**EDPSY 510: Cognition in the Context of the School Curriculum**

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Tuesdays, 1:30 to 3:50 Spring 2003 Miller 411

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COURSE OVERVIEW

This seminar is intended for graduate students who seek to understand current as well as classic research in cognition and instruction. We explore perspectives on cognition and the learning of subject matter over time, the nature of expertise in different disciplines (history, poetry, science, mathematics, literature), and the nature of everyday practices as they implicate an understanding of subject matter.

This course is intended to help you:

(1) Gain a better understanding of current work that uses cognitive research, somewhat broadly construed, to inform the school curriculum.
(2) Learn how to read cognitive research (or further refine your skills). This also means learning to read research as much for what it *doesn't* say as for what it does.
(3) Develop a familiarity, both theoretically and experientially, with some of the tools cognitive scientists use to study cognition in the laboratory and in the wild. This goal will be achieved by having you work on a small-scale research project.

The course assumes some background in modern learning theory; a course such as EDPSY 501, "Human Learning and Development" (or its equivalent) would be helpful background. Students who haven't had a previous course in educational psychology are welcome but some additional reading will be suggested early in the course.

ASSIGNMENTS

1. Class Discussions. All class members are expected to actively participate in the discussions each week. This is crucial for a graduate seminar.

2. Posting Reading Reactions to Class Web Discussion Board. All students will be asked to post a critical reaction and questions about each article. Also for each article, try to make a connection back to something else we have read (or a piece that is relevant), so we can start surfacing how these readings articulate. Each week your comments should be posted **by 5pm on Monday** so members of the class can view them before we meet. We will be using the EPost tool for this purpose:

   `http://catalyst.washington.edu/webtools/epost/register.cgi?owner=pbell&id=4550`
   (the URL will be sent around by email after the first class meeting)

3. Annotated Bibliography (6-8 pages, double-spaced)
   Given your specific interests, you will be expected to create and share an annotated bibliography about cognition and instruction in a particular subject, the nature of work in a particular discipline, or the details of everyday activity that intersect with subject

matter. Ideally, this bibliography will set you up for writing your literature review in your final paper. Further instructions about the bibliography format will be provided in class.

4. Observation of Disciplinary Activity:
   In order to delve into the nature of thinking and interaction that takes place related to specific subject matter, I will ask that you spend an hour or two closely observing some aspect of disciplinary activity that is of interest to you. You might attend a departmental lecture somewhere on campus or arrange to visit a research group. You should focus your observation on a discipline that bears some relation to the subject matter of the school day. Your role is to carefully observe typical intellectual activity as it takes place in the setting (the focus of discussion, the norms for interaction or analysis, what is being accomplished, etc.). We will then discuss your observations in class during week 6.

5. Research Paper (15-20 pages, double-spaced)
   The primary assignment for this course is an empirical research paper. The goal for this project is for you to apply a cognitive research method to data you will collect or to an existing data set. It is one thing to read about these techniques and another to actually try them and interpret data. In this spirit, you will design a case study of one or two people doing a task in a subject area represented in the school curriculum (e.g., math, science, English, history, geography, computer science, foreign language, etc.). If you already have an research project currently underway that is appropriate, you can further your progress on that effort instead of collecting new data. It is also possible to study an expert in lieu of students; talk to me if this interests you.

   Students will be provided time to present their research project to the class in a "research group style" discussion in order to receive feedback on some aspect of it. You will write up the results of this mini-study in a 15-20 page paper, **due on the last day of instruction, June 6th, by 4pm**.

6. Class Presentation
   For the last class session on June 3rd, we will have a "seminar conference" in which you will give a 12 minute oral presentation of your work. The oral presentation of research results is an invaluable skill that you will use throughout your professional lives as educators; it is best to start practicing early and often, and it often doesn't receive adequate attention in graduate school. (As proof, just drop into a random session at AERA, APA or other major professional conference!)

GRADING POLICY

I expect all assignments to be completed in a timely fashion. All written work will be held to high standards and should conform to rules of proper grammar, usage, punctuation, and spelling. Because of time pressures, *late papers will not be accepted unless prior written confirmation has been given by one of the instructors.* Please double-space all written work and use a 12-pt. font. APA format should be used for references. Assignments will be weighed according to this scheme:

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| Class Participation & E-Post Reviews | 15% (graded) |
| Annotated Bibiology | 10% (credit / no-credit) |
| Observation of Disciplinary Activity | 5% (credit / no-credit) |
| Project Presentation | 10% (credit / no-credit) |
| Research Paper (including draft) | 60% (graded) |

SCHEDULE OF READINGS & MILESTONES

**Week 1, April 1** **Introduction to the role of cognitive learning theory in the teaching of school subjects**

This session will provide an introduction to the goals and purposes of this course. We will preview the main themes and activities of this course as well as view and discuss the *A Private Universe* video. We will use the video as a shared "text" to allow us to start exploring some of the issues involved with this course.

**Week 2, April 8** **The Cognitive Revolution as Applied to Education: An Overview**

John Bruer (1993), excerpt from *Schools for Thought* (pp.1–50). Cambridge, MA: MIT Press.

Lee S. Schulman & Kathleen M. Quinlan (1996). The comparative psychology of school subjects. In *Handbook of Educational Psychology*, edited by D.C. Berliner & R. C. Calfee (pp.399–422). New York: Simon & Schuster Macmillan.

*Three short methodological readings:*

Ginsburg, Herbert (1981). The clinical interview in psychological research on mathematical thinking: Aims, rationales, techniques. *For the Learning of Mathematics*, 1, 4-11.

Pressley, M., & Afflerbach, P. (1995). An introduction to protocol analysis of reading, *Verbal protocol of reading*. (chapter 1, pp. 1-14). Hillsdale, NJ: Erlbaum.

Cobb, P., Confrey, J., diSessa, A., Lehrer, R., & Schauble, L. (2003). Design experiments in educational research. *Educational researcher, 32*(1), 9-13.

**Week 3, April 15** **The Expert-Novice Paradigm**

Larkin, McDerrmott, Simon, and Simon. (1980). Expert and novice performance in solving physics problems. *Science*, *208*, pp. 1335-1342.

Chi, M. T. H., Feltovich, P., & Glaser, R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive Science, 5*(2), 121-152.

Chi, M. T. H. & Koeske, R. D. (1983). Network representation of child's dinosaur knowledge. *Developmental Psychology*, *19*, 29-39.

**Week 4, April 22** **Keeping Views of Expertise Appropriately Complex**
**AERA — NO CLASS THIS WEEK, BUT READ THE FOLLOWING**

Smith, J. P., diSessa, A. A., & Roschelle, J. (1994). Misconceptions reconceived: A constructivist analysis of knowledge in transition. *Journal of the Learning Sciences, 3*(2), 115-163.

Wineburg, S. (1998). Reading Abraham Lincoln: An expert/expert study in historical cognition. *Cognitive Science, 22* (3), 319-346.

**Week 5, April 29** **Learning in the Textual Disciplines**

Fish, Stanley. (1980). Excerpts from *Is there a Text in this Class?* Harvard University Press.

Scholes, R. (1985). Who Cares about the Text, *Textual power: Literary theory and the teaching of English* (pp. 129-148). New Haven: Yale.

Peskin, J. (1988). Constructing meaning when reading poetry: An expert-novice study. *Cognition & Instruction, 16*, 235-263.

➟ **Annotated Bibliography due.**

**Week 6, May 6** **The Nature of Disciplinary Activity as a Touchstone for Learning**

Schwab, J. J. (1978). Education and the structure of the disciplines (excerpts), *Science, Curriculum, and Liberal Education*. Chicago, IL.

Latour, B. (1995). The 'pedofil' of Boa Vista: A photo-philosophical montage. *Common Knowledge, 4*(1), 147-187.

Burbules, N. C., & Linn, M. C. (1991). Science education and the philosophy of science: Congruence or contradiction? *International Journal of Science Education, 13*(3), 227–241.

Wineburg, S. (in press). On breaking good habits of mind. To appear in *The Chronicle of Higher Education*.

**Week 7, May 13** **Understanding student epistemologies**

diSessa, A. (2002). Why "conceptual ecology" is a good idea. In M. Limón & L. Mason (Eds.), *Reconsidering conceptual change: Issues in theory and practice* (pp. 29-60). Dortrecht: Kluwer.

Bell, P., & Linn, M. C. (2001). Beliefs about science: How does science instruction contribute? In B. Hofer & P. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 321-346). Mahwah, NJ: Lawrence Erlbaum Associates.

Hammer, D., & Elby, A. (2003). Tapping epistemological resources for learning physics. *The Journal of the Learning Sciences, 12*(1), 53-90.

**Week 8, May 20** **Everyday Activity as a Touchstone for Learning / The Cultural Turn**

Lave, J. (1987). *Cognition in practice* (pp. 1-93). New York: Cambridge University Press.

➟ **A full draft of the final course paper is due in class.**

**Week 9, May 27** **Looking to the world in detail**

Lave, J. (1987). Insides the supermarket (outdoors) and from the veranda; Out of trees of knowledge into fields for activity, *Cognition in practice* (pp. 97-144). New York: Cambridge University Press.

Wenger, E. (1998). *Communities of practice: Learning, Meaning, and Identity* (pp. 1-50). Cambridge, UK: Cambridge University Press.

| **Week 10, June 6** | **Cultivating Learning Communities in the Classroom & Class Presentations** |
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Brown, A. L., & Campione, J. C. (1994). Guided discovery in a community of learners. In K. McGilly (Ed.), *Classroom lessons: Integrating cognitive theory and classroom practice* (pp. 229-270). Cambridge, MA: MIT Press/Bradford Books.

Lee, C. D. (1995). A culturally-based cognitive apprenticeship: Teaching African American high school students skills in literary interpretation. *Reading research quarterly, 30*, 608-630.

OPTIONAL:
Bruner, J. (1996). Psychology's next chapter, *The culture of education* (pp. 160-185). Cambridge, MA: Harvard University Press.

Each student will be asked to make a 10-minute presentation summarizing their research project. If time does not permit, we will schedule time during exam week to complete the presentations.