

CD 145 / ED 182

Technological Tools for Learning

Spring, 2014

Tuesday 9-11:30am

Location:

Curriculum Lab at the Eliot-Pearson Department of Child Development

Prof. Marina Bers

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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 Jr project (Due February 11---20% of grade). Students will work and share a completed Scratch Jr project that fits into one of two categories: interactive stories or interactive games.

Iditarod video project (Due April8--30% of grade):In pairs, students create a 1 min video to show others about the Iditarod experience. The video can focus on the technology itself, on a whole class experience, on a particular child experience (case study), on the teacher, on the parents, on other classmates experience. Prior approval of Prof. Bers required

Sensors Curriculum(April 22—20% of grade). In pairs students will develop a curriculum that focuses on sensors with KIWI.For the final presentation day, they will have the class experience their curriculum activity and complete the assessments. As a final paper they will deliver the completed curriculum template and assessments.

January 21: 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>

January28: 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, 21</i>(4), 371-391.</p>
Design Studio	<p>Students will explore tangible programming with CHERPand KIWI</p>

February 4: Dances around the world with KIWI

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

February 11: 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</i></p>
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	<p>ACM, vol. 52, no. 11, pp. 60-67 (Nov. 2009).</p> <p>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.</p>
Design Studio	Scratch activity (cards)

February 18: Scratch Jr project (Dylan)

Readings for Class	<p>Flannery, L.P., Kazakoff, E.R., Bontá, P., Silverman, B., Bers, M.U., and Resnick, M. (2013). Designing ScratchJr: Support for early childhood learning through computer programming. In Proceedings of the 12th International Conference on Interaction Design and Children (IDC '13). ACM, New York, NY, USA, 1-10. DOI=10.1145/2485760.2485785</p> <p>Scratch Jr. website</p>
Design Studio	Scratch Jr projects

February 25: Visit to classroom I: Iditarod

Design Studio	Iditarod project in first grade
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March 4: Visit to classroom II: Iditarod

Design Studio	Iditarod project in first grade
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March 11: Visit to classroom II: Iditarod (Parent presentation)

Design Studio	Iditarod project in first grade
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March 18: No class. Spring break

March 25: Games for learning (Amanda and Amanda)

Design studio	Swinx game/Quandary/Apps for kids
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April 1: Curriculum with Sensors I

Design Studio	Students will develop curricular activities with sensors and teach each other
Assignment Due	Students will share the 1 min video about the Iditarod experience

April 8: Computational literacy and technological fluency

Readings for Class	<p>Jenkins, H. et al. (2006). Confronting the Challenges of Participatory Culture: Media Education for the 21st Century. MacArthur Foundation.</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 15: 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 22: Final presentations: Curriculum with Sensors: Let's play!

Assignment due	Curriculum
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