they are available. I would recommend that you do more focused studies on the preference for the electronic devices because I imagine paper/electronic will be very dependent on personal preference for students. I really like your, "buy and bring your own" philosophy although it would be good to have a small loaner pool for students who have never used a device and might like to "try before they buy."

There were a few cases that had figures that were unreadable. I did not take notes on which ones but I will endeavor to forward any readability issues to you if I find more.

For the 10 weeks of PMT401 I would have definitely bought my own eReader for the course if a majority of the cases were available in electronic format.

Deficiencies (Nook):

1. Difficult and very slow to annotate documents with notes. Notes were not visible on the page so were not helpful. (Pri C)
   +Workaround is to carry a separate notepad.
2. Some complex figures are unreadable (Pri B)
   +Looks like if most were to be rotated 90 deg they should be readable.
3. Battery power is required to utilized eReader vs paper (Pri D)
   Missed opportunity to use the eReader even though, truthfully I was carrying the eReader and would not have taken a heavy binder.
4. Difficult to turn pages rapidly with Nook eInk display (during study and class - Pri C)
5. Nook cannot open Acker Library eBooks (their books are in incompatible "Adobe Digital Editions" format) (Pri D)
6. Nook controls are slow and not always intuitive. Not the friendliest device. (Pri D)

Enhancements (Nook):

1. Much more portable than paper and binders.
2. Storage and recall of cases and reading material is much improved. Students are more likely to reference cases when they are not buried in a binder somewhere.
3. Separate notes pages can enhance creativity and mapping material from text to visual context.
4. Can store/read additional course books in eReader (less expensive and more portable if they are available).
5. Much easier to keep material organized in the eReader. Would make reading, filing, and archiving all of the loose papers much better if available in eReader format.
6. Training on the device was very simple, I was able to master the controls during the first study session (~1 hr).

Student Feedback – iPad Owner

I like eReader for PMT-401 cases! The eReader gives me ready access to all cases immediately for cross reference, allows me to easily take my cases with me to read during gym time or waiting in line etc (i.e. multitasking...yes I know that studies have shown that multitasking is inefficient, but when waiting in line at Chipotles for 45 mins, one can do a lot of reading.) I can also make annotations in the reader although I have to click on them to see them.

Issues: Graphics don't always come through well. Additionally, during class, people will refer to page numbers and these do not correlate with the eReader.

I would recommend further optional use of this system. To be fair, I am a digital learner. I take notes within my computer. My office at Tinker is 100% devoid of paper. I hate paper. During PMRs at home station, I do not ask for paper slides, neither do I make notes on the brief. At most, I'll make notes in my to-do list on my Ipad for follow-up.

Many like writing notes on the paper/brief that they are reading. For this reason, I'm not sure that at least for the next few years, 401 can get away from paper cases until the digital generation fully matures. I think it is a great option for “geeks" like me though :)

March 2011

Student Feedback – iPad Owner

For me, the text is the important thing, not the medium. The decision not to utilize the eCases was strictly a personnel choice, I'm use to handling a text book the feel and ease of looking at two or more pages at once, highlighting text and knowing I'm am close to completing the assignment ,with an iPad I am scrolling up and down, with the iPad I would find myself zooming in and out just to be able to read the text.

I tend to develop eye strain when reading for prolonged periods of time on the iPad, text books don't cause me any significant eye-strain. Another thing is that paper text books don't need power to function and can be read anywhere with sufficient light. If you make notes in them, the notes are there to stay and can be reviewed whenever I want. With text books, I don't have to worry about hardware issues, if my IPad doesn't turn on or crashes I cannot complete the course work assignments, after all the IPad is a computer so you can encounter normal computer problems, battery life and software bugs which could lock up the system.

iPad's have to be recharged after every use. Hard covers will have to be mandatory and each student would require a back up the iPad because is not very durable if you spill something on them, chances are that's the end of your reader not to mention scratches, dropping them, lost or stolen, and so on.

Choosing text book or iPad I believe is a personnel choice, and if a student asked me I would recommend text book based on my preference.

March 2011

Student Feedback – Kindle User

Thank you so much for allowing me to test the Kindle for course work. I have never used an e-reader before, but have more than 25 years of PC usage and 25 years of IT delivery background. I am in my mid fifties, do PC tasks all day long and use the PC at home all the time. I connect from my home to the work computer several times each week to perform work. I support the five PCs we own for my home use and my three family members. I am also an avid Blackberry user.

After using the Kindle for a few cases, I felt that it was not adding to my understanding of the case. I actually found that I retained less from reading a case on the Kindle

a. I usually underline and highlight as I read. I find it much more effective to do that on paper that on an electronic pad. My highlight and underline stands out as soon as I glance on the case.

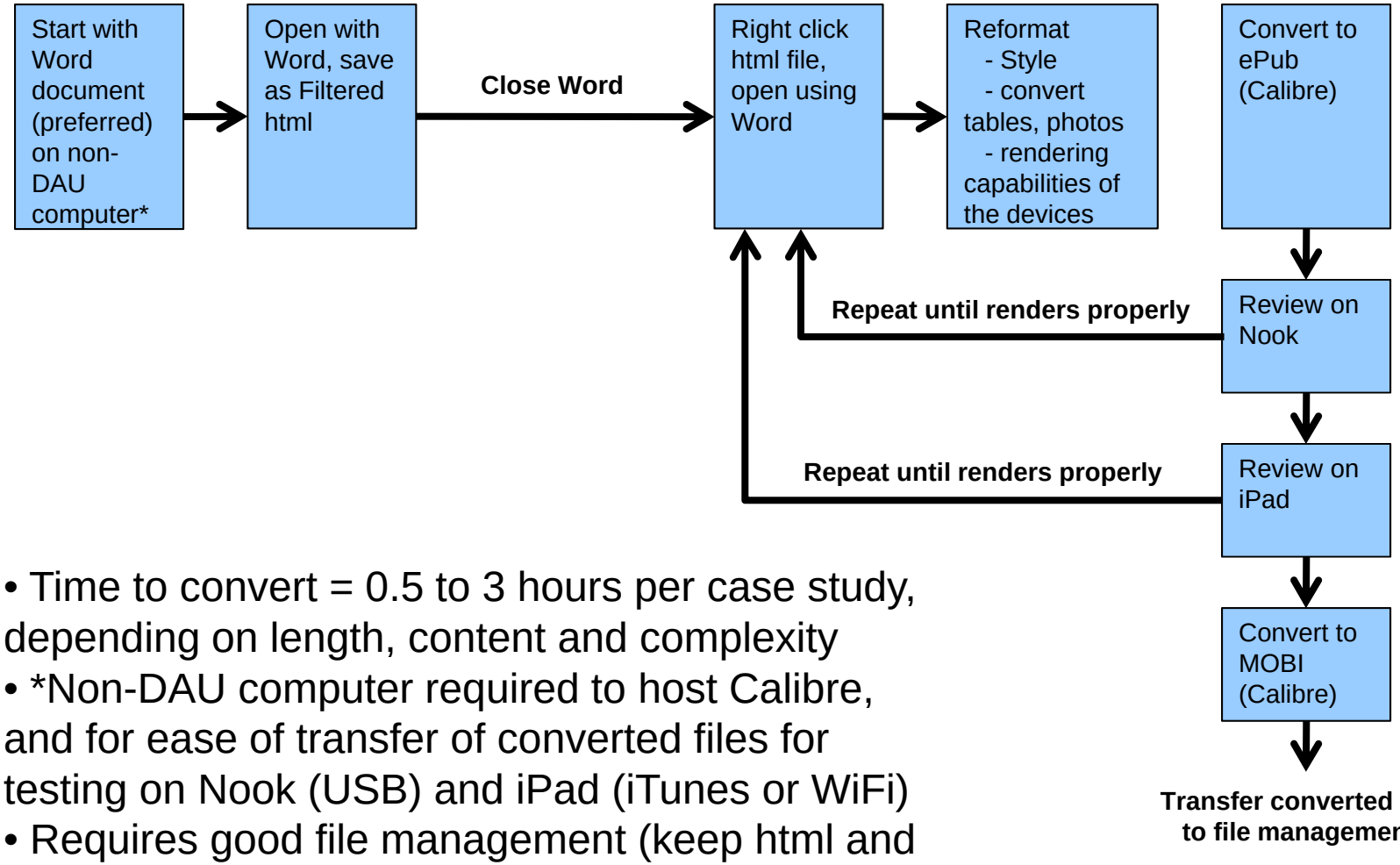
b. I did not see much benefit in having on-line search capability

c. I found it harder to follow the case and look things up in the class as we were discussing the case. Plain paper with highlights is easy to work with. An e-reader seemed less effective for me.

I very much appreciate the opportunity to use the e-Reader. As you know I decided to turn it into DAU after a few days of use. I felt I learned less through the e-Reader and did not want to take any risk to use a “cool” tool and lose out in learning.

March 2011

ePub/MOBI Conversion Process



- Time to convert = 0.5 to 3 hours per case study, depending on length, content and complexity
- *Non-DAU computer required to host Calibre, and for ease of transfer of converted files for testing on Nook (USB) and iPad (iTunes or WiFi)
- Requires good file management (keep html and supporting files synced

ePub/MOBI Conversion Process

- Start with Word document (preferred) on non-DAU computer
- Open with Word, save as Filter html
- Close Word
- Right click file, open using Word
- Reformat
  - Style, rendering capabilities of the devices
- Convert to ePub (Calibre)
- Review on Nook
- Repeat until renders properly
- Review on iPad
- Repeat until renders properly on iPad
- Convert to MOBI (Calibre)
- Transfer to file management