Mobile learning

Matthew X. Curinga

Dino Sossi

Table of Contents

**Educational Technology 0858-612, Spring 2021**

**Course description.** Most of the world connects to the Internet from mobile phones, most of the time. Android tablets and iPads are filtering into schools — and the hands of children. 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, augmented reality

 1951, Dick Tracy’s wearable computer

**Instructor:** [Matthew X. Curinga](https://matt.curinga.com), [mcuringa@adelphi.edu](mailto:mcuringa@adelphi.edu)

**Office hours:**

* Monday 2-4pm
* Tuesday 4-5pm
* *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

*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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| week | date | topic | format | assignment |
| 1 | Jan 27 | Going mobile | zoom |  |
| 2 | Feb 03 | Mobile first | async |  |
| 3 | Feb 10 | Tech reports | zoom | tech report |
| 4 | Feb 17 | Mobile computing and society | async |  |
| 5 | Feb 24 | Cognition & Embodiment | zoom |  |
| 6 | Mar 03 | App Inventor hackathon | async |  |
| - | Mar 10 | *no class (mini break)* | - |  |
| 7 | Mar 17 | Augmented reality | zoom | app inventor |
| 8 | Mar 24 | 1:1 Computing | async |  |
| 9 | Mar 31 | Subject reports | zoom | subject report |
| 10 | Apr 07 | Mobile games for learning | async |  |
| 11 | Apr 14 | ARIS 1: location game design | zoom |  |
| 12 | Apr 21 | ARIS 2: build and test | async |  |
| 13 | Apr 28 | Reading screens | zoom | ARIS project |
| 14 | May 05 | UDL & Mobile Assistive Tech | async |  |
| - | May 12 | *no class (makeup day)* | - |  |
| 15 | May 19 | Mobile ID presentation | zoom | instr. design |

## 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 (pair)

You or you and a partner 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 zoom calls 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 an live class class (via zoom), 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. If you are leading a workshop, you will work with the instructor to design activities for the rest of the class and you will present the tools and facilitate the activities.

### Reading Responses (solo)

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 daily. 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 Podcast (pair)

Working in pairs, you will present a “Tech Report” on an aspect of mobile technology. Teams will prepare 10 minute presentation they will present 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.

Grading for this assignment will take into account:

* written report on Moodle
* quality and importance of the subject matter
* quality of the presentation

Example topics:

* wireless networks (wimax, mesh networks, p2p networks, 5G/6G)
* near field communications (NFC)
* device hardware (chips screens, etc)
* mobile payments (Google Wallet, Apple Pay, etc)
* GIS/GPS & location
* beacons, RFID, etc
* iOS and Android Platforms
* mobile media (video, audio, animations, web/html/css, etc.)
* speech recognition, text-to-speech, voice interfaces
* facial recognition & computer vision
* AR technologies (Goggles, biometrics, development platforms, etc)
* IoT (microboards, dev platforms, uses, sensors, etc)
* mobile computing and assistive technology
* wireless/mobile security
* virtual assistants (Alexa, Google Home, etc)
* gesture interfaces

### App Inventor app (team)

Working in a team, 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. We will all work on the same theme, which each team presenting their solution. The theme for the Hackathon will be determined by the class and the instructor. App Inventor apps only run on Android, but the software includes a simulator that any user can use from the web. The final product can be installed on an Android phone or tablet.

### Mini literature review (solo)

For this assignment you will write a report about how mobile technologies are used in a specific domain of learning. Broadly, your report 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). Your report will include a written portion and then a visual presentation video where you demonstrate and discuss apps/mobile software related to your topic.

The written report should:

* describe the domain your researching, including an understanding of best pedagogical practices in general (without tech or mobile tech)
* include a literature review of relevant research in mobile learning (if you can’t find at least 3 good academic articles, you should choose a different topic)
* the lit review provides both a summary and a synthesis of the research
* describe the software that you will demo and discuss in your video (links to developer, brief summary, etc)

Your report *must* include specific screenshots (or embedded) videos of mobile apps that are related to the report, showing how they support (or hinder) learning objectives.

In class, you will take about 5 minutes to present your report and then answer questions related to the topic.

## Course Readings & Bibliography

Ally, M. (Ed.). (2009). [*Mobile learning transforming the delivery of education and training*](http://www.aupress.ca/index.php/books/120155). Edmonton, AB: AU Press. ISBN 978-1-897425-44-2

Aschoff, Nicole . (2020, June 15). Smartphones Have Transformed the Fight Against Police Violence. *Jacobin Magazine*.

Apple, Inc. (n.d.). [human interface guidelines](https://developer.apple.com/design/human-interface-guidelines/).

Billings, S. (2011, January 4). [What can the iPad do for museums?](http://www.museumnext.org/2010/blog/what-can-the-ipad-do-for-museums) Museum Next.

*Black Mirror* [Video] “Nosedive” (Season 3, Episode 1)

Brown, J. S., Collins, A., & Duguid, P. (1989). [Situated cognition and the culture of learning.](http://people.ucsc.edu/~gwells/Files/Courses_Folder/ED%20261%20Papers/Situated%20Cognition.pdf) Educational Researcher, *18*(*1*), 32-42.

Cai, S., Wang, X., & Chiang, F.-K. (2014). A case study of Augmented Reality simulation system application in a chemistry course. *Computers in Human Behavior*, *37*, 31–40. <https://doi.org/10.1016/j.chb.2014.04.018>

Cantave, G. (2018). [Video] [How augmented reality is changing activism](https://moodle.adelphi.edu/mod/url/view.php?id=3347563). [TED].

Carr, D. (2010, January 1). Why Twitter will endure. *The New York Times*.

Castells, M. (2007). [Communication, power and counter-power in the network society.](http://ijoc.org/ojs/index.php/ijoc/article/download/46/35) *International Journal of Communication*, *1*(1), 238–266.

Castells, M., Fernandez-Ardevol, M., LinchuanQiu, J., & Sey, A. (2006). *Mobile communication and society: A global perspective.* Cambridge, MA: The MIT Press.

Chaiprasurt, C., Esichaikul, V., & Wishart, J. (2011). [Designing mobile communication tools: A framework to enhance motivation in online learning environments.](http://mlearn.bnu.edu.cn/source/ten_outstanding_papers/Designing%20Mobile%20Communication%20Tools%20A%20Framework%20to%20Enhance%20Motivation%20in%20Online%20Learning%20Environment.pdf) Presented at *mLearn 2011*, Beijing, China.

De Jong, T., Specht, M., & Koper, R. (2008). A reference model for mobile social software for learning. *International Journal of Continuing Engineering Education and Life Long Learning*, *18*(1), 118–138.

Doctorow, C. (2011, May 2). [Techno-optimism.](http://www.locusmag.com/Perspectives/2011/05/cory-doctorow-techno-optimism/). *LOCUS online.*

Dourish, P. (2004). *Where the action is: The foundations of embodied interaction.* (New edition.). Cambridge, MA: The MIT Press.

Dunleavy, M., Dexter, S., & Heinecke, W. (2007). What added value does a 1:1 student to laptop ratio bring to technology-supported teaching and learning? *Journal of Computer Assisted Learning*, *23*(5), 440-452.

Evans, C. (2008). The effectiveness of m-learning in the form of podcast revision lectures in higher education. *Computers & Education*, *50*(2), 491-498.

Facer, K., Joiner, R., Stanton, D., Reid, J., Hull, R., & Kirk, D. (2004). Savannah: Mobile gaming and learning? *Journal of Computer Assisted Learning*, *20*(6), 399–409.

Fernandez, V., Simo, P., & Sallan, J. M. (2009). Podcasting: A new technological tool to facilitate good practice in higher education. *Computers & Education*, *53*(2), 385-392.

Fussell, Sidney. 2019. “Why Hong Kongers Are Toppling Lampposts.” *The Atlantic*. August 30, 2019.

Hillesund, T. (2010). [Digital reading spaces: How expert readers handle books, the Web and electronic paper.](http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/2762/2504) *First Monday*, *15*(4).

Hu, W. (2011, January 4). [Math that moves: Schools embrace the iPad.](http://www.nytimes.com/2011/01/05/education/05tablets.html?pagewanted=all). *The New York Times*.

Kay, R. H., & LeSage, A. (2009). Examining the benefits and challenges of using audience response systems: A review of the literature. *Computers & Education*, *53*(3), 819-827.

Kelly, K. (2019, February 12). [AR Will Spark the Next Big Tech Platform—Call It Mirrorworld](https://www.wired.com/story/mirrorworld-ar-next-big-tech-platform/). *Wired*.

Kloos, M. (n.d.). [Communities of practice 2.0.](http://www.martinkloos.nl/thesis-M.Kloos.pdf)

Mayer, R. E. (2007). Five features of effective multimedia messages: An evidence-based approach. In S. M. Fiore & E. Salas (Eds.), *Toward a science of distributed learning*. (pp. 171–184). Washington, DC: American Psychological Association. [moodle](https://moodle.adelphi.edu/file.php/49382/mayer-2003-multimedia-methods.pdf)

Mirzoeff, N. (2011, January 31). [Networked visuality: The revolution in North Africa.](http://nicholasmirzoeff.com/RTL/?p=32) *For the Right to Look.*

Morozov, E. (2009). Iran: Downside to the “Twitter revolution.” *Dissent*, *56*(4), 10-14. doi:10.1353/dss.0.0092

Morozov, E. (2011). [The Internet in society: Empowering or censoring citizens?](http://youtu.be/Uk8x3V-sUgU)[video]. RSA Animate.

Motiwalla, L. F. (2007). Mobile learning: A framework and evaluation. *Computers & Education*, *49*(3), 581–596.

Naismith, L., Lonsdale, P., Vavoula, G., & Sharples, M. (2004). [Literature review in mobile technologies and learning.](http://archive.futurelab.org.uk/resources/documents/lit_reviews/Mobile_Review.pdf) *FutureLab Report*, *11*.

Naciri, A., Baba, M. A., Achbani, A., & Kharbach, A. (2020). [Mobile Learning in Higher Education: Unavoidable Alternative during COVID-19](https://www.aquademia-journal.com/download/mobile-learning-in-higher-education-unavoidable-alternative-during-covid-19-8227.pdf). *Aquademia*, *4*(1), ep20016. <https://doi.org/10.29333/aquademia/8227>

Naismith, L., & Smith, M. P. (2009). [Using mobile technologies for multimedia tours in a traditional museum setting.](http://www.aupress.ca/books/120155/ebook/12_Mohamed_Ally_2009-Article12.pdf) In M. Ally (Ed.), *Mobile learning transforming the delivery of education and training* (pp. 247-264). Edmonton: AU Press.

Negroponte, N. (2012, February) [Learning by themselves.](http://youtu.be/CNRaM2GgQuA) [Video of a lecture presented at the *Solve for X forum*]

Nielsen, J. (2011, May 23). [iPad usability: Year one.](http://www.useit.com/alertbox/ipad.html). *Jakob Nielsen’s Alertbox*.

[One Laptop per Child.](http://en.wikipedia.org/wiki/One_Laptop_per_Child) (2013). *Wikipedia*.

Papert, S., & Harel, I. (1991). [Situating constructionism.](http://www.papert.org/articles/SituatingConstructionism.html) *Constructionism* (pp. 1–11). Norwood, N.J.: Ablex Pub. Corp.

Pasnik, S. (2007). [iPod in education: The potential for teaching and learning.](http://cct.edc.org/sites/cct.edc.org/files/publications/iPod_in_Education_Whitepaper.pdf) [White paper]. *edcommunity.apple.com.*

Patel, N. (2021, December 14). [Audio podcast] [The metaverse is already here—And it’s full of Pokemon, says Niantic CEO John Hanke](https://www.theverge.com/22832490/niantic-ceo-john-hanke-metaverse-pokemon-go-ar-vr-podcast-decoder-interview). *The Verge*.

Penuel, W. R. (2006). [Implementation and effects of one-to-one computing initiatives: A research synthesis.](http://jhauge.tie.wikispaces.net/file/view/ISTE.pdf) *Journal of Research on Technology in Education*, *38*(3), 329.

Pyke, S. M. (2010). An initiative in introducing iPads to higher education. *ERGA Conference (5th: 2010: Adelaide, Australia)*.

Ravenscraft, E. (2021). [What Is the Metaverse, Exactly?](https://www.wired.com/story/what-is-the-metaverse/) *Wired*.

Rheingold, H. (2002). *Smart mobs: The next social revolution.* Cambridge MA: Basic Books. ISBN 0738208612, 9780738208619

Ritter, S., Anderson, J., Koedinger, K., & Corbett, A. (2007). [Cognitive tutor: Applied research in mathematics education.](http://pact.cs.cmu.edu/pubs/Ritter%20Anderson%20Koedinger%20Corbett%202007.pdf) *Psychonomic Bulletin & Review*, *14*(2), 249–255.

Rosenbaum, E., Klopfer, E., & Perry, J. (2006). On location learning: Authentic applied science with networked augmented realities. *Journal of Science Education and Technology*, *16*(1), 31-45.

Ryu, H., & Parsons, D. (Eds.). (2008). *Innovative mobile learning: Techniques and technologies.* (1st ed.). Hershey, PA: Information Science Reference. ISBN 1605660620

Sen, A. (2010). [The mobile and the world.](http://itidjournal.org/itid/article/view/614/254) *Information Technologies & International Development*, *6*(Special Edition).

Sharples, M., Taylor, J., & Vavoula, G. (2016). A Theory of Learning for the Mobile Age. In *The SAGE Handbook of E-learning Research* (pp. 63–81). SAGE Publications Ltd.

Squire, K. (2010). From information to experience: Place-based augmented reality games as a model for learning in a globally networked society. *Teachers College Record*, *112*(10), 2565–2602.

Squire, K. D., & Jan, M. (2007). Mad City mystery: Developing scientific argumentation skills with a place-based augmented reality game on handheld computers. *Journal of Science Education and Technology*, *16*(1), 5-29.

Traxler, J. (2009). [Current state of mobile learning.](http://www.aupress.ca/books/120155/ebook/01_Mohamed_Ally_2009-Article1.pdf) In M. Ally (Ed.), *Mobile learning transforming the delivery of education and training* (pp. 9–24). Edmonton, AB: AU Press.

van der Merwe, R. (2012, March 12). [A dad’s plea to developers of iPad apps for children.](http://uxdesign.smashingmagazine.com/2012/03/12/dads-plea-developers-ipad-apps-children/). *Smashing Magazine*.

Weiser, M. (1991). [The computer for the *21st* century.](http://www.ubiq.com/hypertext/weiser/SciAmDraft3.html) *Scientific American*, *265*(3), 94–104.

Wenger, E. (2006, June). [Communities of practice: A brief introduction.](http://www.ewenger.com/theory/)

Wishart, J. (2009). [Use of mobile technology for teacher training.](http://www.aupress.ca/books/120155/ebook/13_Mohamed_Ally_2009-Article13.pdf) In M. Ally (Ed.), *Mobile learning transforming the delivery of education and training* (pp. 265–278). Edmonton, AB: AU Press.

Zheng, B., Warschauer, M., Lin, C.-H., & Chang, C. (2016). Learning in One-to-One Laptop Environments: A Meta-Analysis and Research Synthesis.\_ Review of Educational Research\_, *86*(4), 1052–1084. <https://doi.org/10.3102/0034654316628645>

Zhang, Jianwei, Marlene Scardamalia, Richard Reeve, and Richard Messina. 2009. “Designs for Collective Cognitive Responsibility in Knowledge-Building Communities.” *Journal of the Learning Sciences* *18* (1): 7–44.