CS 4660: Educational Technology
Syllabus

14th October 2002

1 Class Specifics

Location Bunger Henry, Room 311
Class Time Tuesday and Thursday, 12-1:30 PM
Instructor Jochen “Je77” Rick
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T.A. Marty Geier
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CoWeb http://coweb.cc.gatech.edu/edTech2002
user name: anonymous
password: edtech
Textbooks There are two required textbooks for this class, available at GT Bookstore:
Changing Minds: Computers, Learning, and Literacy by Andrea diSessa
“I Won’t Learn from You” and Other Thoughts on Creative Maladjustment
by Herbert Kohl

2 Grading

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<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tr>
<td>Homework #1</td>
<td>10%</td>
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<tr>
<td>CoWeb Assignments</td>
<td>25%</td>
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<tr>
<td>Midterm Exam</td>
<td>15%</td>
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<tr>
<td>Project</td>
<td>25%</td>
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<td>Final</td>
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3 Homework

1. Write a 2-3 page paper on creating a learning environment for people to learn basic computing. Be sure to define what you think of as “basic computing” and justify your design decisions.

4 Schedule

Tu Aug 20  Introduction

Th Aug 22  Why use Computer to Learn?

*The Computer Delusion*\(^1\) by Todd Oppenheimer. This is an important Atlantic Monthly article which had many people questioning the role of computers in education. Be prepared to talk about reasons for and against using computers in education.

Tu Aug 27  Using Computers to Learn

*The Day After Net Day*\(^2\) by Amy Bruckman. Consider this a follow-up to the Atlantic Monthly article that outlines why you would want to use a computer and why you would not.

*The Gears of my Childhood* and *Computers for Children* by Seymour Papert. This is the foreword and introduction to Papert’s *Mindstorms: Children, Computers, and Powerful Ideas*, perhaps the most famous book in the field of educational technology. In this 1980 book, Papert outlines a clear vision as to what computers can give to education.

Th Aug 9  Computer as Literacy

Preface and Chapter 1 of *Changing Minds*. Here is another perspective of how to view the computer’s potential for learning.

Tu Sept 3  A System for Computational Literacy

Chapters 2 and 3 of *Changing Minds*. These chapters introduce Boxer, one of the best examples of using the computer to create a system that allows for computational literacy.

*Situating Constructionism* by Seymour Papert.

Th Sept 5  Computational Literacy: A Powerful Idea

*Powerful Ideas Need Love Too!*\(^3\) by Alan Kay. Kay is a major visionary for both the computer and using the computer to learn. His vision of the Dynabook, a small portable computer that children of all ages could use to play with and create media, has greatly affected both the development of the personal computer and the use of the computer for learning.

\(^1\)http://www.theatlantic.com/issues/97jul/computer.htm
\(^2\)http://www.cc.gatech.edu/fac/Amy.Bruckman/papers/convergence-day-after.pdf
\(^3\)http://el.www.media.mit.edu/groups/el/events/love-too.html
Tu Sept 10  Foundations of Learning
       Chapters 4-6 of *Changing Minds*.
       *Homework #1 due.*

Th Sept 12  Systems
       *Helping Children to Learn Hard Things*\(^4\) by Ken Kahn. This introduces
       ToonTalk (for Windows users, you can download a free trial version at
toontalk.com), about the earliest-level programming environment out there.
       *Pianos not Stereos*\(^5\) by Resnick, Bruckman, and Martin. This article gives
       a good introduction to some newer learning environments.

Tu Sept 17  Computer Systems for People
       Chapter 7 & 8 of *Changing Minds*.

Th Sept 19  Midterm Exam

Tu Sept 24  Logo and Designing Software
       *Software Design as a Learning Environment* by Harel and Papert. This
       is a highly influential paper about the ISDP project. It is a good exam-
       ple of how a programming language (like Logo) can be integrated into a
       curriculum in a way which makes sense.

Th Sept 26  Goodbye Logo as Latin
       *On the Cognitive Effects of Learning Computer Programming* by Pea and
       Kurland. Logo was one of the most popular trends in modern education.
       This study nearly killed off all the Logo momentum. Papert had created a
       grand vision, but this paper points out some flaws in that vision.

Fr Sept 27  DROP DAY

Tu Oct 1   Cognition and Education
       Chapter 1 of *Schools for Thought: A Science of Learning in the Class-
       room* by John T. Bruer. In this book, Bruer argues that we can effectively
       improve education by understanding the psychology of learning.

Th Oct 3   Cognition in Practice
       Chapter 1 of *The Psychology of Written Composition* by Scardamalia and
       Bereiter. This is an example of how understanding the psychology of an
       activity can inform us of how to better education.

Tu Oct 8   Cognitive Apprenticeship: Interaction
       p. 453-476 of *Cognitive Apprenticeship: Teaching the Crafts of Reading,
       Apprenticeship is one of (if not the most) complete system for integrating
       the lessons learned from the study of cognition into educational practice.

\(^4\)ftp://www.animated-programs.com/learnhardthings.pdf
\(^5\)http://lcs.www.media.mit.edu/groups/el/Papers/mres/pianos/pianos.html
Th Oct 10  Cognitive Apprenticeship: Design  


Tu Oct 15  MIDTERM RECESS

Th Oct 17  Cognitive-based Systems of Learning

*Educational Implications of Analogy* by Janet Kolodner. Case-based reasoning is a very broad theory of cognition. In this paper, Kolodner points the way as to how this cognitive perspective can lead to better education.

*Learning by Design from Theory to Practice* by Kolodner et al. This gives a more indepth view of how Kolodner’s group was able to transition from the theory (case-based reasoning) to the practice (learning by design).

Tu Oct 22  How do we learn?

*Epistemological Pluralism and the Reevaluation of the Concrete* by Turkle and Papert.

Th Oct 24  ICLS 2002: NO CLASS: One of the major conferences in the field of educational technology (International Conference of the Learning Sciences) is taking place in Seattle, so I will be out of town. Use this time to work on the project, since you will be able to avoid schedule conflicts during this time.

Tu Oct 29  Evaluation: Design Experiments  

p. 141-163 of *Design Experiments: Theoretical and Methodological Challenges in Creating Complex Interventions in Classroom Settings* by Ann Brown. This paper introduces design experiments and is probably the best paper written on evaluating classroom interventions.

Th Oct 31  Evaluation: Lessons Learned  

p. 163-178 of *Design Experiments: Theoretical and Methodological Challenges in Creating Complex Interventions in Classroom Settings* by Ann Brown. In this part of the paper, Brown states some problems that studies in learning research have to overcome.

Tu Nov 5  Evaluation: Reflecting on Theory  

*Evaluating What Really Matters in Computer-based Education* by Thomas Reeves. Many new learning environments claim to follow modern theories of learning—constructivism, cognition-based, socio-constructivism, etc. In this paper, Reeves gives some useful heuristics for assessing how these environments conform to modern learning theory.

Th Nov 7  “I Won’t Learn from You”

_I Won’t Learn from You_ by Herbert Kohl. Kohl is both a dedicated educator and polished author. Whereas the other readings are from a scientific/research perspective, this reading gives insight to some specific personal problems that can be found in the classroom.

Tu Nov 12  Designing for Learners: Theory

_Learner-Centered Design: The Challenge for HCI in the 21st Century_ by Soloway, Guzdial, and Hay. Those familiar with HCI will know user-centered design. This paper extends those principles to the case of learners.

Th Nov 14  Designing for Learners: Practice

_Learning Theory in Practice: Case Studies of Learner-Centered Design_ by Soloway et al.

Tu Nov 19  Project Design Review

Th Nov 21  Public Education

_Creative Maladjustment and the Struggle for Public Education_ by Herbert Kohl. Being a teacher isn’t easy, especially when the system is working against you. This essay is about making a difference in any way possible.

Tu Nov 26  Public Education

_Excellence, Equality, and Equity_ by Herbert Kohl. What does excellence in the schools really mean?

_Uncommon Differences: On Political Correctness, Core Curriculum, and Democracy in Education_ by Herbert Kohl.

Th Nov 28  THANKSGIVING

Tu Dec 3  Project Presentations

Th Dec 5  Project Presentations

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