

*iPad or iFad – The reality of a paperless classroom*

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## **Abstract**

This paper will discuss the benefits, problems, and possible solutions to teaching a Microeconomics class in a completely paperless classroom. The use of the iPad is examined as a tool to move students from the typical technology infused classroom into a truly mobile environment.

The advent of the iPad has fundamentally changed a teacher's ability to mobilize the student's learning environment, freeing them from the linkages typical lap top based computers have on access and interaction with other students. While the iPhone made paperless classroom possible, the iPad with its true mobility has made the paperless classroom practical with its functionality and versatility. The use of online texts, virtual games, electronic documents, group projects and teaching tools will be examined. The use of several applications and tools (such as Blackboard, Numbers, and QuickOffice) will be examined outlining the benefits and limitations to their use in the classroom.

Student perceptions of the class, along with class activities and frustrations will be covered along with the instructor's perceptions of the advantages and limitations of this new technology. A comparison of a traditional Macroeconomics class with compulsory lap-top usage will be made with the Microeconomics iPad class giving an interesting insight into the differing use patterns provided by the iPad's truly mobile nature. The use of Blackboard in both classes will allow the comparison of connectivity by hour for the semester. Analysis of these patterns should indicate if there truly is a mobile advantage and difference between the mobility of the iPad when compared to the more fixed nature of the lap top computer.

Insights into the changed dynamics of classroom interaction will be given, comparing the traditional laptop with the iPad.

## **Introduction**

During the Fall semester of 2010 we conducting research into the use of iPads and iPad applications that help an instructor manage the classroom environment in a truly paperless way. In August 2010 I was approached by our Mobile Learning Initiative team to create and present a Microeconomics course that was completely paperless using the newly released iPad from Apple. Creating a course from scratch with only a few weeks to prepare the course presented some challenges. A truly paperless course required the combination of many tools that recreated or improved on existing paper based systems currently in use in the classroom.

The term "paperless" has many meanings. My goal as an instructor was first to actually use no paper products at all in the classroom. This had the effect of having to rethink course content, course presentation, testing, communications, and activities. The effect of going

paperless was in fact an additional benefit rather than the primary benefit. The true goal of the course was “Mobility”. The ability to access any and all course information required to complete the course from any location in the world, at any time, for any purpose. To facilitate this mobility I structured the course to use the tools described in this paper.

### **The Apple iPad**

The Mobile Learning Initiative at ACU has been instrumental in placing tools in the students hands that provides twenty four hour a day seven days a week access to the ACU learning environment. Each student has an iPhone that allows both web access and the use of applications designed by ACU or available from the iTunes store to facilitate learning in the classroom. While the iPhone made a truly mobile learning environment possible it had its limitations. The iPad took the capabilities of the iPhone and made them practical. The large screen, light weight, functionality of the iPhone, and available applications finally addressed both mobility and practical use for the student.

A class of fifty students were chosen to receive ACU sponsored iPads for a semester of research into changes in their learning environment using the iPad and iPad applications. The first day of class each student was advised of the research study and agreed to be a participant in the research at ACU. Students were given a contract describing the terms and conditions of the study and were given an iPad that would be theirs for the semester. At the end of the semester, students would return the iPad after testing was completed. The iPads provided were wireless capable (not 3 G) and one class period was spent distributing the devices , registering the devices on the wireless network, stress testing the wireless environment in the classroom, and downloading the required text and class iPad applications.

### **An Online Textbook**

ACU had been approached by McGraw Hill Publishing and Inkling (an applications development company) to test a new Microeconomics text using a new paperless application for the iPad. The Micro Economy Today (Schiller 2010) was selected as our text for the class. Using this online text, students would have access to their text in real time 24 hours a day from any location. A benefit of the iPad is its mobility (easy to carry) and functionality (music, video, calendars, pictures, and games) all of which encourage constant companionship with the user. The ability to remove the traditional text weighing up to 3 pounds and providing the student with instant access causes a fundamental change in study habits. Traditionally the student would have to carry the text or plan a situation where the text was available for study (the library, the classroom, or their dorm). The iPad freed the student from these fixed planned moments allowing random access as time became available from any location.

McGraw Hill worked with an applications software provider called Inkling. The Applications team at Inkling believe the following:

“Inkling isn’t about books on a screen. It’s about redefining how you work with your learning content and improving how you learn.” (Inkling, 2011)

The Inkling team set out to redefine how users worked with the traditional printed text and move these texts to the iPad (a multi touch device). The team at Inkling wanted to take traditional content and cause it to respond to the iPad user. At a touch the user can move from the text to television, newspaper, websites, magazines and instructor provided notes and links.

From a teachers perspective we believe that Inkling is getting it right. Student feedback during the semester has shown that students do not just want to read linearly through the text. Areas of interest needed to be explored and the linking capabilities of Inkling and the text allowed the students that “Aha!” moment as they followed areas of interest to broaden their ideas on various topics. Follow this link to see a video presentation on the capabilities of Inkling: <http://vimeo.com/14448256>.

### **Blackboard**

The class was set up using Blackboard and structured to provide students with the following areas of information:

1. **Announcements:**

Regular class announcements were entered and appeared on student screens as soon as they entered the course. Each announcement was also broadcast using an email copy as the announcement was made. Students could browse back by date to see past announcements.

2. **Staff Information:**

Contact information and background on the course instructor is provided through this screen.

3. **Course Information:**

The class syllabus and schedule are provided with active links to Inkling. Refer to Appendix A for the course schedule and syllabus.

4. **Course Videos:**

There were 42 video links available to reinforce various topics in each of the chapters. Students could select relevant chapters, then follow links to download and run video on their iPad.

5. **Module 0:**

At ACU we use a setup module to ensure that students are prepared to fully engage in the course. Module 0 asks the student to fulfill several tasks one of which is to provide an online introduction of themselves to the class. The students create a personal profile that introduces them to others. This module also contains tips and tricks on setting up other media devices such as laptops to run the required course requirements.

## **6. Chapters:**

The book was broken into 4 sections of 5 chapters per piece. Each section contains up to 5 chapters:

- Section 1 – Chapters 1 to 5
- Section 2 – Chapters 6 to 10
- Section 3 – Chapters 11 to 15
- Section 4 – Chapters 16 to 20

Within each chapter the student is presented with instructor notes, summaries, chapter assignments and ethical and biblical applications of each chapter topics. At the end of each Section there are two activities to finalize each section. The first is a class/group competition where students compete using a practice test and work as a collaborative group on their iPads to answer test questions using the InKling presented text. The second activity is a Blackboard test which comprehensively covers the chapters within each section.

## **7. Tools:**

Students can access their grades and email other students using this functionality. The blackboard grade sheet is automatically updated by the student's tests allowing them immediate access to online testing results.

## **8. Discussion Board:**

The discussion board is used for students to create and complete their online personal profile for the instructor and other students to review.

## **9. Blogs:**

Group discussions are handled using the blog site. Each group has their own blog area where they work on blogs about each chapter's assignment topic.

## **10. Glossary:**

A glossary of terms is provided allowing the student to search and research terms they may find in the text.

## **11. Class Media Links:**

During the semester we found that our class was the center of attention by the media. There were many columns, reports, articles, and interviews conducted by the media that were made available to the students through this link. The students enjoyed having these links and stories available as they could showcase these to their families during home visits

### **The Paperless Environment – Fact or Fiction?**

#### **Classroom Connectivity**

The introduction of 50 wireless devices to our already existing network surrounding room 217 or the College of Business Administration building presented few problems. The existing facility was already designed to carry wireless transmissions. On the day of our first class we had a wireless technology team available to monitor the wireless hub traffic. As students logged on to the system and registered their devices the wireless team made adjustments to the network to handle the additional loads placed on the system by the new devices.

Traditionally, these classes have also handled my macroeconomics class which requires the use of a 50 wireless laptops for each class period. The infrastructure for this technology was put in place several years ago and maintained in top condition by our team of system engineers. The macroeconomics class uses Blackboard and downloads and uploads files during each class period.

In designing the Blackboard course it was decided to minimize click through within each content area. As a student clicks on a chapter, most of the page content is downloaded as part of the initial click. This allowed us to present more information on a timely basis. If additional links were added it would have increased response time and lag as students wait to read the next content. Using our design, as the student reads the top of the page, information is already loading below ensuring that the student minimizes wait time.

#### **Class Activities**

In addition to regular class lectures, there were five types of activities in class:

1. PowerPoint or Keynote presentation of lecture slides.

The Microeconomics class involves a multitude of data presentations which immediately placed me in a dilemma. I had pledged to keep the class paperless using the Apple iPad. Given this pledge I found myself in great distress the first day of class as I tried to switch between Keynote, Quick Office, Document Camera, various web browsers, You Tube video,

and Responseware for attendance and student class feedback. The iPad does not let the instructor continuously broadcast the screen image for all activities from the iPad. Very quickly I had to fall back to running all software for class on the desktop PC at the presentation table. This allowed me to quickly switch between screens, keeping data flow and presentation holdups to a minimum.

The iPad 2 now enables the instructor to present all images from the tablet as the class progresses. In the past, limiting all presentations to only Keynote placed significant time constraints on the instructor and limited the available class activities.

## 2. Data analysis and creation through spreadsheets.

The students would be emailed as an attachment a template for the class activity through the Google mail system. Students would open the template in Google mail, move it to the Quick Office application and work the assignment in that application.

This activity had several purposes:

- a. Upload, download and attach files to emails.
- b. Move files to a mobile device.
- c. Open files on a mobile device.
- d. Edit and create data on a mobile device.
- e. Create economic model information
- f. Visualize economic data using graphs.
- g. Save and return data files using Google mail.

Regular classes would require hand written work from the classroom using paper or perhaps in more advanced classes such as Macroeconomics a laptop based submission. One problem with this type of activity was the untrained nature of the iPad user. There is a small learning curve required to master the Quick Office program used in these activities. I created these activities in Excel (the dominant workplace office software) and moved the spreadsheet to Quick Office through the use of Google mail. As the student received the file he or she could select to open the document in Quick Office.

The first issue at hand is the early development phases of applications for the iPad that deal with translating Microsoft based products into Apple compatible data sheets. The Quick Office Application made the transition to the iPad easy but was extremely cumbersome with regard to keyboard display and functions. It was unclear as to whether any thought had gone into the keyboard display for a spreadsheet function application as students had to spend a great deal of time switching between keyboard displays to create, finish, and copy spreadsheet formulas.

As the semester moved on, students became more adept at creating formulas quickly using the keyboards in Quick Office. This limitation forced me to re-evaluate spreadsheet options and finally settle on Numbers for the iPad this last semester. The keyboard

functions are well designed and easy to complete for the student. The learning curve for numbers was much shorter this semester than for Quick Office last semester.

### 3. Responseware

Students were asked to download Responseware and create accounts allowing them to participate in class activities. Primary uses in our Microeconomics class were taking roll and participative feedback. Certain presentations had problems included in the presentations that ask the students to answer a question given the data presented. The instructor could hold the presentation while the students decided on their response, and then present the distribution of answers from the class for discussion. Percentages for each response were shown and then we would discuss what differences might have caused the answers to vary. Then, the students would be informed of the correct answer using feedback on the screen.

If there were a significant number of problems in understanding the concept I received immediate feedback allowing me to re-cover the concept immediately before moving on. An additional tool was the ability of the instructor to draw additional information into the question slide showing the student the solution process, thus reinforcing the concept with each student.

This was one of the most powerful tools I used during the semester. Student positive responses to these types of classes were significant. Students indicated that they truly understood the concepts given the question, answer, discussion, solution, and review process. It is rare that I have students stop and use the terms “Extremely worthwhile” and “A positive tool for learning” as they leave the classroom. This tool is a winner!

Responseware was also used in group competition during competitive tests. After questions were asked of the group, the class could weigh in and indicate what they thought the right answer might be. The benefit as an instructor is found in the class percentage for the correct answer allowing “Just in Time” teaching on the subject at hand.

An additional benefit of using Responseware is the instructor’s ability to force free riders into action. A major problem with large classes is engagement. Responseware allows me as an instructor to engage every student during every class. Students are informed that they must log into their Responseware account and be prepared to answer any questions that the instructor may have. These questions can range from “Are you here today?” to “What do you think the right answer is for this question?” I instruct the class that I expect and review participation in all my classes through their feedback. Non-response to questions indicates that you are “not here mentally” and therefore has an impact on your participation grade.

At the end of each class, I save the Responseware data set for that day and download to Excel for analysis. The reporting system allows me to generate reports by user and by question so that it is easy to see who is not participating in the class activity. Vindictive users might impact the class through blatant wrong answers to group polling, but it is up to the instructor to gauge when it is appropriate to move on to another topic rather than hold up the rest of the class.



#### 4. Discussion board Blogs.

Each class had at least one discussion activity that was supported by the Blackboard system. Prior to class I would use the Blackboard system to randomly create discussion groups in class for the next day. The system would assign a group number to each student who would then be emailed that they were part of group number X. The email would contain a group leader and the discussion paper, question, and supporting documents.

During class the next day the students were well prepared for their group work. Each knew their group and their task. Students were then handed additional props (such as cups or materials for operations activities) and sent to locations of their choice to collaborate, complete the application, and report back their findings. These activities required that all students complete spreadsheet templates with their data findings using Quick Office. There was also a videographer assigned to the group who would video the activity using their iPhone and submit the video along with the group solution for grading. Completion of the group task required spreadsheet submissions by all students, group video submission, and a blog analysis of the situation.

These activities were enjoyed immensely by the students. The iPad has essentially freed the student from the classroom with a manageable device that is connected, mobile, and functional allowing true collaboration to begin with student learning. Selected video segments from the students showed me the liberating nature of the iPad and its applications in the classroom. Students could jump up, move around, and take their iPad with them to discuss data, solutions, or problems. No longer were they tied to their desks with bulky laptops that tout mobility but lack practicality. I am a convert to the iPad based on my observations in the classroom on these activities. No other device to-date has provided the support, application, and ability to generate true collaborative learning in my classes.-

#### 5. Testing.

The textbook provides a bank of questions which were loaded into pools for use by the class. Testing during the early portions of the semester started out using the following criteria:

- a. Random Block Test – questions pulled randomly for each student with each student getting different test questions.
- b. Single Attempt – only one attempt at the test.
- c. Force Completion – you must complete the test once you open it.
- d. Set Timer – the elapsed time for the test was 1.5 hours
- e. Feedback – Score and submitted answers were given at the completion of the test.
- f. Questions Presented One at a Time – the student was shown only the current question.
- g. Prohibit Backtracking – you cannot return to already completed questions.
- h. Randomized Questions – answers within the question can be randomized.

By the end of the semester we had to rethink the testing methodology as we were inundated with test problems from the students. Typical problems were:

- a. The iPad had (from the user's perspective) lost connectivity. The iPad devices given the students were not 3G enabled and if the student moved to a wireless area during a test (or if wireless was spotty) the device would lose connectivity and appear to lock up.
- b. The iPad displayed a blackboard error on test submission.

Both these conditions were caused by the nature of the iPad connection. If a student momentarily lost connectivity the Blackboard system assumed the test was over and that the student had chosen to exit the quiz or exam. Modifying the testing methods and parameters helped resolve these problems.

## 6. Applications Used on the iPads during Microeconomics

At use during any part of the semester were the following applications:

- a) ACU Mobile: Used for access to classes, files, NANO Tools, documents and webmail. (Access Randomly)
- b) You Version Holy Bible: Used to access Bible verses. (Access Randomly)
- c) InKling: Used to load and browse the online text, create notes, follow-me and follow-you notes. (Access Daily)
- d) The Optimist: Used to get up-to-date news on campus events. (Access Randomly)
- e) WSJ – Wall Street Journal: Used to get up to the minute world news and events. (Access Randomly)
- f) Calculator: Used for non-spreadsheet based calculations. (Access Randomly)
- g) Blackboard – Mobile Learning: Used for Blackboard based class review. (Access Daily)
- h) Responseware: Class interaction software that monitors and displays feedback from the class. Used mainly in attendance, quiz taking, competitive tests, and informational feedback situations. (Access Daily)
- i) Quick Office: Used to load, complete, save and upload completed spreadsheet activities in class. Distribution of files was done through Google mail. (Access Randomly)
- j) Safari: Used for quiz and test taking in the Blackboard System. (Access Daily)

## Student Perceptions

A review of feedback from the students showed that they still felt that there was a good deal of improvement to be made in the presentation of distance learning materials. Most of the student frustration dealt with problems in delivering testing where tests and quizzes would time out and cause problems with submissions. Typical student statements about the course being too hard, too easy, too strict, too lenient, too hands-off, too controlling were ignored. Technophobia didn't seem to be a problem but students did comment that some applications were less functional than they needed to be. Frustrations with different key pad formats on the screen were prevalent. Having to change through three screen displays to create formulas with text, numbers, and character sets were frustrating and caused keying errors.

Some student comments revolved around the fact that they were unhappy with having to now do work and think for themselves. Different learning styles were prevalent. The students who were comfortable with “hand feeding classes” were evident. For some it was apparent that the transition from paper to electronic format meant little. A student who did not study in a traditional classroom could not study in a mobile classroom.

There were students who enjoyed the mobility of the class. These students commented on their ability to access class work and textbooks in those few moments that they had available. These students appreciated the worth of a weightless learning experience (not lugging of books, notes, and laptops around the campus).

### **Instructor Perceptions**

As an instructor I did notice a realization on the student’s part as they signed their ACU contracts and received their iPads that they had just signed a contract that said they agreed we could track their activities. The realization that “this class might now involve actual work on their part” was not lost on them. The inclusion of technology in the classroom for delivery dramatically improves the teaching experience. Preparation of modules allows the instructor to remove the humdrum nature of printing, copying, and distributing of materials. Online testing frees up class time for application of topics and content discussions.

Reliance on technology for activities does have a cost. With heavy media interest in this class I was always worried that the cameras were rolling and that the technology would fail giving the impression that I was incompetent and unprepared to both the students and media. This did in fact happen during a video session with CNBC. During the class presentation both projectors quit working a few moments after the class began. A key to the success of technology is to be prepared for those moments when it fails. During the few minutes that it took to get the projectors going I was able to continue and present the class around the problems that were brought encountered. Be prepared, be flexible, and be ready to innovate when technology is involved.

### **Student Data Analysis**

System logs were collected for Macroeconomics and Microeconomics students during the fall semester of 2010. The Macroeconomics course had 100 students using laptops for class activities and assignments. The Microeconomics course had 50 students using iPad, iPhone, and laptops (in their rooms) for access to the course content. The activity logs were analyzed in a database format showing activity by hour of day by user. If a user appeared in the system during any part of that hour (or several times in that hour) they were considered to be present once in that period.

Our unfunded research during the Fall semester of 2010 compared the data use patterns for an iPad-based class to these two Laptop-based classes. The findings from this research showed a difference in use patterns of iPad students. Visualization of that data shows that iPad user patterns are more diffused when compared to the laptop user. One possible explanation is that because iPads are truly mobile devices, they are available at any moment to work on educational

content. Laptops are more “fixed” and less mobile and therefore less available for moments of study.

For our study during the Fall of 2010, only Blackboard data was analyzed. Refer to Table 1 below for a visual comparison of the use patterns. Each cell in the table contains the average number of users accessing Blackboard during that weekday/time during the semester (Note: the laptop data contains two separate sections with a total of 100 users.) Laptop users are focused around class time and the Tuesday / Thursday class schedule while the iPad users show use patterns that are spread out. Heat mapping in Excel is achieved by the software coloring the variance from the minimum entry to the maximum entry in the data set.

***Table 1 – iPad vs. Laptop Heat map comparison.***

iPad Class								Laptop Class							
Hour	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Hour	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6	0.1	0.1	0.2	0.0	0.1	0.0	0.0	6	0.0	0.1	0.1	0.1	0.1	0.2	0.0
7	0.1	0.2	0.4	0.2	0.3	0.3	0.2	7	0.0	0.1	3.6	0.5	3.4	0.6	0.1
8	0.2	0.4	0.9	0.5	0.9	1.1	0.2	8	0.4	0.6	10.2	0.9	10.1	1.1	0.1
9	0.3	0.9	1.6	1.5	1.6	1.0	0.5	9	0.4	1.5	14.2	1.1	11.6	1.4	0.3
10	0.2	1.3	1.4	1.4	1.0	0.9	0.6	10	0.8	1.6	6.6	1.7	5.4	1.9	0.4
11	0.2	1.0	2.2	0.5	1.7	0.7	0.7	11	0.6	1.1	2.1	1.5	2.4	1.4	0.7
12	0.5	1.1	3.3	0.9	2.8	1.1	0.9	12	0.9	2.3	4.5	2.1	4.2	1.3	1.1
13	0.9	1.9	11.3	1.3	16.3	0.8	0.6	13	1.8	2.5	3.9	3.1	4.8	1.6	0.9
14	1.0	1.8	5.4	1.9	5.6	0.7	0.6	14	2.5	2.9	3.7	3.1	4.0	2.0	1.4
15	1.1	2.1	4.0	2.5	3.1	1.1	0.9	15	2.8	3.4	4.8	3.5	5.8	1.7	1.3
16	1.1	2.3	2.7	1.6	3.1	0.7	0.8	16	3.2	3.6	4.8	3.7	6.6	2.6	1.6
17	1.1	1.9	1.9	1.4	2.1	0.6	0.8	17	2.8	3.9	5.6	3.7	5.2	1.9	1.5
18	0.9	2.2	1.8	1.4	2.5	0.4	0.6	18	2.5	3.5	4.4	2.3	4.4	1.7	0.8
19	1.1	2.1	2.2	1.3	2.2	0.3	0.5	19	3.1	4.4	5.5	2.9	4.7	1.2	1.1
20	1.2	2.4	3.1	1.4	2.0	0.8	0.4	20	3.2	4.9	7.3	3.7	5.8	1.5	0.9
21	2.0	2.5	3.1	1.7	2.4	0.8	0.7	21	2.9	4.8	8.5	3.8	5.3	1.2	1.1
22	1.6	2.0	2.9	1.8	2.8	0.5	0.6	22	2.5	4.3	8.6	4.2	6.8	1.3	1.0
23	1.3	2.2	3.5	2.0	2.4	0.8	0.6	23	3.1	3.5	7.1	3.4	6.8	1.0	0.5
0	0.4	1.1	1.5	1.4	0.9	1.2	0.5	0	1.0	1.7	1.8	2.4	2.6	1.9	0.5
1	0.3	0.6	0.8	0.5	0.6	0.7	0.2	1	0.4	0.7	0.8	0.7	1.0	0.9	0.3
2	0.1	0.2	0.2	0.3	0.2	0.3	0.2	2	0.2	0.1	0.8	0.3	0.6	0.3	0.1
3	0.0	0.1	0.0	0.2	0.2	0.1	0.1	3	0.1	0.1	0.3	0.1	0.3	0.1	0.1
4	0.1	0.1	0.0	0.1	0.3	0.1	0.0	4	0.0	0.0	0.2	0.0	0.1	0.1	0.0
5	0.2	0.1	0.4	0.0	0.1	0.2	0.0	5	0.1	0.0	0.2	0.0	0.0	0.1	0.1

Our data visualization of this initial investigation raises follow up questions that we cannot answer without an automated process for mining this usage data from the various networking, web, and application logs.

Our hypothesis is that the iPad (or more mobile device) allows a more “diffused” pattern of learning than a typical desktop, laptop and textbook. The nature of the iPad is that it allows for those moments of learning away from traditional locations such as dorm room, classroom, and library. Future research over the next year will track this same information with demographics, device type, and location being overlaid to give a more comprehensive picture of mobile learning.

**Future Research Hypothesis**

Although ACU's mobile computing initiative has been exceptionally well-received, we have reached the limits of mobile computing research based on self-reporting surveys. We are now at the point where new insights into mobile computing require access to real usage data.

Collecting data by user (ixs03a), device type (desk top, lap top, mobile device), campus location (COBA atrium), application use (Blackboard), content accessed (Quiz) , date / time (4/7/11 at 5:22 pm), and Banner demographic information (GPA) will enable ACU researchers to do pattern analysis on actual mobile device usage.

We will be able to answer questions like “How does the mobile device usage pattern of an "A" student differ from that of a "D" student? These comparisons will allow us to gauge the impact that mobile learning has on individual students.

This future research project will develop two systems:

- a. a data capture process from existing ACU system logs that stores “device use data” for analysis.
- b. a data reporting and query system that allows mobile fellows to query the data using web based analysis tools.

### **iPad and Paperless Pros**

From my experience I believe that the iPad:

- a. Is a true mobile learning device
- b. Increases student engagement
- c. Enables collaborative learning
- d. Allows potential student productivity
- e. Allows potential student efficiency
- f. Improves student technology competency
- g. Reduces faculty back end effort

### **iPad and Paperless Cons**

There are some down sides to going paperless:

- a. Technology reliance requires preparation in advance for possible failure
- b. There has to be a motivation to change on the part of the faculty
- c. There is increased faculty effort involved in preparing to use these technologies
- d. On the older versions of the iPad there are limitations to presenting on the screen.
- e. There is a learning curve for the new technology.

### **Application Issues with Blackboard Mobile**

- a) Attachments set to open in a new window did not work. After discussions with Blackboard we changed to open attachments in the same window
- b) Discussion Board reply problems were presented to Blackboard and Blackboard updates were pushed back to ACU to solve our problem
- c) Blackboard Testing was not supported from Mobile Applications

## **Other Application Issues**

We experienced Responseware response time issues as well as issues with Quickoffice not having graph capability. Students did not like the keyboard structure of Quickoffice as it was not intuitive and required switching between several keyboard screens to finalize a formula.

## **Problem Solutions**

Be sure to open application problem tickets and follow-up with software vendors as soon as issues arise. Most vendors are interested in resolving user problems quickly when dealing with new devices and new applications.

Most of all, be flexible. You are the King or Queen of your classroom. If something goes wrong and it might mean a slight delay just go with it. An assignment that was due tonight at midnight has the same effect as the same assignment due at 12 noon tomorrow if there are connectivity problems over night.

My biggest issue is with the amount of instructor work involved in using multi platforms on the iPad. There are considerable overlaps between digital texts, Blackboard, and other content providers on the web. The use of any and all require the instructor to sometimes duplicate effort which can be time consuming.

## **The Student Perspective**

Student Lilly Assaad remarked about iPad activities:

“We could do it anywhere from campus. We weren’t limited to the classroom and we weren’t limited to being together...we could collaborate and corroborate regardless of where we were and regardless of what time it was as long as we have the iPad, which basically modeled the professional life...and so it really helps us be prepared for the professional world.”

Lilly Assaad also discovered, learning with a mobile device is very different than

“...a traditional class, where you have to either take a big fat textbook or you’re not going to get any work done. You realize that you can get your homework done and your reading done and interact with other students very easily. It’s just a whole different mindset.”

There is a new level of student engagement and involvement in course participation, because with the use of Mobile devices within the classroom, students have new levels of responsibility to actively participate in real-time polls, discussions, blogs, and other course activity.

## **Finally – iPad or iFad – The reality of a paperless classroom?**

What we are experiencing now is definitely not an iFad! The paperless classroom is a reality for both the instructor and student. I see the iPad and its educational applications as critical in the development of mobile learning. I will be doing this again!

### **Citations and References and Literature Review**

The creation of a data mining research site with the unique accumulations of user data proposed for ACU is unprecedented. Current literature reviews have found that there has been little if any research conducted on actual user data at a scale proposed here at ACU. We have met with and engaged the research team in library services to assist over the next year with our article research. Our research article searches are focused on the following areas:

1. Other academic studies on mobile user devices and user patterns.
2. The use of data mining in academic research.
3. The use of user analysis tools in data mining.
4. Comparisons of user device profiles to demographic information i.e. gender, grades etc.
5. The effectiveness of mobile devices and learning.
6. Collaborative efforts between academia and private enterprise in mobile learning. e.g. Apple or Google.
7. Policy trends with regard to mobile device and technology in education.

A list of articles and presentations of interest and support for our research are listed below:

*Stephen J. H. Yang, et al. "The Add-on Impact of Mobile Applications in Learning Strategies: A Review Study." Journal of Educational Technology & Society 13.3 (2010): 3-11. Academic Search Complete. EBSCO. Web. 7 June 2011.*

*Thelwall, Mike. "Social networks, gender, and friending: An analysis of MySpace member profiles." Journal of the American Society for Information Science & Technology 59.8 (2008): 1321-1330. Academic Search Complete. EBSCO. Web. 7 June 2011.*

*Crisp, C.B. and Williams, M.L., "Mobile Device Selection in Higher Education: iPhone versus iPod touch." PDF*

*In M.M. Cruz-Cunha and F. Moreira (Eds.), Handbook of Research on Mobility and Computing: Evolving Technologies and Ubiquitous Impacts Computing (pp. 1213-1225). USA: IGI Global, 2011. ACU Connected 2009. Abilene Christian University, Abilene, TX.*

*Mobile Learning 2009; William Rankin and Brad Crisp; Capitol Hilton, Washington DC; 17 February 2009. "ACU Connected: A Campus-Wide Mobile-Learning Initiative."*

*EDUCAUSE 2009; Brad Crisp, Kyle Dickson, Scott Perkins, Cynthia Powell and George Saltsman; Denver CO; 6 November 2009; "Mobile-Learning with iPhone and iPod touch a Year Later."*

*Critical Breakthroughs: CCCU International Forum. William Rankin, George Saltsman, and Cynthia Powell; Atlanta GA; 25 February 2010; "ACU Connected: Developing a Campus-Wide Mobile-Learning Initiative at Abilene Christian University."*

*EDUCAUSE 2009, Brad Crisp, Kyle Dickson, Scott Perkins, Cynthia Powell and George Saltsman; Denver CO; 6 November 2009; "Mobile-Learning with iPhone and iPod touch a Year Later."*

*A Campus-Wide Mobile-Learning Initiative at Abilene Christian University. Unites States Army. Abilene, TX, 2010.*

*Mobilizing an Institution: How ACU Funded, Implemented, and Evaluated a Campus-Wide Technology Initiative. Southern Association of Colleges and Schools 2010 annual Meeting. Louisville, KY, 2010.*

*Researching Mobile Learning: Lessons Learned from ACU's Second Year. EDUCAUSE 2010. Anaheim, CA, 2010.*

*Holland, J. (in progress). **Mobile jumpstarts in a calculus course** [invited paper]. PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies.*

*Perkins, S. & Saltsman, G. (under review). Engaging Faculty in a Campus-Wide Initiative: Perspectives on Abilene Christian University's Mobile Learning Program, International Journal of Mobile and Blended Learning, invited manuscript under review.*

*Turning Technologies User Conference 2010. Cambridge, MA; October 11, 2010; Researching the Impact of Mobility: Lessons Learned and Directions for the Future.*

*Perkins, S., & Saltsman, G. (2010). [Mobile Learning at Abilene Christian University: Successes, Challenges, and Results from Year One](#), Journal of the Research Center for Educational Technology, 6(1), 47-54.*

*Southern Association of Colleges and Schools Commission on Colleges. William Rankin and George Saltsman; Atlanta, GA; December 7, 2009; Mobile Learning with iPhone and iPod touch: Year Two.*

*2009 EDUCAUSE Conference. Brad Crisp, Kyle Dickson, Scott Perkins, and George Saltsman; Denver, CO; November 6, 2009; Mobile-Learning with iPhone and iPod touch a Year Later.*



2009 ACUTA Portland Fall Seminar. William Rankin and George Saltsman; Portland, OR; October 27, 2009; *Mobile-Learning at Abilene Christian University: A Second-Year Assessment of ACU Connected.*

MoblEd '09. William Rankin, Scott Perkins, and George Saltsman; Pasadena, CA; April 23, 2009; *ACU Connected: A Campus-Wide Mobile- Learning Initiative at Abilene Christian University.*

Burton, B. G., Martin, B.N., (in press). *Student engagement and the creation of knowledge within a 3D virtual learning environment. In Immersive Environments, Augmented Realities and Virtual Worlds: Assessing Future Trends in Education, Ed. S. D'Agustino, IGI Global Publishing.*

Burton, B. G., Martin, B. N., Thomas, D. (2010) *Collaboration and the use of three dimensional interface within a virtual learning environment. In Adaptation, Resistance and Access to Instructional Technologies: Assessing Future Trends in Education, Ed. S. D'Agustino. IGI Global Publishing.*

Burton, B. G., Martin, B. N. (2010) *Learning in 3D virtual environments: Collaboration and knowledge spirals. Journal of Educational Computing Research, Vol. 43(2) 259-273.*

Burton, B. G., Martin, B. N., (2010) [Collaboration and the use of Mobile Devices](#), paper, PDF. American Educational Research Association Convention, Denver, CO.

American Educational Research Association Convention. Burton, B. G., Martin, B. N.; Denver, CO, 2010. *Collaboration and the use of Mobile Devices.*

Southwest Educause Convention. Burton, B. G., Mhlanga, F. S.; Austin, TX, 2010. [Experiences and direction in teaching an undergraduate course in mobile computing](#), presentation, PDF. Austin, TX.

Ed-Media Conference of AACE. Burton, B. G., Mhlanga, F.S. Toronto, ON, 2010; [Best practices: Teaching mobile computing: practices & pitfalls](#), paper, PDF.

Schiller, Bradley. *The Micro Economy Today*. 12th. New York: McGraw Hill, 2011. eBook.

Inkling, "Textbooks now featuring features!." <http://www.inkling.com/product/>. Inkling, n.d. Web. 14 Feb 2011.

## **Appendix A - Microeconomics Spring 2011 Syllabus**

### **INTRODUCTION**

Economics of the firm and industry; supply and demand; revenue and costs; profits; consumer behavior; markets; the price system; the role of government; inequality; comparative economic systems, as well as selected concepts of business ethics.

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### **CONTRIBUTION OF COURSE TO THE DEVELOPMENT OF COMMUNICATION SKILLS**

The study of microeconomics provides the opportunity for the student to engage in class discussions.

Students will develop communication skills through class discussion and group interaction. The integration of technology will enhance the student's ability to use technology tools to display concepts and theories. Economics is a discipline that encompasses major business principles and government policies. Many of the problems dealt with in business today are economic in nature. This course will contribute to your ability to be a better businessperson.

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### **CONTRIBUTION OF COURSE TO CHRISTIAN SERVICE AND LEADERSHIP**

This course will allow the student to view economics from the Christian perspective. Economics involves choices, and choices imply tradeoffs between alternatives. These choices cannot be made without reference to some ethical base. This course will help the student see industry from a Christian perspective.

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### **GOALS FOR STUDENT COMPETENCY**

At the conclusion of this course, the student should be skilled in:

- Discussing the basic theory and use of economic principles and terms.
- Using simple charts and diagrams to illustrate economic principles.
- Discussing the effects that changes in the market have on supply-and-demand curves.
- Explaining the principles of increasing and diminishing returns.

- Illustrating and discussing the economic models of competition.
- Discussing the free enterprise system.
- Analyzing the market distribution of income to each of the four factors of production.
- Testing our Christian view of the world and our responsibilities towards others against accepted economic practices.

## CLASS FORMAT

- This course will consist of:
- Self-directed study.
- Multiple Choice and True-False Quiz Question research.
- Group Discussion.
- Class Participation.
- Examinations.

## GRADING SYSTEM

<b>Description</b>	<b>Points</b>	<b>Total</b>
Syllabus Acknowledgement	5	0
Attendance (-5 for unexcused absences)	25	0
Section Exams (4 at 100 Points)	100	400
Class and Activity Participation	100	100
<b>Total</b>		<b>500</b>
Grade A is 90% to 100% or 450 points to 500 points		
Grade B is 80% to 89% or 400 points to 449 points		
Grade C is 70% to 79% or 350 points to 349 points		
Grade D is 60% to 69% or 300 points to 349 points		
Grade F is less than 60% or 0 points to 299 points		

## PROFESSIONAL COURTESY

At COBA we try to prepare you to be a productive business associate. Business etiquette requires that associates (students) act and behave in a manner that is "business-like."

Specifically:

- Lateness to any meeting, as to any business meeting, reflects poorly on the student.
- Set meetings at mutually agreeable times with your group, and keep strictly to that time.
- If you are unable to attend an meeting, email the group or instructor prior to the meeting time.
- If you experience problems meeting a deadline, talk with your group or instructor prior to the deadline.
- Proper planning and time management on your part will avoid these problems.
- Value others' time as if it were your own.
- Be prepared for class discussions by preparing for class in advance - Read the required materials.
- Be respectful to the instructor and other class members.

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## ADMINISTRATIVE COMMENTS

- This syllabus may change at the discretion of the instructor.
- If it does, you will be notified by email, and an updated syllabus will be placed in Blackboard.
- Email from your instructor will be sent only to your ACU email account.
- Failure to monitor or forward your email to an active account is unacceptable.
- You must earn a grade of C or better in this course for it to satisfy the prerequisite requirement for any course for which this course is a prerequisite.
- If it becomes necessary for you to drop this course, you should visit first with your academic advisor and then talk to the instructor of the course.
- Refer to your current catalog for drop dates and refund schedules.
- You will need to set up a Gmail account with Google to have access to Google Docs that are used in this course.

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## SECTION EXAMS

- Section Exams cover groupings of at most 5 chapters.
- Each of these exams will be comprehensive.
- You must complete these exams online.
- These exams are uniquely generated for each student.
- Missed exams will receive a grade of zero.

## ATTENDANCE

- You begin the semester with 25 attendance points.
  - Each class session you miss (do not sign in at the front of the class) you will have 5 points deducted.
  - These points can go negative after 5 missed class periods.
  - If you have an excused absence, please bring documentation to have attendance points added back.
- 

## PARTICIPATION

Participation will be graded on class participation and group discussion through the online Blackboard system.

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## HONOR CODE

College of Business Administration, Abilene Christian University

### ► Objective

COBA faculty, staff and students will strive to proclaim in their lives competence, character and community.

In joining COBA, students, faculty, and staff covenant to abide by the following ethical principles.

### ► Competence

To lead and serve well requires competence. And to become competent requires diligence and hard work. We owe it to all who have prepared the way and who will follow in our footsteps, to be good stewards of opportunities and resources. Thus, in all you do: set priorities, seek excellence and professionalism in your work, satisfy requirements, and take responsibility for your learning and performance. You cannot build competence if you lie, cheat, steal, or tolerate those who do.

### ► Character

A reputation of good character is built slowly through testing, yet can be destroyed in an instant

by compromise or careless work, just as it can through injustice. Guard your character; it is worth more than a grade or promotion. "A good name is more desirable than great riches; to be esteemed is better than silver or gold" (Proverbs 22:1). You cannot build character if you lie, cheat, steal, or tolerate those who do.

### ► **Community**

A spirit of fellowship and mutual encouragement holds each community member accountable. Accountability leads to a healthy community through adequate preparations for the tasks at hand, respectful truthfulness in all situations, and adding value to the tasks at hand. As a community, we must hold each other accountable to the principles of competence, character, and community. You cannot build community if you lie, cheat, steal, or tolerate those who do.

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## **ACADEMIC INTEGRITY**

COBA supports ACU's [Academic Integrity Policy](#)

This important policy offers examples of academic infractions and a process for assigning consequences and voicing appeals. Ignorance of this policy is never an excuse. Individual instructors will define course specific definitions, however, in general you should avoid:

1. **Plagiarism** - Copying or even paraphrasing words or ideas from another source (including current or past students) without giving adequate credit.
2. **Lying** - Inventing data or sources or making false attributions about the origin of material or offering a deceptive reason for an absence or delay in the completion of academic work.
3. **Cheating** - Facilitating or participating in any process that circumvents the intent of any exam, test, quiz, paper, or assignment.

Any dishonest act observed or reported will be investigated and, if proven, will be reported in administrative offices and records, and may be subject to any or all of the following outcomes based on severity:

1. A zero for the assigned work
2. A failing grade for the course.
3. Dismissal from the university.

Ratified by all COBA Faculty: 11/18/2004

### **Test and Written Assignment Definitions of Academic Dishonesty**

- You cannot intentionally or unintentionally copy files or portions of files from another current or past student.

- You cannot give your files or portions of your files to another current, past, or future student.
- You cannot accept files or portions of files from another current or past student.
- You must key each-and-every keystroke in your solution file yourself.
- Another student cannot complete any portion of any assignment for you.
- You must not email or copy any assignment or exercise or portion of an assignment or exercise to anyone other than to the course instructor.

The intent of these assignments is twofold:

1. It requires you as an individual to develop computer and analytical skills that will be required in the workplace.
2. It reinforces economic concepts discussed in the class.

Any activity that circumvents the intent of this assignment prevents the development of these skills and is therefore unacceptable.

### **Course Definitions of Academic Dishonesty**

**Plagiarism** - Copying or even paraphrasing words or ideas from another source (including current or past students) without giving adequate credit is plagiarism. If you use ideas, words, or graphics from other students, the Internet, or published sources, do so legally and with appropriate citations.

**Lying** - Inventing data or sources or making false attributions about the origin of material or offering a deceptive reason for an absence or delay in the completion of academic work, is lying.

**Cheating** - Cheating includes, but is not limited to:

- Copying answers on exams.
- Working on exams past deadlines.
- Consulting an unauthorized exam, assignment, instructors' materials, another students' materials, or using any unauthorized materials on an exam.
- Allowing other students to copy.
- Submitting the same work for more than one course without approval.
- Facilitating any process that circumvents the intent of any exam, test, quiz, paper, or assignment.
- Any unauthorized use of electronic communications to transmit or receive information and propagate communications that undermine the integrity of any exam, test, quiz, paper, or assignment.

Collaborative learning on assignments is expected as part of the learning environment in COBA, however, in this class the final work product must reflect individual effort and be unique in all ways to that student.

Students who believe that they have been unjustly penalized under this scenario have the right to appeal to the department chairperson and dean of the college.

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## **TEXTBOOK**

- Title: The Micro Economy Today
  - Digital Copy
  - Publisher: McGraw Hill Irwin
  - Language: English
  - ISBN-13: 978-0-07-724741-6
  - DO NOT PURCHASE THIS TEXT - Refer to in-class instructions on how to obtain the text.
- 

## **DISABILITIES**

If you have a documented disability and wish to discuss academic accommodations, please feel free to contact your instructor.

The ACU Student Disability Services Office (a part of Alpha Academic Services) facilitates disability accommodations in cooperation with instructors.

To receive accommodations, you must be registered with Disability Services and complete a specific request for each class in which you need accommodations.

Call extension 2667 for an appointment with the Director of Disability Services.



<i>Date</i>	<i>Day</i>	<i>Topic</i>	<i>Due 11:55 pm</i>
8/24/2010	Tuesday	Chapter 0	Special Announcement and contracts signed
8/26/2010	Thursday	Chapter 1	
8/31/2010	Tuesday	Chapter 2	Syllabus Quiz due at 11:55 PM tonight.
9/2/2010	Thursday	Chapter 3	
9/7/2010	Tuesday	Chapter 4	
9/9/2010	Thursday	Chapter 5	
9/14/2010	Tuesday	Competitive Test for Extra Credit	
9/16/2010	Thursday	Test 1	Class does not meet - take test online.
9/21/2010	Tuesday	Chapter 6	
9/23/2010	Thursday	Chapter 7	Test 1 due at 11:55 PM tonight
9/28/2010	Tuesday	Chapter 8	
9/30/2010	Thursday	Chapter 9	
10/5/2010	Tuesday	Chapter 10	
10/7/2010	Thursday	Competitive Test for Extra Credit	
10/12/2010	Tuesday	Test 2	Class does not meet - take test online.
10/14/2010	Thursday	Chapter 11	
10/19/2010	Tuesday	Chapter 12	Test 2 due at 11:55 PM tonight
10/21/2010	Thursday	Chapter 13	
10/26/2010	Tuesday	Chapter 14	
10/28/2010	Thursday	Chapter 15	
11/2/2010	Tuesday	Competitive Test for Extra Credit	
11/4/2010	Thursday	Test 3	Class does not meet - take test online.
11/9/2010	Tuesday	Chapter 16	
11/11/2010	Thursday	Chapter 17	Test 3 due at 11:55 PM tonight
11/16/2010	Tuesday	Chapter 18	
11/18/2010	Thursday	Chapter 19	
11/23/2010	Tuesday	Chapter 20	
11/25/2010	Thursday	Thanksgiving Holiday	Class does not meet
11/30/2010	Tuesday	Competitive Test for Extra Credit	
12/2/2010	Thursday	Test 4	Class does not meet - take test online.
12/6/2010	Monday	Dead Day	Class does not meet
12/9/2010	Thursday	Final Exam is Test 4	Test 4 due at 11:55 PM tonight.

