DESIGN OF LEARNING ENVIRONMENTS

15:262:603:01
3 Credits

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Office Hours: by arrangement	Prerequisites or other limitations: NA
Mode of Instruction:[1] ___ Lecture ___ Seminar ___ Hybrid ___ Online __x_ Other	Permission required: _x_ No __ Yes Directions about where to get permission numbers:

LEARNING GOALS[2]

- Students will be able to describe the design process (needs analysis, design, user testing)
- Students will be able to apply this process to the design of a learning environment of their choice
  - Students will conduct and report on their needs analyses for the design
  - Students will develop the designed product in multiple stages
  - Students will conduct and report on their user testing for the design
- Students will be able to describe several useful design frameworks in the field

COURSE CATALOG DESCRIPTION:

Learning environments are the diverse settings in which people (children and adults) develop new ways of thinking, acting, and being in the world. A learning environment can be as simple as a mother teacher her infant to build a tower of blocks, or as complex as a classroom with multiple students of different backgrounds. Learning environments can include formal settings such as a university course, or a professional development workshop for teachers; or informal settings such as an after-school science club or a museum display. In these environments people can develop new knowledge about a topic, develop new ways of doing a task (selling, cooking), or learn new ways of engaging with others (learn cultural norms). These environments interact with the learners' cultural background, prior knowledge, interests and identity. The design of any learning environment must begin with a consideration of the learner's needs. In this regard there must be some consideration of the social context in which the learning is to occur; the cultural background in terms of language, norms and practices; and the physical setting. Thus learning environments are complex and multi-layered, socially and physically. Homes,

[1] Check 1:
[2] These can be TEAC claims or objectives from other sources.

neighborhoods, communities, and classrooms are all learning environments with particular social, cultural and physical dimensions, which are sometimes designed sometimes natural.

This course is an introduction to the process of planning, designing and user testing of learning environments in formal and informal settings. In this course we will focus on both the theoretical and practical aspects of design. Towards this end students will work in small groups to design a learning environment of their choice. The process of design will be guided by various design frameworks, and informed by current research on the design and study of learning environments. The course is divided into three stages that reflect the design process:

- Needs analysis: what is the target audience for the design and what needs does it address, what are the design goals and constraints
- Design: within the design space choosing among alternative designs, identifying the tradeoff space, and making informed design decisions
- User testing and revision: small scale testing of elements of the designed product

The course is a hybrid of in-class and on-line instruction and will include several double sessions. The course includes multiple assignments, most of which will be carried out in groups.

GRADING POLICY:

Assignment	Date due	Grade
Participation (individual)	Throughout the course	15%
Journal (individual)	Throughout the course	15%
Critique Fair (group)	Week 5	10%
Needs Analysis (group)	Week 4	5%
Storyboard (group)	Week 7	5%
Prototype (group)	Week11	5%
User Test Report (group)	Week 13	5%
Final Prototype	Week 14	20%
Individual reflection paper (individual)	Week 15	20%

ASSIGNMENTS[3]:

Readings: There will be assigned readings for most class sessions; you are expected to read them and be prepared to discuss them in class. On occasion an additional reading may be assigned or a new reading may be substituted for an existing one.

Participation: Your participation in class and online counts towards your grade. It is therefore important that you actively participate in class activities and discussions. Learning is an active process: the more you participate the more you learn.

Design Journal: Each student is expected to keep an electronic design journal. This journal will serve several purposes: (1) a place to keep track and reflect on your design project, (2) a place to respond to various questions we will pose during class, (3) a place to reflect about what you are

[3] Including exams, papers etc.

learning (both things you understand and things you are confused about). You are expected to write in your journal once a week reflecting about class and your inquiry project (about 300 words per entry). Every few weeks we will also ask you to address specific questions in your journal in addition to the regular free-style entry for the week. Questions about readings will also be assigned and can be addressed in the journal. Journals will be collected periodically. Make sure you SAVE and BACKUP your journals.

Course Project: As noted above this course is organized around the development of learning environment. The design work will be conducted in small groups and will take place both during class and on-line between classes. The design process will progress in stages and there will be graded and non-graded assignments associated with these stages. The following is a brief description of each stage and the relevant assignment:

Needs/Task Analysis: Each group will conduct a needs analysis that includes the identification of the target audience and their needs through surveys, interviews, etc. The needs analysis will also include a description of the design goals and constraints. Complete part I of the Design Framework

Developing the storyboard: Using the design frameworks (in particular, part II of the Design Framework) each group will develop a storyboard for how the learning environment will function. What are the tasks that learners will perform and with what support? How will the learning process unfold? What are the various options and functionality involved? Groups need to provide documentation of the rational for key design decisions and describe the tradeoffs involved in these decisions.

Designing a prototype of the Environment: Each group will develop a prototype for the environment with most of its functionality. Documentation of design decisions is also part this assignment.

User Testing of Prototype: Each group will conduct user testing of the prototype with either individual users or focus groups. Groups will prepare a report based on the testing and will suggest revisions to the design (and the rational for the proposed changes to the design)

Revision of the Design: Based on the user test report, each group will revise the most critical shortcomings of the design and create a revised prototype.

Critique Fair: In order to help students become familiar with related design solutions, as well as develop a critical stance towards the design of learning environments, students will prepare a poster critiquing a related design using the Design Framework. Posters will be presented during the critique fair.

Individual reflection paper: The last assignment of this course is an individual reflection paper about 5 pages long in which you reflect (individually) on what you have learned in this course. This reflection should be based on the contribution of the readings, class activities, and final project to your developing understanding of the design of effective learning environments.

Academic Integrity Policy: Please make sure to properly cite all academic sources (citations of articles, books, etc) in your assignments

COURSE SCHEDULE

Session 1- Introduction (in class)

Discussion of syllabus, course plan, and requirements
Introduction to the design process

Group contract due (Sep 18 by 5pm)

Session 2 - Needs Analysis: Identify Design Candidates (on line)

Each group will propose 3 potential design projects

Collins, A. (1996). Design issues for learning environments. In S. Vosniadou, E. D. Corte, R. Glaser, & H. Mandl (Eds.), International perspectives on the design of technology-supported learning environments (pp. 347-361). Mahwah, NJ: Erlbaum.

Norman- Design of Everyday things chapters 1-3

Session 3 [Sep 27]- Needs Analysis: Plan the Needs Analysis (in class)

Groups will choose one project from the 3 candidates and develop a plan for conducting the needs analysis as well as identify related designs to critique

Travis, D. (2009). The fable of the user-centered-designer. Userfocus.

Norman Design of Everyday Things Chapters 4-7

Session 4 [Oct 4]- Needs Analysis: Conduct and Report on Needs analysis (on-line)

Each group will carry out the needs analysis and prepare a report

Edelson, D. C. (2001). Learning-for-Use: A Framework for the Design of Technology-Supported Inquiry Activities. *Journal of Research in Science Teaching*, 38 (3), p355-85

Handbook of the LS: Chapter 8- learner centered design

Needs analysis report due

Sessions 5 & 6 - Critique Fair (in class double session Sat)

This is a double session. In the first half groups will present their critiques of a relevant design. In the second half we will discuss design frameworks and begin to design the first prototype.

Wiggins, G. & McTighe, J. (1998). Understanding by design. Association for Supervision and Curriculum Development: Alexandria, Virginia.

Critique poster presented

Session 7 - Prototype Design: Storyboard (online)

Download and read GBS- PP: http://www.edtech.vt.edu/edtech/id/models/gbs.html

Design Framework part II due

Session 8 – Storyboard continued (online)

Groups will complete the storyboard for their design

Handbook of the LS Chapter 4: Cognitive Apprenticeship

Storyboard due

Session 9 - Prototyping (in class)

We will discuss the development of a prototype

Handbook of the LS Chapter 20: Making Authentic Practices Accessible to Learners

Session 10 - Prototyping (on line)

Groups complete prototype

Edelson, D. C. (2002). Design research: What we learn when we engage in design. Journal of the Learning Sciences, 11(1), 105-121. (by end of the week)

Session 11 - User testing: Planning (in class)

Groups will present prototype

We will discuss user testing methodologies.

Handbook of the LS- Chapter 28: Motivation and Cognitive Engagement in LE

User Testing methodologies: https://www.msu.edu/~thorpjus/w3cwai/ucdres.html

Sessions 12 - Interlude: Field Trip (Sat session location LSC)

We will visit a local museum and observe the ways in which users engage with exhibits, discuss the rational behind various exhibit designs with the education staff, etc

Reading TBD- paper on the design of informal LEs

User testing plan due .

Session 13 - User Testing: Conducting the tests (online)

Each group will conduct user testing based on approved plan

Ladson-Billings, G. (1995a). But that's just good teaching! The case for culturally relevant pedagogy. Theory Into Practice, 34(3), 159-165.

Optional: Delpit, Lisa D. 1988. The Silenced Dialogue: Power and Pedagogy in Educating Other People's Children. Harvard Educational Review 58:280–298. pp. 286, 296.

Session 14 - Revise Design (online)

Read Engines for Education (Schank) http://engines4ed.org/hyperbook/ Section on corporate training

Based on the user tests each group will revise their prototype and prepare their presentation

Sessions 14 &16 - Design Fair (double session on Sat)

User testing report Due in class

Groups will present their designs, results of user testing and revisions

Individual reflection paper due

No Readings