

CD 145 / ED 182

Technological Tools for Learning

Spring, 2013

Tuesday 9-11:30am

Location:

Curriculum Lab at the Eliot-Pearson Department of Child Development

Prof. Marina Bers

Marina.Bers@tufts.edu

1-617-627-4490

COURSE DESCRIPTION

This course explores the design and use of new technologies for learning. The underlying philosophy of this course is "constructionism", which states that people learn better when engaged in making and designing their own computational meaningful projects; therefore, we will become designers of technological tools to be used in educational and we will become researchers to assess the thinking and learning fostered by the different tools. We will also explore current research and debates regarding educational technologies.

COURSE REQUIREMENTS

Readings and class participation (On-going--10% of grade): All students are expected to do the readings, and to participate in discussions of the readings in class. Most readings will be linked from the syllabus. It is strongly suggested that students print them out and have them available in a folder to bring to class.

Class presentations (On-going--20% of grade): Class time will be organized as discussions, not lectures. To help get discussions started, each session a student will be asked to summarize the readings and suggest one question or provocative issue.

Scratch project (Due March 12--30% of grade): Students create a Scratch project to teach about robotics.

Final video (April 23th—40% of grade). In pairs students will create a 5 minute video project for teachers about 1) the potential of using Scratch Jr., 2) a tutorial about one aspect of Scratch Jr, and 3) or documenting a case study of a young child (4-7) learning and working with Scratch Jr.

January 22: Introduction and Course Overview

Readings for Class	<p>Koschmann, T. D. (1996). Paradigm shifts and instructional technology: An introduction. In T. D. Koschmann (Ed.), <i>CSCL: Theory and practice of an emerging paradigm</i> (pp. 1-24). NJ: Lawrence Erlbaum.</p> <p>Papert, S. (1999, March 29). Papert on Piaget. Time Magazine, special issue on "The Century's Greatest Minds,"105</p>
Design Studio	<p>Class activity with the four paradigms and Logo</p> <p>Papert's video</p>

January 29: Programming robots in Kindergarten

Readings for Class	<p>Bers, M. & Horn, M. (2010). Tangible programming in early childhood: Revisiting developmental assumptions through new technologies. In I. R. Berson & M. J. Berson (Eds), <i>High-tech tots: Childhood in a digital world</i>. Greenwich, CT: Information Age Publishing.</p> <p>Bers, M (2011) The TangibleK Robotics Program: Applied Computational Thinking for Young Children Early Childhood Research & Practice (Volume 12, No. 2).</p> <p>Kazakoff, E., & Bers, M. (2012). Programming in a robotics context in the kindergarten classroom: The impact on sequencing skills. <i>Journal of Educational Multimedia and Hypermedia</i>, 21(4), 371-391.</p>
Design Studio	<p>Students will explore tangible programming with CHERP Garden activity with WeDO</p>

February 5: Dances around the world with KIWI (Amanda)

Readings for Class	<p>Ready for Robotics website</p>
Design Studio	<p>Students will work on dancing robots with KIWI</p>

February 12: Learning Programming with Scratch

Readings for Class	<p>Resnick, M., Maloney, J., Monroy-Hernandez, A., Rusk, N., Eastmond, E., Brennan, K., Millner, A., Rosenbaum, E., Silver, J., Silverman, B., & Kafai, Y. (2009). Scratch: Programming for All. <i>Communications of the ACM</i>, vol. 52, no. 11, pp. 60-67 (Nov. 2009).</p>
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	Resnick, M. (2006). Computer as Paintbrush: Technology, Play, and the Creative Society . In Singer, D., Golikoff, R., and Hirsh-Pasek, K. (eds.), <i>Play = Learning: How play motivates and enhances children's cognitive and social-emotional growth</i> . Oxford University Press.
Design Studio	Scratch activity (cards)

February 19:Scratch project

Design Studio	Developing a Scratch project to teach robotics
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February26:Visit to classroom I: Iditarod

Design Studio	Iditarod project in first grade
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March 5: Visit to classroom II: Iditarod

Design Studio	Iditarod project in first grade
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March 12: Scratch Jr

Readings	<p>NAEYC Policy Statement</p> <p>http://www.naeyc.org/content/technology-and-young-children</p> <p>Barron, et al. (2011). Take a giant step: A blueprint for teaching young children in a digital age. New York, NY: Joan Ganz Cooney Center</p> <p>http://www.joanganzcooneycenter.org/upload_kits/jgcc_takeagiantstep.pdf</p> <p>Druin, A. (2002) The role of children in the design of new technology. Behaviour and Information Technology (BIT), 21 (1), 1-25.</p> <p>http://hcil2.cs.umd.edu/trs/99-23/99-23.pdf</p>
Design studio	<p>ScratchJr Page</p> <p>http://ase.tufts.edu/DevTech/ScratchJr/ScratchJrHome.asp</p> <p>Students will work with Scratch Jr</p>

Assignment Due	Scratch project
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March 19: No class. Spring break

March 26: Computational literacy and technological fluency

Readings for Class	<p>Technological Fluency</p> <p>Jenkins, H. et al. (2006). Confronting the Challenges of Participatory Culture: Media Education for the 21st Century. MacArthur Foundation.</p> <p>Alliance for Childhood Tech Tonic: Towards a New Literacy of Technology</p> <p>Technological Literacy standards (ITEA International Technology Education Association)</p> <p>Massachusetts Curriculum Frameworks for Science and Technology / Engineering and Massachusetts Technology Literacy Standards and Expectations</p> <p>Technically Speaking: Why all Americans Need to Know More about Technology (National Academy of Engineering and National Research Council, 2002)</p> <p>NETS (National Educational Technology Standards) Project, ISTE (International Society for Technology in Education)</p>
Design Studio	Students will compare and contrast the ways in which the different documents define what it means to be computer literate.

April 2: On line learning

Guest presentation and activity with Gina Seising

April 9: Games for learning

Readings for Class	<p>Klopfer, E, Osterweil, S & Salen, K (2009) Moving Learning Games Forward . The Education Arcade, MIT</p> <p>Gee, James Paul. (2008) "Learning and Games." In <i>The Ecology of Games: Connecting Youth, Games, and Learning</i>. Edited by Katie Salen. The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. Cambridge, MA: The MIT Press, 2008. 21–40.</p> <p>Barab, S; Gresalfi, M; Ingram-Goble, A (2010) Transformational Play: Using Games to Position Person, Content and Context. <i>Educational Researcher</i>, Vol 39, N 7 pp525-536</p>
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Design studio	Swinx game
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April 16: Current debates on Educational Technologies

Readings for Class	<p>Cuban, L So much high-tech money invested, so little use: how come?</p> <p>Wartella, E. A., & Jennings, N. (2000). Children and Computers: New Technology-Old Concerns. The Future of Children: Children and Computer Technology, 10(2).</p> <p>Papert, S. (1987). Computer criticism vs. technocentric thinking. Educational Researcher, 16(1), 22-30.</p>
Design studio	In-class debate

April 23: Final presentations

Assignment due	Scratch Jr. case studies video projects
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