PSQF:6214:0001 – HYPOTHES.IS DRAFT
Design of Learning Environments: Theory, Practice & Method

Course Instructor	Office Hours
Course Instructor Benjamin DeVane, Ph.D, Assistant Professor **Phone:** (319) 335 - 6422 **Email:** benjamin-devane@uiowa.edu **Course Meetings** Tuesdays 5pm – 7:30pm on Zoom (unless otherwise directed): https://uiowa.zoom.us/j/96398434059	On Zoom**:** Wednesdays, 2pm – 4pm **Course Site** Log into Iowa Courses Online (ICON) using your Hawk ID and password. **http://icon.uiowa.edu/index.shtml**

Academic Course Home	Prerequisites
Department of Psychological & Quantitative Foundations, College of Education	None

A word about the course

I want you to understand that I acknowledge that nothing is normal about the period that we are living through. I understand that many of you may encounter personal, familial or social hardships in any number of forms. I want to make clear where my commitments lie as an educator and academic:

- I will privilege care for your well-being in all its forms.
- I will listen to your concerns and welcome your participation, should you so choose, in the co-design of this course.
- I will be flexible with expectations for your participation, especially as you may confront any array of challenges.

Instructor biography

I'm Ben. I'm an assistant professor in Psychological & Quantitative Foundations whose area of focus is in the *learning sciences*. I'm interested broadly in how people learn and interact with digital media in a variety of formal and informal educational settings. Truth be told though, I mainly study learning games. More specifically, my research investigates game-centric approaches to helping people learn about computational thinking and scientific inquiry – we'll probably read about these things at some point in the course.

Once upon a time, I helped found the Games, Learning & Society initiative at the University of Wisconsin (as a graduate student). More recently, I taught and researched game development and interaction design at the University of Florida.

Course Descriptions

This course explores the theory, practice and research method of the design of learning environments. It will emphasize technology-based learning environments, but its understanding of technology is broadly conceived. A major component of coursework will be a semester-long project to design or evaluate the design of a learning environment, technology-based or otherwise.

We will examine how a number of forces shape the design of a learning environment, asking:

- How is a particular learning environment shaped by *underlying theories of learning*?
- What intersecting *design variables* shape the nature and function of a learning environment?
- How do learning environments employ *technologies, tools or artifacts* toward different goals?
- How do the roles that *teachers, facilitators*, students and learners shape how and what they learn?

This course approaches the design of learning environments from the perspective of an educational field called the *learning sciences*. The learning sciences is an interdisciplinary field that emerged in the late 1980s from the dialogue of scholars in education, computer science, linguistics, cognitive science and anthropology. When learning scientists look at the design of learning environments, they look at the ways technologies, artifacts, resources and participant structures come together to mold how and what we learn.

Course Goal and Objectives

By the end of this course, students will be able to:

- Identify and describe in detail major theories about the design of learning environments.
- Analyze and articulate how design variables shape a learning environment
- Employ practical and research methods to evaluate the design and application of learning environments

Course Structure

This course is being offered over the World Wide Web as a Distance Education offering. Students will login to the course site on ICON to access the discussions forum and all course materials, including: pre-recorded lectures, handouts, assignments, and quizzes. Course materials will support students in the completion of assignments, projects, and examinations. For a detailed explanation of the course work requirements to be mentioned below, see the **"Course Work"** section of this syllabus.

Students will be expected to visit the course site several times a week to:

- **Read the Course Readings**.
- **Review the "Course Modules"** and get familiarized with all course materials (e.g. assigned readings and assignment requirements).
- **Submit course assignments to the course instructor via the ICON "Dropbox"**. Assignments are **due no later than 3:00 P.M.** on the dates specified later on this syllabus and on the **course "Calendar".**

In addition, and during specific times of the semester, students will visit the course site to:

- **Post and comment on reading reflections**
- **Upload major course assignments**

Technology for the course

Media/System Requirements:

Listed below are the media/system requirements applicable to this course:

- **System requirements.** Computer with Internet access, preferably broadband wired connections with upload and download speeds of at least 1 Mbps. Although wireless will work it can have delay problems.

- **Browser requirements.** Firefox or Google Chrome are recommended regardless of operating system. All versions of Internet Explorer have functional difficulties in both ICON and the wiki.

- The latest version of **Adobe Reader** must be installed in your computer in order to access course materials posted as PDFs. For a **free download** of this application, visit the Center for Credit Programs **Internet Connection Test/Download Page**.
    - Once on this page, scroll down to "Test Sample Files/Download Software," and
    - Test the file related to the media player listed above.
    - Download media player if needed.

- **Need Technical Support?** Contact the Center for Credit Programs technical support staff at tech-support@www.continuetolearn.uiowa.edu.

Email:

Email is an official method of communication for this course. Students can expect to receive weekly communications from the instructor (via email) introducing assigned course work. Students are expected to check their university email account several times a week.

Student Support

The course structure mentioned above assumes students have basic computer skills and are knowledgeable of the various programs and hardware they will need to use during this session (e.g. Microsoft Word). For information and computer support geared toward distance education students, access:

- the **Student Guide to ICON** - http://icon.uiowa.edu/support/onlinehelp/students/guide/

Required Materials

- A collection of articles on reserve through our ICON site: http://icon.uiowa.edu/index.shtml -- then click on Content.
- Access to online journals (e.g., through UI Psychology and Education Resources website: http://guides.lib.uiowa.edu/psyc_educ)

Grading Criteria

Students will be assessed based on their performance in the following items:

	% of final grade
- Analyze a learning problem	10%
- Project proposal	10%
- Reading Reflections & Online Discussions	20%
- Learn & examine a learning technology or process	15%
- Design or analyze the design of a course-aligned learning environment	30%
- Reflection on learning environment and synthesis	15%
Total:	100%

Final grades will be awarded based on the following ranges:

A	**B**	**C**	**D**	**F**
A+ > 97	B+ 89-86	C+ 79-76	D+ 69-66	F < 59
A 96-94	B 85-83	C 75-73	D 65-63	
A- 93-90	B- 82-80	C- 72-70	D- 62-60	

Participation

Participation in this course represents a significant part of a student's final grade. The instructor calculates participation on both the quantity and quality of the posts that are topic driven and meaningful to the development of the class discussion.

Some characteristics the instructor considers to be part of excellent discussion contributions are outlined below. The instructor will consider these characteristics when assessing the quality and level of student participation.

- Reading responses and discussions posts should be thorough and thoughtful. Just posting an "I agree" or "Good ideas" will be considered inadequate. Support statements with examples, experiences, or references. Be brief — keep each post and response to one or two short paragraphs. Keep in mind that fellow learners will be reading and responding to you, too.
- Reading responses should provide details that explain the main idea. In addition, examples should be provided to support main idea points.
- Reading responses should be within a range of 75-150 words if no word limit is specified by the instructor.
- Make certain that all posts and responses address the question, problem, or situation as presented for discussion.
- When relevant, add to the discussion by including prior knowledge, work experiences, references, web sites, resources, etc. (giving credit when appropriate).
- Contributions to the discussions (posts and responses) should be complete and free of grammatical or structural errors.

Netiquette

- Students need to effectively communicate with each and their instructors when working online. Although it may not be intended, tone in communication is often read differently than when it is presented in the form of speech. For tips on "Netiquette" technique, go to: http://www.albion.com/netiquette/

Communication policy

- Provide students a communication policy. That is, how long will it be before you, the instructor, responds to email, phone calls, and so forth? Recommended is 48 hours, except for, perhaps, on weekends.

Student Support

- Provide the students with information regarding how they can receive help, both academic and technical. Students need to know where they can turn when they need help with the course or help in resolving academic issues.

Course Work

Project deliverable #1:

Analyze a learning environment problem (10% of grade): In three-four double-spaced pages, identity a problem related to the design of a learning environment. You may draw upon your past experiences in a) learning environments; b) a problem presented in the scholarly literature; or c) new observations that you conduct for the purposes of this class.

For the purposes of this class, the most generative problem analysis will focus on learner engagement, collaborative learning, inquiry learning with technology, the design of tools and environments, or inquiry-based learning.

Project proposal (deliverable #2):

Project Proposal (10% of grade): You will include in your project proposal (2-3 pages double-spaced) the following topics: a) how your project relates to your problem analysis; b) the overall goal of your project, and whether your will be designing or evaluating a learning environments; c) the learning or design theory that your design is based on; d) the domain that your design addresses; e) the design problem of the learning environment and how your project will address (through design) or better understand (through evaluative analysis) this problem.

Project deliverable #3:

Learn about and examine a new learning technology or learning environment process (15 % of grade): All students should learn about a) a new learning technology (NetLogo, Trailblazer, IPRO, Squeak, Second Life, ARIS, etc.); OR b) a new learning environment process (e.g. guided inquiry, technology-based formative feedback, collaboration scripting, learning-through-making, learning-through-design, etc.). This learning technology or process should ideally be related to your proposed project.

In an in-class presentation, describe how your technology or process enables or constrains different modes of learning in an environment. Explain how you've developed proficiency with this technology.

Project deliverable #4:

Design or evaluate a technology-based learning environment (30% of grade): Students have two options here:

A) Design a learning environment. Prepare a design document for a learning environment. The document should address:

- The goals of the learning environments – What knowledgeable practice or learning domain do you with to support?
- Learning processes and environment – What activities will learners undertake, what tools will they use, and what artifacts will learners produce? What is the time frame and space in which the learning environment will be situated?
- Learners – Who are your learners, what needs do they have, and how are you addressing them in your design?
- Learning theories – How does your learning environment design draw on a theory or theories of learning? Why are they appropriate?
- Assessment – What type of evidence would your draw on to assess the efficacy of the learning environment? How is this assessment aligned with a theory of learning?
- References in APA format

B) Observe and analyze a novel or forward-looking learning environment. Prepare a scholarly analysis that identifies two-to-three major findings about a learning environment. (4000 words)

- The goals of the learning environments – What knowledgeable practice or learning domain does it support?
- Learning processes and environment – What activities do learners undertake, what tools will they use, and what artifacts will learners produce? What is the time frame and space in which the learning environment is situated?
- Learners – Who are the learners, what needs do they have, and how does the design of the learning environment support or constrain their learning?
- Learning theories – How does the learning environment design draw on a theory or theories of learning? Why is it appropriate?
- Assessment – How is evidence used to assess the efficacy of the learning environment? How is this assessment aligned/misaligned with a theory of learning?
- References in APA format

Project deliverable #5:

Synthesize and reflect on the findings from your design or analysis (15% of grade):

A) <u>For Design projects</u>: Try out your learning environment with a small group of learners. Report in a reflection and synthesis paper about your findings. (1000 words)

- What went well and what was an area of struggle?
- How does what happened in your learning environment speak to the scholarly literature on the subject?
- What would you do differently next time?

B) For Observation-Analysis Projects: Take the results of your analysis, and make an argument about the design of learning environments relative to the research literature. (1000 words)

- How would you redesign the learning environment you observed?
- What design principles from the research literature would you bring to bear on said redesign?
- What future research directions grow out of your analysis and observation?

Online Discussions and Reading Reflections:

Students will participate of weekly online discussions. Discussions will evolve out of guide questions posted by the course instructor and/or will serve as a forum to critique projects submitted by class member.

Assignment Format	Due Dates & Missed Deadlines
All assignments are to be typed and format as follows: • Double-spaced with one-inch margins • 12 point font size • Page numbers added Detail instructions and requirements for each assignment will be made available on the course site; ICON > **Modules**	All assignments and projects are: • Due no later than 3:00 P.M. on the dates indicated in the syllabus. • To be submitted via the ICON **Assignments.** Absent instructor's approval, late assignments will not be accepted and the student will receive a 0 for that assignment.

Student Rights

All students have specific rights and responsibilities. Students have the right to adjudication of any complaints they have about classroom activities or instructor actions. Information on these procedures is available in the College's (CLAS) Student Academic Handbook. Students also have the right to expect a classroom environment that enables them to learn, including modifications if they have a disability.

Academic Fraud

All forms of plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. All academic fraud is reported first to the departmental DEO and then to the Associate Dean for Academic Programs and Services. See Academic Fraud at http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml for the complete policy. Turn It In, often used to curb plagiarism, is used in the course.

Courtesy to others

Students are expected to be courteous to all others using they communicate with within the course or via email, cell phone and so forth. For tips on "Netiquette" technique, go to: http://www.albion.com/netiquette

Making a Suggestion or a Complaint

Students have the right to make suggestions or complaints and should first visit with the instructor, and next with the departmental DEO, Dr. Tim Ansley. All complaints must be made as soon as possible. For more information visit, Student Complaints at http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5

Academic Accommodations

Under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, instructors must provide reasonable academic accommodations for qualified students with disabilities. Students seeking academic accommodations first register with Student Disability Services and meet with a counselor in that office who reviews documentation and determines eligibility for services. Students approved for accommodations arrange to meet privately with course instructors. Visit Student Disability Services at http://www.uiowa.edu/~sds/ or call 319-335-1462.

Understanding Sexual Harassment

Sexual harassment is reprehensible and will not be tolerated by the University. It subverts the mission of the University and threatens the well-being of students, faculty, and staff. Visit this site - http://www.sexualharassment.uiowa.edu/ - for definitions, assistance, and the full University policy.

College of Education Expectations for COVID-19 Safety

Students in the College of Education are preparing for careers as professionals in education and counseling related fields. In these fields, responsibility to others and to the larger community is a central professional disposition. Social distancing, where possible, hand sanitizing, and mask-wearing are critical to the public good. Therefore, it is the expectation that students in the College of Education comply with mask wearing at all times on campus, in field placements, and engage in hand sanitizing and social distancing to the extent possible. In an effort to protect our broader community, lack of compliance may lead to disciplinary action including dismissal from this course, your program, and/or the College of Education.

Syllabus Statements

Classroom Expectations

Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the Code of Student Life. This includes the policies and procedures that all students have agreed to regarding the Steps Forward for Fall 2020 in response to the COVID-19 pandemic. Particularly, all students are required to wear a face cover when in the building, including the classroom. In addition, we have reduced the density of our classrooms. In some instances, this will be 6 feet or more of distance. In others it may be less. Regardless, wearing face coverings and maintaining as much distance as is possible are vital to helping slow the spread of COVID-19. In the event that a student disrupts the classroom environment through their failure to comply with the reasonable directive of an instructor or the university, the instructor has the authority to ask that the student immediately leave the space for the remainder of the class period. Additionally, the instructor is asked to report the incident to the Office of Student Accountability for the possibility of additional follow-up. Students who need a temporary alternative learning arrangement related to COVID-19 expectations should contact Student Disability Services (https://sds.studentlife.uiowa.edu/fall-2020/covid-19-temporary-learning-arrangements/; 335-1462).

Sharing of Class Recordings (if appropriate)

Some of the sessions in this course will be recorded or live-streamed. Such recordings/streaming will only be available to students registered for this class. These recordings are the intellectual property of the faculty and they may not be shared or reproduced without the explicit, written consent of the faculty member. Further, students may not share these sessions with those not in the class, or upload them to any other online environment. Doing so would be a breach of the Code of Student Conduct, and, in some cases, a violation of the Federal Education Rights and Privacy Act (FERPA).

Nondiscrimination Language

The University of Iowa is committed to making the classroom a respectful and inclusive space for people of all gender, sexual, racial, religious, and other identities. Toward this goal, students are invited in MyUI to optionally share the names and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (https://diversity.uiowa.edu/eod; 335-0705 or diversity.uiowa.edu).

Course Calendar

Assigned Readings & Materials - Legend

- **ICON** = these course materials can be found on the course site under "Modules".

End of Week 1: DUE 9/1	
Due at end of this week: Reading Reflection	**Topic 1:** ***Theories of learning & learning environments*** **Assigned Readings:** **ICON** – Bransford, Brown & Cocking (2000, Ch. 6); Barab & Squire (2004); Philips, Bang & Jackson (2018)
End of Week 2: DUE 9/8	
Due at end of this week: Reading Reflection	**Topic 2:** ***Constructionism*** **Assigned Readings:** • **ICON** – Papert (1996); Kafai & Fields (2018); Holbert & Wilensky (2018)
End of Week 3: DUE 9/15	
Due at end of this week:	**Topic 3:** ***Problem-solving and scaffolding*** **Assigned Readings:**

Reading Reflection Learning problem analysis	• **ICON** –Lu, Bridges & Hmelo-Silver (2014); Putambeker & Hubscher (2005); Brush & Saye (2008);
End of Week 4: DUE 9/22	
Due at end of this week: Reading Reflection	**Topic 4:** ***Knowledge-building and inquiry*** **Assigned Readings:** • **ICON** – Scardamelia & Bereiter (2006); Linn et al. (2006); Liu & Slotta (2014); Brown & Campione (1995)
End of Week 5: DUE 9/29	
Due at end of this week: Reading Reflection	**Topic 5:** ***Design-based (Implementation) Research*** **Assigned Readings:** • **ICON –** Design-based Research Collective (2003); Bielaczyc (2013); Penuel (2015)
End of Week 6: DUE 10/6	
Due at end of this week: Reading Reflection Project Proposal	**Topic 6:** ***Computer-supported collaborative learning*** **Assigned Readings:** • **ICON** – Suthers (2006); Dillenbourg & Evans (2011); Hesse et al. (2013)
End of Week 7: DUE 10/13	
Due at end of this week: Reading Reflection	**Topic 7:** ***Games and Simulations in LEs*** **Assigned Readings:** • **ICON –** Squire et al. (2008), Gaydos & Squire (2012), Clark et al. (2012) **Additional Resources:**
End of Week 8: DUE 10/20	
Due at end of this week: ***Learn about a new technology or learning process***	**In-class: Student Presentations**

End of Week 9: DUE 10/27	
Due at end of this week: Reading Reflection	**Topic 9:** ***Teachers and Curricula in Learning Environments*** **Assigned Readings:** • **ICON –** Putambeker et al. (2007); Ertmer et al. (2012); Penuel et al (2017)
End of Week 10: DUE 11/3	
Due at end of this week: Reading Reflection	**Topic 10:** ***Culture & Learning Environments*** **Assigned Readings:** **ICON** – Lee (2003); Ares (2007); Moll et al. (1992)
End of Week 11: DUE 11/10	
Due at end of this week: Reading Reflection	**Topic 11:** ***Methods in Design-based Research*** **Assigned Readings:** **ICON -** Barron et al (1998); Hoadley (2004); Reimann (2011);
End of Week 12: DUE 11/17	
Due at end of this week: Reading Reflection	**Topic 12:** ***Assessing and evaluating LEs*** **Assigned Readings:** **ICON –** Meier et al. (2007); Clark-Midura & Dede (2010); Sampson & Clark (2008); Ruiz-Primo et al. (2001)
End of Week 13: DUE 12/1	
Due at end of this week: **DESIGN/ANALYSIS PAPER DUE**	**Topic 13:** ***Design & Classroom Integration*** **Assigned Readings:** **ICON –** Penuel et al. (2007); Kapur & Bielazyc (2011); Chut et al (2011)
End of Week 14: DUE 12/8	

Due at end of week: Reading Reflection, Student Final Project Presentations	**Topic 15:** ***Learning in museums & informal environments*** **Assigned Readings:** **ICON –** Bell et al. (2007) Crowley et al. (2007);
End of Week 15: DUE 12/15 – NO CLASS	
Due at end of this week: *Synthesis Paper Due*	*Synthesis Paper Due 12/13*