Making Mathematics Portable

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Outline

1 Introduction

2 Reflections

3 Pedagogy

4 Applications

5 Feedback and Conclusions

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- First data services, person to person SMS text messaging, appear in 1993 (the 2G generation).
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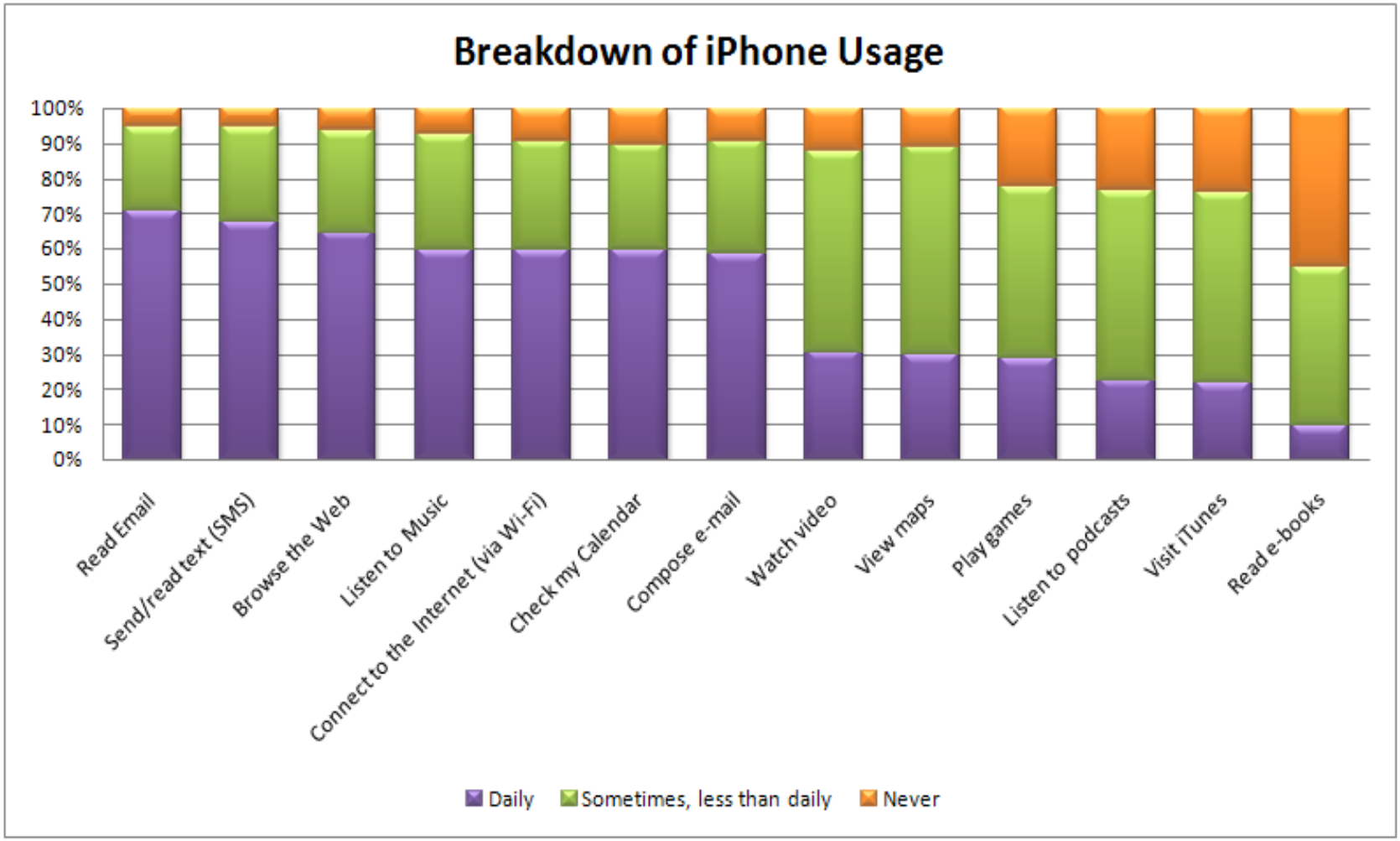
What are students using? [1]



What have we learned?

Some of the general limitations and advantages of iPhone usage based on class observations and student and faculty feedback are identified as follows:

Pros	Cons
• Ease of access to portable digital course content.	• A limited number of apps geared toward mathematics.
• Increased student engagement in the classroom.	• Time consuming to utilize many features in the classroom.
• Increased student collaboration outside the classroom.	• Logistics of supplying, repairing, replacing.
• Decreased emphasis on physical resources and locations.	• Potential source of distraction for some students.

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A Model For Integrating Mobile Learning in Undergraduate Mathematics

While still a work in progress, the formation of a working model which maximizes contributions from both student and device is the goal of this initiative. In this regard, we have formulated the following areas as being fundamental to the integration of mobile learning in our undergraduate mathematics program.

1. New Pedagogies
2. Student as Publisher
3. Course Applications

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New Pedagogies

- Where do classical lecture formats fit in?
- How can we engage students?
- Peer assessment and collaborative reflection drive results.
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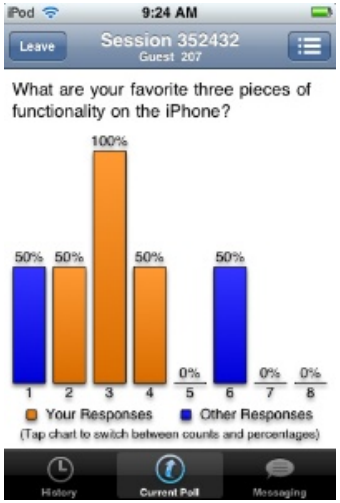
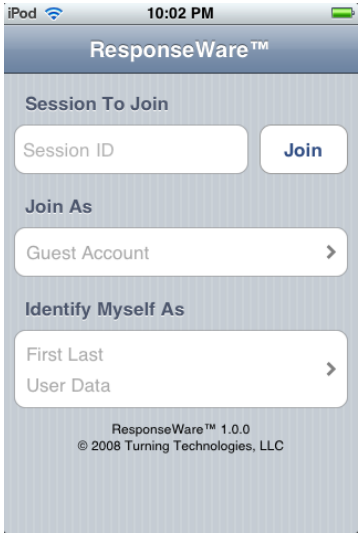
ResponseWear

One example which fits all of these areas is the use of interactive polling. Turning Point Technologies' ResponseWare is useful in this capacity. With ResponseWare, professors can initiate a discussion during lecture and have students respond in real-time using their iPhones. ResponseWare instantly compiles the results for immediate assessment. ResponseWare is a free app available for download from the iTunes app store.





Student as Publisher

- Students take ownership of their work.
  - In a mobile learning environment student work is the culmination of a peer reviewed, faculty/student led workflow.
  - Students do not simply hand in work, they publish work for any and all to see.
- Student is both learner and teacher.
  - The most intriguing benefit of a mobile learning environment is the ability for a professor to facilitate "classroom learning" long after class has ended.
  - This naturally leads to students organizing themselves in classroom like environments with their classmates where students both lead discussions and take part in them.

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Course Applications

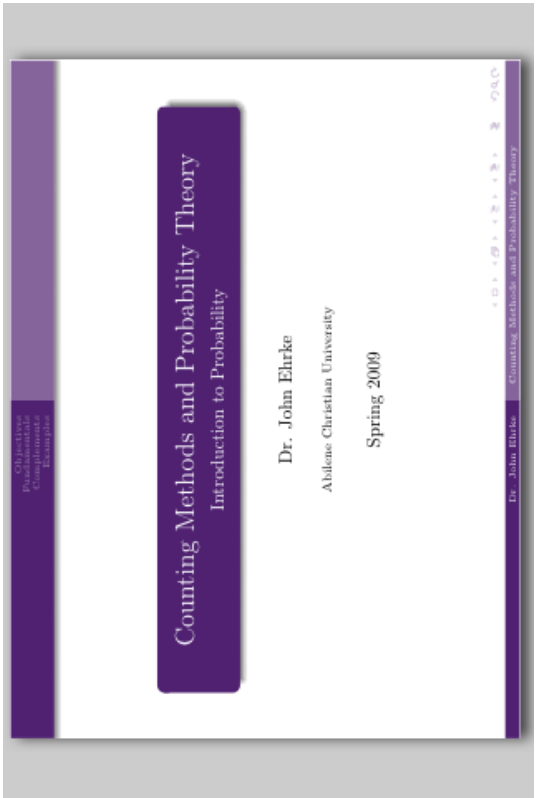
Courses	*Podcasting*	*iTunesU, Content Server*
MATH 120	• TI-SmartView screencasts • Lecture video	• Course syllabus • ResponseWear • Lecture slides
MATH 361	• Maplecasting • Lecture video • Problem of the week • Homework helpers	• Course syllabus • Lecture slides • Undergraduate research articles
MATH 399	• LaTeX podcasts • Presentation Tips podcasts	• Project guidelines • Past project examples • Peer review forum

MapleCasts

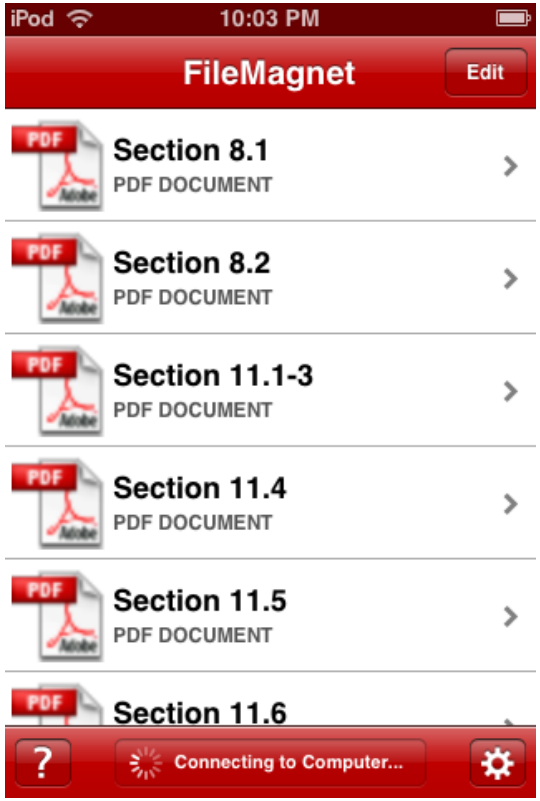
Using screencasting software such as Camtasia Studio allows professors to extend the classroom experience by providing detailed instructions for solving problems within any number of software applications such as Maple, MatLab, LaTeX, Mathematica, etc... These MapleCasts allow students to accelerate the learning curve of such programs and offers students a valuable resource that otherwise would have taken a significant amount of class time. Often times I will embed these files directly into pdf lecture notes as is done below. (video removed due to file size constraints)

Other Applications

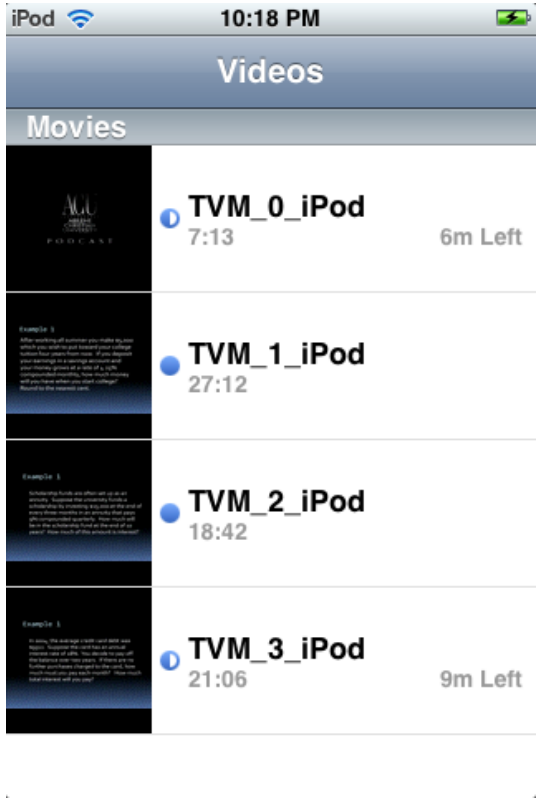
Lecture Notes



File Transfer



Video Lectures



iTunesU

Featured Contributors

- **The Making of Jacob's Dream**
  Last Modified: Feb 9, 2009
  Total Tracks: 3
- **Summit: Exploring Romans**
  Last Modified: Feb 9, 2009
  Total Tracks: 336
- **Portable Technology & Faith**
  Last Modified: Feb 9, 2009
  Total Tracks: 28
- **Mobile Learning**
  Last Modified: Oct 13, 2008
  Total Tracks: 16
- **Stewllenium Radio: Finance & Investing**
  Last Modified: Jan 27, 2009
  Total Tracks: 84

Areas of Study

- **Arts & Humanities**
  Last Modified: Mar 25, 2009
  Total Tracks: 191
- **Business & Finance**
  Last Modified: Feb 13, 2009
  Total Tracks: 164
- **Communication & Media**
  Last Modified: Oct 3, 2008
  Total Tracks: 204
- **Education & Human Services**
  Last Modified: Sep 19, 2007
  Total Tracks: 15
- **International**
  Last Modified: Nov 24, 2008
  Total Tracks: 3
- **Ministry & Theology**
  Last Modified: Dec 12, 2008
  Total Tracks: 406
- **Science & Technology**
  Last Modified: May 13, 2008
  Total Tracks: 39
- **Teaching, Learning, & Research**
  Last Modified: Mar 14, 2009
  Total Tracks: 21

TOP DOWNLOADS

- Stewllenium Radio #9 PE EPS Sensitivity
- For Freedom You Have Been Set Free: The Magic Negro in Churches of Christ, Part 2 of 3
- Five Theological Turnings (Part 1 of 2)
- iTunesU
- Mrs. Doubtfire
- ACUmobile 1-iPhone
- Backgrounds: History & Religion
- GhostHunters
- Worldview and the Work of William Cowper
- Convening the Mediation: the First Negotiation - Part 2

WHAT'S NEW

- Leadership Summit Speakers
- Hamil Harris, Washington Post, Diversity in the Media
- Dr. Jack Scott, California state senator
- The Writing Center
- Connected: the Movie

WEB LINKS

- Abilene Christian University
- Admissions
- ACU on iTunes U
- Alumni Association
- Mobile Learning at ACU

Student Feedback

- *"I'm not sure I enjoy all the change. Sometimes technology can be confusing and frustrating."*
- *"I enjoy the thought of being able to come to class with only what I can fit in my pocket, and still feel completely prepared for that class."*
- *"I loved the videos! It made understanding and working through the problems much easier so that I could move into the homework at a quicker pace because sometimes it takes me a while to recall exactly where we left off in class."*
- *"It's always nice to be able to hit pause."*

Conclusion

Future Questions

1. What role does mobile learning play in enhancing the framework for undergraduate research?
2. What are the implications of an ever evolving set of assessment criteria?
3. Will professors be able to stay ahead of the technology curve and provide the type of course content that meets their student's needs?

References

- Apple iPhone: Successes and Challenges for the Mobile Industry, March 31, 2008, Rubicon Consulting ©
- Corbell, J.R., Corbell, M.E., Are You Ready for Mobile Learning?, Educause Quarterly, November 2007.
- http://www.acu.edu/news/videos/index.html
- http://www.turningtechnologies.com/highereducationinteractivelearning/higheredresponsewareweb.cfm