Mobile learning

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**Educational Technology 0858-612, Spring 2022**

**Course description.**

Most of the world connects to the Internet from mobile phones, most of the time. Chromebooks, Android tablets and iPads have made one-to-one computing a reality in many U.S. school systems. Augmented reality and location based software offer new opportunities for context aware learning. Students carry significant computing power in their pockets. This course considers how mobile computing forces us to reconsider the time and place of learning.

**Keywords:** mlearning, mobile learning, android, ipad, tablet computing, AR, XR, augmented reality

 1951, Dick Tracy’s wearable computer

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**Office hours:**

* *office hours by appointment*

## Goals & objectives

Students taking this course will develop an understanding of the ways that mobile technologies can be used for teaching and learning. They will also consider the impact of mobile computing on the field of education as a whole.

Students will:

* understand basic underlying mobile technologies, and their educational implications
  + network types and capacity
  + hardware speed, capabilities, and energy requirements
  + screen and display technologies
  + software development platform, including Web, SMS, and local “Apps”
  + GIS and location services, and how they can be used to augment learning
  + augmented reality technologies
* understand the specific strengths and constraints of mobile interactivity & design
* implement best-practices of teaching with wireless mobile technology
* reflect on how mobile computing challenges the traditional time and places of learning

## Weekly topics

**Class format.** The class this semester will be taught in a hybrid-flexible (“hyflex”) format which combines asynchronous online work in some weeks, with live meetings held synchronously on campus at the Manhattan Center and over live Zoom video calls. The instructor will always be on campus for the hyflex sessions. You are invited to join in-person or via Zoom, and are free to change the format week to week. Regardless of modality, if a session is listed as “hyflex”, you must plan to be available from 4:30-6:20 on that date.

*Readings, discussion forums, and other assignments are available on the course website under the weekly topic.*

*Complete the readings* ***before*** *the session listed for hylfex weeks so that you come to class meetings prepared to discuss. For asynchronous weeks, you should do the readings early in the week so that you can participate in online activities that draw on them later in the week.*

**Hyflex sessions: Wednesday 4:30-6:20** Manhattan Campus room 274 or zoom

| Session | Date | Format | Topic | Readings | Due |
| --- | --- | --- | --- | --- | --- |
| 1 | Jan 26 | hyflex | Going mobile | - | - |
| 2 | Feb 02 | async | Mobile first | Weiser, Curinga | - |
| 3 | Feb 09 | hyflex | Tech reports | Explained Channel, Bright Side | tech report |
| 4 | Feb 16 | hyflex | App inventor 1 | Tissenbaum, App Invetor Tutorial | - |
| 5 | Feb 23 | async | Mobile computing and society | Black Mirror, Castells, Fussell, Aschoff | - |
| 6 | Mar 02 | hyflex | Situated & Distributed Cognition | Sharples, Brown, Zhang | - |
| 7 | Mar 09 | async | Augmented reality | Cantave, Ravenscraft, Patel, Cai | - |
| - | Mar 16 | - | *spring break* | - | app inventor 1 |
| 8 | Mar 23 | hyflex | 1:1 Computing | Zheng, Philip, Heflin, Naciri | - |
| 9 | Mar 30 | async | Mobile games for learning | Laato, Facer, Squire | - |
| 10 | Apr 06 | hyflex | App inventor 2 workshop | - | - |
| 11 | Apr 13 | async | Lit review | - | lit review |
| 12 | Apr 20 | hyflex | Reading screens | Margolin, Singer | - |
| 13 | Apr 27 | async | UDL & Mobile Assistive Tech | Google switch, Tania’s story, Sik-Lányi | - |
| 14 | May 04 | hyflex | Mobile app testing | - | app prototype |
| - | May 11 | - | *no class (makeup day)* | - | - |
| 15 | May 18 | async | app inventor project | - | app inventor 2 |

## Assignments & grading

| Assignment | Pct | Date Due |
| --- | --- | --- |
| Session leader | 10% | ongoing |
| Reading responses | 10% | ongoing |
| Tech report podcast | 10% | Feb 10 |
| App Inventor app 1 | 20% | March 17 |
| Lit review | 25% | March 31 |
| App Inventor app 2 | 25% | April 21 |

### Session leader (individual)

You will be responsible for leading a class session this semester. For async weeks, you will submit (to the instructor) an audio introduction to the readings and other materials; during hyflex meetings you will begin the session with a short introduction. Plan for about 10 minutes.

If you are leading an asynchronous class session, you will not submit your own reading response this week, but will play the role of moderator in our online discussion. You will ask follow up questions to posts and comments, connect students who address the same subjects but may not have seen each other, post to keep discussions on track (and civil if needed), and prompt/nudge your peers who seem to be falling behind.

If you are leading a live class, you will essentially be the seminar or workshop leader for that week. You should be very familiar with the readings and come to class with interesting questions and/or quotations from the texts that you believe will lead to fruitful discussions.

### Reading Responses (individual)

For most asynchronous weeks you will be asked to post a *reading response* on Moodle. This is the main online interaction for this portion of this course. Your reading response should be approximately 500 words, but occasionally may call for more or less.

A good reading response:

1. specifically refers to the readings and other activities due that week: you will usually want to quote the texts and refer to specific passages,
2. your post will start a new thread in our discussion forum, it should have its own unique (and clever) title,
3. is not a *summary*, you should have a point of view and express your own synthesis, understanding, and opinion about the topic under discussion,
4. sometimes this will relate to courses you are taking now, your work, or your personal life,
5. sometimes this will relate to other things you have read or studied (this is okay, just give us a little bit of reference and a way to find more information),
6. is not a formal, academic post (you don’t need APA style references), but you should include links, titles, authors names, etc for outside readings/videos/works,
7. *is* intended for this course and your classmates so it should be **professional** in substance and tone, and
8. **is posted on time**

The general workflow for these online weeks follows:

1. (Wed-Sat) Do course readings
2. (Sat-Mon) Write & post a reading response
3. (Tues-Wed) Read all of the responses and post comments/discuss

In addition to your own response, you should check the discussion board regularly. You are required to comment on at least two of your peer’s responses each week and you should respond to people who engage with you.

### Tech Report (pair)

Working in pairs, you will present a “Tech Report” on an aspect of mobile technology. Teams will prepare 10 minute presentation they will deliver in class. In the Moodle forum, each team will post a 1-paragraph abstract of their presentation and an annotated list of resources (e.g. websites, press, and scholarly articles) related to their topic. Annotations should only be a few sentences. The report does not need to include academic or experimental articles, but should give a general overview of the technology (how and where it works) as well as the latest state of the art of the field.

Choose one of these technologies for your report:

1. indoor location systems (bluetooth beacons, etc)
2. mobile payments (Google Wallet, Apple Pay, Alipay, etc)
3. Augmented reality (AR) headsets, glasses, etc
4. mesh networks
5. wireless/mobile encryption and security
6. wearable computing (other than AR sets)

This project is worth 10 points. Your report should:

* describe the technical details of the topic in a way that’s easily understood
* use video, sound, images as needed
* describe the main ways the tech is currently being used and its potential uses
* summarize why the technology may or may not be important

### App Inventor app 1 (individual)

You will design, develop, and test a mobile app built with MIT’s [app inventor software](https://appinventor.mit.edu/), which allows you to make mobile Android apps without writing any text-based code. For this assignment you will conceive of, design, and code a “simple” educational app with app inventor. The app will be “simple” because it will not have to use any advanced features such as having users log in, accessing internet resources, allowing for multi-user interactions, etc.

To design your project, think of a useful mobile app for teaching or learning. Start with a “problem” that you can describe, and then think of solutions to that problem that are a good fit for what we know about mobile technologies and mobile learning. If there’s an existing, better solution to what you’re proposing, you can either think of a way to improve it, or move on to a new idea. When you create your design, prioritize the most important features. You are only going to build a prototype – a working software application that can be tested and refined.

This project is worth 20 points and will be scored according to this scale:

* 5 points: learning framework (why does the concept make sense in terms of mobile learning?)
* 5 points: originality of the concept
* 5 points: quality of the “code”
* 5 points: quality of the usability / user experience

To submit this project, you will create a video screencast (5-8 minutes) where you demonstrate the “code” and how it’s organized, and then show the app running on a mobile device. [[Record the screen on Android](https://support.google.com/android/answer/9075928?hl=en)] [[Record the screen on iOS](https://support.apple.com/en-us/HT207935)]

Submit a link to the screencast and the exported app inventor project files.

### App Inventor app 2 (team)

Building on the skills and ideas from your first app inventor project, you will join a team (3-5 people) to build a larger, more complex mobile app for learning using the App Inventor platform. This second app should be more ambitious than the first one. You might want to include location or map data, voice recognition, multi-user support, storing information on the device, etc. It can be an extension of a previous project, or can be something designed from scratch.

This project is worth 25 points and will be scored according to this scale:

* 10 points: learning framework (why does the concept make sense in terms of mobile learning?)
* 5 points: originality of the concept
* 5 points: quality of the “code”
* 5 points: quality of the usability / user experience

This second project should have a more robust learning framework that incorporates the various approaches to mobile learning that we have learned this semester. When you submit the project, you will include a **written conceptual framework** (500-800 words) that describes:

* the problem being solved
* why existing solutions are not sufficient
* why your proposed solution is based on solid learning theory and instructional design
* why a mobile solution is the right solution for the problem

Your team will submit:

* the written framework
* a 5 minute *team* video explaining the goals of the app and showing it in use; reflect on what worked well and what still needs further development
* *individual* videos from each team members that walk through the code that team member worked on primarily

One team member must submit a link to the screencast and the exported app inventor project files. Everyone

### Mini literature review (individual)

For this assignment you will write a brief review of literature about how mobile technologies are used in a specific domain of learning. Broadly, your review should focus on a subject area (e.g. mathematics, language learning, teacher professional development) or target group/setting (e.g. students with disabilities, higher education, museum education, ENL students). You should read and review the most important scholarly articles in your topic area. This must include articles that do not describe *mobile learning*, but discuss the state of the art knowledge of the field. For example, if you choose to write about “mobile technologies in museum education,” you must include a brief overview of the key goals and techniques of museum education in general. From there, you will review the research on mlearning for museums.

Read the [Purdue University Online Writing Lab (OWL) guide to writing a literature review](https://owl.purdue.edu/owl/research_and_citation/conducting_research/writing_a_literature_review.html) to gain a better understanding of what is expected for this assignment. Typically, a literature review will be *exaustive* – in that it covers all of the public research on the topic. Your review can be selective, where you review the 5-10 **most important** articles published on your topic.

## Course Readings & Bibliography

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