

Cognition in Action
Northwestern University
School of Education and Social Policy (SESP)
SESP 201
Fall 2019

Professor: Bruce Sherin
Teaching Assistant: Mario Guerra

Class: Tuesdays and Thursdays, 11:00AM - 12:20PM
Location: Annenberg Hall, Room 303
Office Hours: Bruce Sherin
Thursdays, 2PM-4PM
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Mario Guerra
Tuesdays, 12:30PM-2:30PM or by appointment
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Course Description

Our concern, in the Learning Sciences, is with helping individuals to learn; we want to help them learn to engage in new tasks, and to understand things that they didn't understand before. It is the assumption of this course that we will be in a better position to achieve these goals if we can somehow characterize the knowledge that individuals possess at any given time, and how this knowledge changes as they learn. In short, this is a course about individual cognition and learning.

However, there are important respects in which the aims of this course differ from a cognition course outside of the Learning Sciences. In LS, we are less concerned with general mechanisms that underlie cognition across domains, and more concerned with issues of knowledge and learning that are specific to individual subject-matter domains. We want to understand, for example, what is challenging about coming to understand Darwin's theory of natural selection. We are also interested in phenomena of learning on a very particular timescale (weeks to months) and knowledge-scale (systems of knowledge).

A key goal of this course is for you to develop an LS-style sensibility for seeing and understanding learning. Thus, a major focus of this course will be to practice observing and analyzing learning phenomena.

Course Assignments

Participation (10%): Active engagement in class discussions and activities is important and expected.

Weekly Interview Tasks (15%): A series of weekly tasks will be assigned throughout the quarter as a means of elucidating key concepts in the course as well as providing practice opportunities for key course methodologies. In general, these assignments will require asking individuals outside of the course to answer a series of questions, solve a set of problems, or complete a task. You will then document the results, submit them online, and be prepared to discuss them in class.

Learning Diary Entries (25%): You will pick something to learn—hopefully, something that you’ve wanted to learn but haven’t had the time. Then you will take steps toward beginning learning in that area. As you do so, you will keep a “learning diary” to track your process. Along the way, we’ll be giving you prompts to structure your diary entries.

Tacit Knowledge Project (50%): This is the big project that can be done individually or in pairs. The project consists of an analysis, using the methods and perspectives studied in the course, of thinking in some (limited) domain. More specifically, your goal is the identification of interesting tacit structure. The data you collect will consist of videotapes of interviews that you conduct. The precise nature of these interviews will vary greatly, depending on the nature of the domain that you choose. The project will be submitted in five milestones:

1. Idea. A one paragraph description of your project idea.
2. Preliminary interview design. A first draft of your interview protocol along with an account of the rationale behind your design. You can submit this earlier, if you’re ready. (**10%** of total project course)
3. Interview Summaries. A summary of what you observed during your interviews. (**10%** of total course grade)
4. Final paper (**20%** of total course grade)
5. Presentation (**10%** of total course grade)

Course Policies and Expectations

- **Canvas:**
 - Class notices, updates, and reminders of assignments, deadlines, and changes will be posted at this course site.
- **Attendance:**
 - Attendance at each class is important and expected.
- **Assignments:**
 - Written assignments are due by prior to class on the specified due date, unless otherwise noted.
 - All assignments should be submitted on Canvas.

Course Materials

Articles and book chapters can be downloaded from Canvas (under the “Pages” tab). As these readings will be the focus of class discussions, students should have access to digital or print copies during the class.

Accessible NU

Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

Academic Integrity

Students in this course are required to comply with the policies found in the booklet, "Academic Integrity at Northwestern University: A Basic guide". All papers submitted for credit in this course

must be submitted electronically unless otherwise instructed by the professor. Your written work may be tested for plagiarized content. For details regarding academic integrity at Northwestern or to download the guide, visit: <http://www.northwestern.edu/provost/policies/academic-integrity/index.html>

Course Overview

Week 1: How do we study cognition in the learning sciences?

September 24	September 26
<ul style="list-style-type: none"> Nothing due 	Nothing due

Week 2: Key Characteristics of Thought

October 1	October 3
<u>Readings:</u> None <u>Assignment Due:</u> Diary Entry #1	<u>Assignments Due:</u> <ul style="list-style-type: none"> Practice think-aloud interview Project Ideas

Week 3: Conceptual Tools for Describing Cognition

October 8	October 10
<u>Readings:</u> <ul style="list-style-type: none"> Thagard Chapter 1 (Required) Thagard Chapters 2-4 (Required) Nathan & Sawyer, 2014 (Optional) <u>Assignments Due:</u> <ul style="list-style-type: none"> Diary Entry #2 	<u>Assignments Due:</u> <ul style="list-style-type: none"> Practice clinical interview due

Week 4: Key Characteristics of Learning (Part 1)

October 15	October 17
<u>Readings:</u> <ul style="list-style-type: none">• Vosniadou, 1994 (Required)• McCloskey, 1984 (Required)• Ginsburg Chapter 3 (Optional) <u>Assignment Due:</u> <ul style="list-style-type: none">• Diary Entry #3	<u>Assignments Due:</u> <ul style="list-style-type: none">• Draft Interview Protocol• Third practice interview

Week 5: Key Characteristics of Learning (Part 2)

October 22	October 24
<u>Readings:</u> <ul style="list-style-type: none">• Siegler & Crowley, 1991 <u>Assignment Due:</u> <ul style="list-style-type: none">• Diary Entry #4	<u>Assignment Due:</u> <ul style="list-style-type: none">• Final Interview Protocol

Week 6: Expertise and Domain Specificity

October 29	October 31
<u>Readings:</u> <ul style="list-style-type: none">• Bransford et al., 2000 Chapter 2.pdf <u>Assignment Due:</u> <ul style="list-style-type: none">• Diary Entry #5	<u>Assignment Due:</u> <ul style="list-style-type: none">• Learning to Watch Video Task

Week 7: Thinking with Tools

November 5	November 7
<u>Readings:</u> <ul style="list-style-type: none">• Norman Chapter 3 and Chapter 4 <u>Assignment Due:</u> <ul style="list-style-type: none">• Diary Entry #6	<u>Assignment Due:</u> <ul style="list-style-type: none">• Be ready to share sample data from your project and discuss the analysis

Week 8: Embodied Cognition

November 12	November 14
<u>Readings:</u> None <u>Assignment Due:</u> <ul style="list-style-type: none">• Final Diary Entry	<u>Assignment Due:</u> <ul style="list-style-type: none">• Preliminary Interview Analysis

Week 9: Machine Learning and Learning Analytics

November 19	November 21
<u>Readings:</u> None <u>Assignment Due:</u> None	Nothing due

Week 10: Teacher Thinking and Learning

November 26	November 28 (Thanksgiving)
<u>Readings:</u> None Teacher Thinking and Learning with Miriam Sherin	No Class

Week 11: Student Presentations

December 3	December 5
<ul style="list-style-type: none">• Student Presentations	<ul style="list-style-type: none">• Student Presentations

Final Paper due on **December 10**