

THE CLASS APP: SURVEYING OUR CURRENT TECHNOLOGY AND HOW WE CAN
COMBINE THIS TECHNOLOGY INTO A SINGLE, POWERFUL CLASS APP FOR OUR
TECHNOLOGY DRIVEN, MULTITASKING STUDENTS

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Mathematical Technology has evolved greatly since the abacus: Calculators that graph functions and perform complex statistical calculations, computers (laptops), tablets, smart phones, interactive educational software galore, and much more. Online education has swept the world with its convenience, and the online revolution continues as technology enhances the way we communicate. Flowing forward with this evolution, the logical next step is for online mathematics education is to take advantage of the App craze and turn each mathematics class into a single, powerful App Class.

In this paper we quickly survey the current technology trends (software and hardware), outline how this technology enhances our online mathematical educational system, and rapidly demonstrate how we can fuse this technology to form The App Class and revolutionize the current online teaching platform. We explore the benefits of The App Class for both students and educators, and the institutions implementing this format. Finally we project the role of the instructor in this newly created teaching environment.

The rapid advancement in technology continues to create information overload for our students. Staying connected to friends through Facebook, Twitter, blogs, etc., is a typical part of our students' lives. Smart phones are definitely all the rage, and the prices have stabilized at a point making them affordable for most students. Texting and messaging have become a dominant means of communication, invoking the creation of a new language designed for faster communication (BRB (Be Right Back), U (You), R (Are), LOL (laugh out loud), etc.). Students are moving with the flow of technology, and we as instructors need to do the same.

The home computer has evolved into a gaming system, telephone, and research center. The capability of the home computer has come a long way, and with a wide variety of software from Microsoft Office to Adobe Creative Suite, the home/office PC has become a staple of society. Yet with the rapidly expanding technological capabilities, this staple is already starring extinction head-on.

We have all seen the commercials of how 4G over 3G will win you that ebay.com item, give you the game score faster than anyone else, and I am sure get you a date with a super model. Smart phones have quick access to email, text, MMS messages, document sharing and viewing, and numerous other possibilities when we throw in Apps.

Tablet Computers are revolutionizing the way we communicate and process information. Tablets can mimic the home computer in almost every respect, right down to using a USB or Blue tooth keyboard. Tablets range in Operating Systems from Windows, Apple iOS, and Google Android. Due to their design, Tablets offer extended uses from the typical PC such as the ability to write, draw, and mark-up documents as you would with a standard pen/paper scenario. Tablets range from reading devices, such as the Kindle and Nook, to higher end ‘computer-like’ tablets such as the iPad. Thus tablets ARE affordable.

Application software, App for short, is software designed to help a user perform a specific task. There is an unlimited amount of resources available to develop and create Apps that will enhance the smart phones and tablets. Apple and Google have their own Apps available for their tablets and smart phones, but the greatest aspect is that ANYONE can create an App! Apple offers free software to create Apps, but to sell the App a developer must pay a \$99 fee, and ensure their App meets apples stringent requirements. Google has a similar policy, and the cost to developers is \$25. Google’s requirements for Apps are more lenient than Apple’s, and thus it is somewhat easier to create an App for an Android OS.

Apps are all the rage, and there are an infinite number of Apps (at least in theory). Educational Apps range in all levels, from Apps to help students add and subtract integers, learn a foreign language, and everything in between. With the ability of anyone to conceptualize and create an App, the creative doors are blown open and the future of education is revolutionized in the palm of the students’ hands.

In addition to Apps, there is a large amount of computer software available to enhance the educational experience from the traditional desktop/laptop. Blackboard is an amazing product that houses everything you need for an online classroom: Discussion boards, classroom content, homework/grading capabilities, and much more.

Discussion boards are an excellent means of communication among the students and the faculty, or simply among the students. Instructors have the ability to create and grad different ‘threads’ of discussion in addition to monitoring the content being accessed by students on the discussion board. Being a lifetime student, I know how intimidating it can be to raise your hand and speak during class. By removing the classroom pressure and allowing the student ample time to provide feedback, the quality of feedback has the capability of being improved. Moreover, students you may not hear from in a typical class setting will be able to have their voice heard.

Classroom content is easily loaded into blackboard, making it an ideal platform for educators to design their own classes. Moreover, this allows for easy modifications of classes as needed. Blackboard is a great one-stop shop for yourself and your students creating a virtual classroom with the feel of a traditional classroom setting.

Immediate feedback for student grades is a great feature of blackboard. As a student I continually check my grades to ensure I have not missed an assignment, etc. I love the immediate feedback versus turning in a paper, test, quiz and having to wait until next class period (unless of course you pester your professor/teacher through email...Blackboard presents options to students/teachers to email one another directly from the Blackboard environment).

Blackboard offers several different platforms for instruction/assignments in addition to discussion boards. Instructors can establish journal writing assignments, a wiki, a blog, a link directly to the discussion board, chat, and a virtual classroom link. SafeAssign is incorporated within Blackboard to safeguard against plagiarism.

Moreover, Blackboard has begun delving into the world of Apps. Blackboard Mobile learning allows students to access their classes from their phone and receive updates via text.

MyMathLab/MyStatLab/MyXILab is a wonderful asset to any mathematics instructor, and is still regularly making significant advances. MyMathLab is similar to Blackboard in that an instructor can create homework assignments and test that are completed within MyMathLab. As with Blackboard, students login to MyMathLab, find their corresponding course(s), and proceed. Homework can be set-up so that when students miss a question they are asked a similar one, thus identifying for the student his/her weakness and allowing for strengthening this weakness. Grades are recorded once a student completes an assignment, providing him/her with immediate feedback. MyMathLab assignments allow for the student to receive hints as he/she proceeds through the problem, further emphasizing the areas the student needs to improve. Pearson offers one free one-on-one tutor session for each student of MyMathLab. Due to Flash requirements, MyMathLab is not accessible via iPad, but Pearson is working to spearhead this issue.

With all the hardware and software available, there is no doubt we are headed to a one-stop shop classroom, the App class: Software designed to help the user perform a specific task...to learn a given topic!

With the Kindle by Amazon, ebooks became very popular. Now we have the Nook, iPad, and several other reading devices. When you make it, they will come. And so did the textbook publishers. Pearson has done a fabulous job with creating etextbooks, as can be seen at: <http://www.coursesmart.com>

Here students can rent textbooks for the length of their course. This eliminates the need for students to sell-back unwanted books, and the publication waste with new additions. This definitely receives kudos from PIRGS:

<http://studentpirgs.org/campaigns/sp/make-textbooks-affordable>

The Classroom of the future:

Registering for courses will be the same as visiting the App store. For example, in the Embry Riddle Class-App store, students will be able to choose their course schedule in the same way Apps are currently purchased. The Embry-Riddle course MATH 111 will be an App that most students will buy as it is a popular course to fulfill the mathematics requirement at Embry-Riddle Aeronautical University. Perhaps the app will look like:

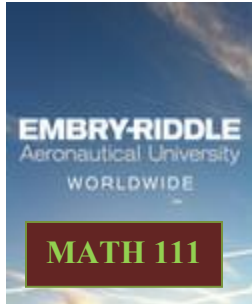


Figure 1: Example of App

Students will click on the App and see a description such as:

Welcome to Math 111. Included in this App is everything you will need to successfully complete this course: Your Textbook, note-taking ability, course material, homework assignments, where to find additional assistance if needed, the syllabus, and instructor contact information. The prerequisite for this course is Math 106. The cost of this class is \$1300 and will be placed on your Class-App account.

Within this single App students will have access to all the great features of Blackboard. No matter where the student access their class from, be it phone, computer, or tablet, the student will be able to interface with Blackboard as they currently do from their computer (or even better!). Students will have the same interaction via Blackboard's set-up on their iPhone, iPad, Android Phone, Android Tablet, etc.

Additionally, students will access their homework in MyMathLab through this single App, and complete homework assignments, test, and quizzes.

In each class App there will be note-taking software that allows the student to take notes via their tablet, and store these notes on the cloud. These notes can be taken during a lecture via conferencing, or on their own.

Aha, let us not forget the textbook. Within this wonderful App will be the students' textbook for the class and any additionally software they may need.

With this awesome new classroom, where does a teacher fit in? Instructors are assuming a new role in education and must wear several hats to ensure the success of our future generations. Three predominant roles are educator, business leader, and psychologist. First and foremost the world needs educators to transfer knowledge whether through face-to-face transfer or some other medium we will discover in the future. Educators have the ability to creatively implement almost any teaching medium that ensures maximal learning on the part of the students. This is a gift that sets educators apart from experts in other fields.

Educators must assume the role of a business leader as they need to sell the new technology and opportunities to university leadership that is unaware of the classroom benefits. Given the financial demands on university leadership, educators must seek alternative methods of funding and implement innovative ways to obtain top technology with little impact to schools' bottom-line. One obvious way is through school and industry partnerships as a classroom is a prime advertising location.

Finally, educators must be empathetic to long held educational stereotypes in order to ensure change. A large percentage of university leadership never experienced the technological advancements of the past fifteen years as a student, and still identify with a typical classroom setting. Furthermore, factoring in the large emphasis on accrediting institutions and educational reform becomes almost stagnant. Yet with an understanding of how university leadership thinks, educators can strategically work to enable leadership to see the benefits of implementing technology and restructuring the educational paradigm, as the alternative is bleak.

Education must change to meet the current and future needs of our students. Current instructing methods are outdated and serve little purpose to preparing our students for the future; hence the current economic condition. To empower creative students, educators must become innovative leaders on the forefront of technological development, developing rigorous education that is available to all. The Class App is one method (which will surely be outdated in ten years) that can meet educational needs in the immediate future.