CI 489: DELTA Capstone Project
Curriculum and Instruction

Credits: 3 (undergraduate); 4 (graduate)
Location: Education 166
Spring 2017

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Course Description

Course format
The course will focus on participatory design models for the development and research of educational materials through a studio-based, materials development project. The course integrates three emerging ideas into a studio experience. Students will pool their skill sets to work with a teacher to design and develop learning activities, field test and revise a curriculum sequence.

Students will work in groups, partnered with a teacher or educator in an informal environment (e.g. museum) to design and test a piece of technology and associated curriculum. The course is designed with more reading in the early weeks, and less reading and more class time devoted to project development activities towards the end of the semester.

Course objectives
The course is designed as the capstone project course for the DELTA undergraduate concentration, although students in other majors or graduate students may enroll with the instructor's consent. The course provides an opportunity to bring together the ideas learned from across the DELTA courses and implement them in a final project. The course builds on three major ideas emerging from recent research on digital environments for learning, teaching and agency. The first idea is that the use of domain-specific tools can make the difference in learning conceptual material. For example, in mathematics, tools can transform normally obscure ideas and concepts with multiple, vivid and linked representations and ways to engage in inquiry. The second idea is that even the best software is unlikely to engage learning or be used widely and/or effectively unless it is compatible with and linked to curriculum materials (such as teacher guides, student problems and activities, and assessments). The third idea emerging from recent research is that achieving an effective level of technology integration is virtually impossible without the direct involvement of developers *and* teachers with the design, development and research processes. A central part of the course will be attention to the collaborative process, with class activities, and regular journal assignments to foster this attention.

Course information and Pre-requisites
This course is required for students enrolled in the DELTA undergraduate concentration as part of the Learning and Education Studies Major. Other students, including graduate students, are welcome. Pre-requisite: none

Course Requirements and Assessment Overview
For undergraduate students
Final grades will be made up of:
Attendance and Class participation: 10%
Homework assignments: 10%
Collaboration evaluation: 10%
Journal submission (4): 10%
Final project and documentation: 60%

For graduate students
Graduate students must complete the same activities as undergraduate students. In addition, a 10-page paper that situates the final project in learning theory literature is required. This paper must justify the decisions that were made for your project, in relation to the research literature in the appropriate field (e.g. if your project focuses on a math activity, literature should be drawn from research in math education and technology).

Final grades will be made up of:
Attendance and Class participation: 10%
Homework assignments: 10%
Collaboration evaluation: 10%
Journal submission (4): 10%
Final project and documentation: 45%
Final paper: 15%

Grades and Grading Scale
Students may elect a course grade or satisfactory/unsatisfactory. Letter grades will be the default option. Plus and minus grades will be assigned for the semester grades. Grades will be assigned as follows:

A+	97-100%	C+	77-79.9%
A	93-96.9%	C	73-76.9%
A-	90-92.9%	C-	70-72.9%
B+	87-89.9%	D+	67-69.9%
B	83-86.9%	D	63-66.9%
B-	80-82.9%	D-	60-62.9%
		F	Less than 60%

Course Readings and Books
DiGiano, C., Goldman, S. & Chorost, M. (2009) Educating Learning Technology
    Designers: guiding and inspiring creators of innovative educational tools. Routledge.

Wiggins, G. and McTighe, J. (2005) *Understanding by Design (2nd Edition).* ASCD

A range of readings will be posted on the course Canvas site.

Course Policies
Attendance and late assignments
Attendance is very important during this course. If you are going to be absent for a particular class, please let me know as soon as possible. A maximum of two unexplained absences are allowed during the semester, after which, you will lose 10% of your grade for each absence.

Four journal submissions are required during the course. As these allow you to reflect on your project and collaboration process, they are essential and allow me to identify any issue arising in your groups or with your project early in the process. These should be submitted by the deadline.   Any extension for this or other activities should be requested as soon as possible.

Statement of Academic Integrity
 The Code of Policies and Regulations Applying to All Students will be applied in all instances of academic misconduct committed by students. This applies to all exams, presentations, assignments and materials distributed or used in this course.
http://admin.illinois.edu/policy/code/article1_part4_1-401.html

Equal Opportunity and Access Statement
Your success as a student is of utmost importance to me. If you have a disability or any other special circumstance that may have some impact on your work in this class, and for which you may require special accommodations, please contact me within the first two weeks in the semester so that accommodations can be made in a timely manner.
http://www.disability.illinois.edu/

Final project and documentation
The materials that you create during this course should include documentation of where they fit within a curriculum, as well as any supporting documentation. In most instances

Class Schedule

Week 1: Jan 18th
Introduction

Introduction to the course.
Ice-breakers

Assignment in progress
Interests and ideas assignment (Post on Canvas by Sunday night; review others before class)
Technology review activity (work in pairs; present in class during week 2)

Week 2: Jan 25th
Technology in Learning Environments

Reading due in class:

Bruner, J. (1960) Aids to Teaching. Chapter 6 in J. Bruner. The Process of Education. Cambridge, MA: Harvard University Press

Collins, A. (1996). Design Issues for Learning Environments. In S. Vosniadou, E. De Corte, R. Glaser, & H. Mandl (Eds.), *International Perspectives on the Psychological foundations of technology-based learning environmets.* (pp. 1–25). Lawrence Erlbaum Associates.

Mercier, E. & Higgins, S. (2015) *The 4 Ts of the Collaborative Classroom*. International Conference on Computer Supported Collaborative Learning 2015, Orchestrated Collaborative Classroom Workshop, Gothenburg, Sweden. CEUR.

Grad student reading:

Baylor, A. L., & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? *Computers & Education*, *39*(4), 395–414. http://doi.org/10.1016/S0360-1315(02)00075-1

Assignment due in class:

Technology review activity (present in pairs during class)
Interests and ideas assignment (submitted to blog Sunday night; review others before class)

Week 3: Feb 1st
Collaboration and the participatory design process

Reading:

Goldman, S., Mercier, E. M., & Booker, A. (2009). Partnering with K-12 Educators in Collaborative Design of Learning Technology. In M. C. C. DiGano, S. Goldman (Ed.), *Educating Learning Technology Designers: guiding and inspiring creators of innovative educational tools*. New York: Routledge.

Mercier, E. M., Goldman, S., & Booker, A. (2009). Focusing on Process: Evidence and ideas to promote learning through the collaborative design process. In C. DiGano, S. Goldman, & M. Chorost (Eds.), *Educating Learning Technology Designers* (pp. 36–61). New York, NY, USA: Routledge.

Whitfield, J. (2008). Group theory. *Nature*, *455*(October), 720–723.

Grad student reading
Rhoten, D., O'Connor, E., & Hackett, E. (2009). The act of collaborative creation and the art of integrative creativity: Originality, disciplinarity and interdisciplinarity. *Thesis Eleven*, *96*, 83–108. http://doi.org/10.1177/0725513608099121

Week 4: Feb 8th
Design Knowledge and Designing Learning Activities; conducting interviews

Groups will be formed and teachers assigned during this class.

Reading:

Hoadley, C. & Cox, C. (2009) What is design knowledge and how do we teach it. In DiGiano,
     C., Goldman, S. & Chorost, M. (eds) Educating Learning Technology
     Designers: guiding and inspiring creators of innovative educational tools. New York:
     Routledge

Cohen, L., Manion, L. & Morrison, K. (2011) Research Methods in Education. Chapter 21
     (Interviews). Taylor & Francis.

Wiggins, G. and McTighe, J. (2005) *Understanding by Design.* Chapters 1, 4 and 5

Week 5: Feb 15th
Meaningful learning activities; Conducting observations

Reading:

Barron, B. & Darling-Hammond, L. (2008) How can we teach for meaningful learning? In
     Darling-Hammond et al. Powerful Learning: What we know about teaching for
     understanding. San Francisco: Jossey-Bass

Dewey, J. (1938) Experience and Education. Chapter 1 and 2

Cohen, L., Manion, L. & Morrison, K. (2011) Research Methods in Education. Chapter 23
     (Observations). Taylor & Francis.

Assignment due in class:
Report on meeting and interview with teacher
Journal number 1 (submit by email by Tuesday night): Early group impressions (see prompts)

Week 6: Feb 22nd
Designing Meaningful Learning Activities

Reading:

Wiggins, G. and McTighe, J. (2005) *Understanding by Design.* Chapters 9 & 11.

Dewey, J. (1938) Experience and Education. Chapter 8.

Assignment due in class:
Report on classroom observation

Week 7: March 1st
Assessment 1

Reading:

Coffey, J.E. (2003) "Involving Students in Assessment." In J. M. Atkin & J. E. Coffey (Eds.) Everyday Assessment in the Science Classroom. National Science Teachers Association, NSTA Press: Arlington, VA.

Shepard, L. et al (2005) Assessment. In L. Darling-Hammond & J. Branford (eds) In Preparing Teachers for a Changing World. Jossey-Bass

Means, B. (2006) Prospects for transforming schools with technology-integrated assessment. In R.K. Sawyer (Ed) The Cambridge Handbook of the Learning Sciences. New York: Cambridge University Press

Grad student reading:
Shepard, L. (2000). The role of assessment in a learning culture. *Educational Researcher*, *29*(7), 4–14

Assignment due in class:
Present 3 potential ideas for your project
Journal number 2 (submit by email by Tuesday night) Reflections on group process and project process (see prompts)

Week 8: March 8th
Designing the learning experience

Reading:

Gruen, D., (2000). Beyond Scenarios: The Role of Storytelling in CSCW Design. CUE Technical Report #00-02. IBM Watson Research Center.

McCloud, S. (1994) Blood in the gutter. In S. McCloud. Understanding Comics: The invisible art. New York: Harper-Collins

Assignment due in class:
Present your project idea and plan for completion

Week 9: March 15th
Content specific readings (will depend on projects)

Assignment due in class:
Bring paper-based prototypes to pilot test with classmates

SPRING BREAK

Week 10: March 29th
Content specific readings (will depend on projects)

Assignment due in class:
Present results from pilot studies with other users

Week 11: April 5th
Presentation of draft project

No reading

Assignment due in class:
Present working prototype and curriculum activities.
Complete storyboard for final activity
Journal number 3 (due Tuesday night by email): Reflections on group process and project process (see prompts)

Week 12: April 12th
Evaluation of your project & Field Test prep
How will you evaluate your field-test; what should be in the grading rubric for your project?

Reading:

Estrella, G. & DiGiano, C. (2009) Featured Student projects. In DiGiano, C., Goldman, S. & Chorost, M. (eds) Educating Learning Technology Designers: guiding and inspiring creators of innovative educational tools. New York: Routledge

Becker, H. Problems of inference and proof in participant observation. (1969) In G.J. McCall & J.L. Simmons (Eds) Issues in Participant Observation: A text and reader. Addison-Wesley Publishing Company: Reading, MA.

Assignment due in class:
Project update & final planning document
First draft of evaluation document for field-test

Week 13: April 19th No class
You will conduct your field test before class on April 27th; use this time to 1) conduct the test or 2) prepare and/or reflect on the test in your group/

Week 14: April 26th
Reflections on field-test
No reading

Assignment due in class:
Report on your field test; what changes do you need to make to your app/curriculum?
Update to class grading rubric

Week 15: May 3ʳᵈ
Final Project Presentations
Partner teachers and a wider audience will be invited to this presentation

Assignment due in class:
Present your final project during class (must include reference to future changes based on field test)
Journal number 4 (due May 5ᵗʰ by email): Final reflection on collaborative process
Collaboration evaluation document.