TECHNOLOGY IN THE CLASSROOM
To what extent does students’ use of mobile technology in the classroom interfere with their learning?
COLLABORATIVE COURSE PROJECT

Course Project

In this course you will learn to design a study and train in different research methods by participating in a hands-on collaborative research project. The course project in Spring 2012 will examine students use of technology and how it affects their learning and academic performance. To study student use of technology we will use different kinds of (participant) observations and multiple kinds of structured, semi-structured, and unstructured interviews with students and instructors. We will write up the results in a PowerPoint presentation that we will present to the director of the Digital Union.

About the wiki

I have created this wiki to work collaboratively on the course project. Wikis are simply web sites that can quickly and easily be edited. It is ideal for collaborative projects.

On the left you find links to pages that help you edit or navigate the wiki. On the top you find links to "content" pages, including pages with information about grant writing.

Only wiki members can edit the pages. To start writing just click the "edit" button and start working. Use the "discuss" button below to discuss major issues or changes to the project or to ask questions of the other members. Keep in mind that nothing is ever lost on the wiki – we can track the history of the different changes and revert to earlier versions (see the "history" button below).

The information on this site is only accessible to project members. Information from this site cannot be shared with non-members.
AN ETHNOGRAPHIC APPROACH

- IRA approach
  - Iterative
  - Recursive
  - Abductive

- Considering meaning and context questions
  - POV1 → POV2

- Observations of students/instructors in natural settings

- Increase understanding and narrow focus using grounded theory

Three levels of analysis in ecocultural framework:

1. **Ecocultural context** (e.g., large university, technology is ubiquitous, commercial pressures)

2. **Cultural models** (e.g., student and instructor perceptions of learning and technology, goals and values)

3. **Direct focus on activity settings** (e.g., everyday routines in the classroom, participants, formal and informal rules).
FINDINGS
STUDENTS’ USE OF TECHNOLOGY

- 98% own a laptop
- 90% are on Facebook
- 72% check phone in class
- Multitasking is common

Picture from OSU Digital First
The ubiquity of technology is fundamentally changing the way students and instructors experience and negotiate the social dynamics of the classroom.
A link to a YouTube video is embedded into the PowerPoint. She clicks on the link, it opens in the browser and the movie attempts to load. As the movie is loading students begin to look up from their notes, laptops, and phones. I hear one student ask “Who is Kohlberg?”, the topic that was just covered in the lecture and who the video is about (fieldnotes).
After a minute or so an error message appears on the screen. The video does not load and the instructor immediately moves on without hesitation stating that “I will try again next class”. Students begin to look down unengaged again (fieldnotes).
Most instructors have rules about technology use in the classroom, especially texting.

Most students have used cell phone when it was banned by instructor.

Both talk about mobile technology use in terms of respect and rudeness.

Are the rules and the enforcement of the rules more distracting than the use of mobile technology?
EMERGENT RESEARCH QUESTIONS

- Is mobile technology any different from other distractions?
- When are students most distracted? When are they most engaged?
- Do students prefer classes where mobile technology is banned?
- Do students think that a technology ban improves learning?
Students say they are bored, tired or hungry when distracted.
- Mobile technology is not the only source of distraction.
- Talking students, phone and laptop are the greatest distractions.

<table>
<thead>
<tr>
<th>Distraction Classification (non-tech)</th>
</tr>
</thead>
<tbody>
<tr>
<td>sleep</td>
</tr>
<tr>
<td>conversation</td>
</tr>
<tr>
<td>student movement</td>
</tr>
<tr>
<td>repeating</td>
</tr>
<tr>
<td>slow</td>
</tr>
<tr>
<td>unprepared</td>
</tr>
</tbody>
</table>
WHEN ARE STUDENTS ENGAGED?

- **Most important factors**
  - The Instructor
  - Subject Matter
  - Discussions

- **Least important factors**
  - Power Point Lectures
  - Time of Day

Q: Think of the classes you’ve most enjoyed while in college. Rate the features of those classes according to how much they contributed to your interest.
PowerPoint is ubiquitous.  
It is boring and useful.
The role of course structure

- “Amazing, helpful, and guiding.”
- “It is boring and it sucks.”
- “A waste of time”
- “Engaging, interesting, learning”
Learning is student-centered. Learning occurs in small student groups. Teachers are facilitators or guides. Problems are the organizing focus and stimulus for learning. Problems are the vehicle for the development of clinical problem-solving skills. New information is acquired through self-directed learning. The process of problem-based learning was illustrated by Woods [17], who contrasted it with subject-based learning (Figure 2). Problem-based learning is suitable for introductory sciences and engineering classes (as it is for medicine, where it is currently used) because it helps students develop skills and confidence for formulating problems they have never seen before. This is an important skill, since few science, mathematics, or engineering graduates are paid to formulate and solve problems that follow from the material presented in the chapter or have a single "right" answer that one can find at the end of a book. An example of a PBL problem, adapted from Adams' [18] "dangling from a wire problem," is to "estimate the diameter of the smallest steel wire that could suspend a typical American automobile." The largest-scale implementation of PBL in the United States in undergraduate courses (including large introductory courses) is at the University of Delaware in Newark, Delaware, where it is used in many courses, including biology, biochemistry, chemistry, criminal justice, education, international relations, marine studies, mathematics, nutrition/dietetics, physics, political science, and exercise science [19, 20]. The initial PBL work at the University of Delaware was supported by the National Science Foundation (NSF) and the Fund for Improvement of Post-Secondary Education (FIPSE); more than 25 percent of the faculty have participated in weeklong formal workshops on PBL. Allen and Duch recently described their implementation of PBL problems for introductory biology [21]. Woods at McMaster University has described the university's implementation of PBL in engineering [17]. In the chemical engineering program there, PBL is used as part of two courses: one topic or problem in a junior-level course; and five topics in a senior-level course [22]. PBL is used in a theme school program created at McMaster University and in a junior-level civil engineering course and a senior-level project course in geography. These are examples of the use of small group, self-directed PBL where tutorless groups of five to six students function effectively. The class sizes are in the range thirty to fifty, with one or two instructors. The students currently take conventional courses. Project-based learning, which focuses on a project and typically a deliverable in the form of a report or presentation, was emphasized in a recent publication on project/problem-based learning at Aalborg University in Denmark (all majors), Maastricht University in Maastricht, The Netherlands (which implemented the McMaster PBL model in medicine in January 2005).

Differences in the use of PowerPoint are illustrated in Figure 1. Two models of the classroom-based teaching-learning process, as drawn by Lila Smith in about 1975. (a) "Pour it in" model; (b) "Keep it flowing" model. Figure 2. Problem-based learning contrasted with Subject-based learning.

Mobile technology and PowerPoint are ubiquitous in the classroom.

Mobile technology does not distract much more than other distractions.

PowerPoint can be disengaging if instructor reads line-by-line.

PowerPoint can also be used to actively engage students.

1. To better understand the role of technology in the classroom we need to study classrooms holistically as complex systems in which one cannot separate humans and technology.
   - It is the way humans use technology
2. It also requires a theory of human behavior that takes into account the habits, constraints, and dynamics that shape how instructors and students interact in the classroom.
   - Why do most instructors use PowerPoint? It is a cultural practice.
   - Why are instructors upset about technology use? It is social situation.
1. Use students’ mobile technology in the classroom to create more interactive classrooms that offer opportunities for students to participate.

2. Train instructors to use PowerPoint and other forms of technology more effectively to create more interactive classrooms.

3. Integrate training in learning technology with training in teaching and learning (DU + UCAT → DUCAT).
QUESTIONS

Thanks