Seminar:
Issues in the Learning Sciences
15:295:590 Section 01

Professor Janice Gobert

Thursdays, 4:50-7:30

In this seminar, students will engage in a deep and thorough analysis of classic papers in Cognitive Psychology, Developmental Psychology, etc. that have influenced the Learning Sciences as they pertain to the development of the discipline of Learning Sciences and current approaches in the discipline. Students will get both a historical view of the field as well as an understanding of how lines of research grew out of these classic papers from the field.

We will begin by discussing classic research on human learning that has deeply influenced Educational Psychology and the Learning Sciences. We will then turn to new research on the learning and reasoning of students, and address how these how these are related to the seminal papers of the field.

Course assignments will include weekly readings, leading one or more discussions, presenting an article to the class, and a term paper on a course-related topic that will help you push your own research agenda forward.

This course will be valuable for all students interesting in learning a strong foundation for developing and evaluating effective learning environments in a variety of fields, from STEM education to literacy education.

If you would like to find out more about the seminar, please email me at janice.gobert@gse.rutgers.edu or call me at 848-932-0867.

Grading:

50% - take home (25%)/in class exam (25%)
15% - Presentation
15% - Presentation write up
10% - Weekly discussion questions
10% - Class discussion/participation

Course web site
There is a web site for the course implemented in the sakai system. The web site will be used to post the course syllabus, assignments, lecture notes, and other course documents, to make announcements, to post grades, and to create a discussion board where students can look post their comments & questions, and discuss various aspects of the course.

Notes on the readings
Students are to come to class having READ the required material and having posted at least 3 comments/questions on sakai. Each reading will have a discussion board "area". Power point notes will be made available on the site.

Weekly questions
Before every class (Wednesday 3pm), you will be expected to submit at least 3 questions that came up during the readings. These questions will help guide the discussions in class to address themes across the papers. Students should try to synthesize and integrate knowledge in order to demonstrate that you are knowledge producers and not merely knowledge consumers. Comments posted will be evaluated with that (knowledge production versus knowledge consumption) as a guiding parameter.

Presentation & write up
Students will choose a series of journal articles (5) on one of the breaching themes of the course and review their philosophical and pedagogical bases, etc. Will also lead a discussion on this in the class.

Exam
The exam will have a take home portion, as well as an in class portion. The later will cover all material from the class readings *and* discussions. Questions will be short answer format. The take home will include the review/critique some articles in LS (2-3; TBD).

Date	Topics	Readings
3-Sep	Course overview, expectations;Philosophical Traditions	Gobert Lecture
10-Sep	Philosophical Traditions	Strauss, S. (2000). Theories of cognitive development and learning and their implications for curriculum development and teaching. *Routledge international companion to education* , 28-50. Strauss, S. (1993). Theories of learning and development for academics and educators. Educational Psychologist, 28, 191–203.Bereiter, C. (2002). Our Oldest Unchallenged Folk Theory at Last Faces Its Day of Reckoning. *Education and Mind* .
17-Sep	Knowledge production vs. consumption	C. Bereiter (ed., pp3 - 23). Mahwah, NJ:Lawrence Erlbaum Associates. Scardamalia, M., & Bereiter, C. (2006). Knowledge building: Theory, pedagogy, and technology. In K. Sawyer (Ed.), Cambridge Handbook of the Learning Sciences (pp. 97-118). New York: Cambridge University Press.
24-Sep	Mental models and conceptual change	Gobert & Buckley MBT; HLS chapter by di Sessa; Linn & Eylon? (piaget; chi; mcloskey; lowe; wiley) - Posner, G. J., Strike, K. A., Hewson, P. W., & Gertzog, W. A. (1982). Accommodation of a scientific conception: Toward a theory of conceptual change. Science Education, 66, 211-227.
1-Oct	Text comprehension/ coding Levels of processing	Guest lecture by Haiying Li (will she be here?) Carik & Lockhart; Bransford '71; van Dijk and Kintsch; P. Johnson-Laird; Harrison; D. Norman on mental models; Larkin & simon '87
8-Oct	How to get at learners' representations/ mental models; cataluzing event	1.Newell, A., Shaw, J.C., & Simon, H. (1958). Elements of a Theory of Human Problem-Solving. Psychological Review, 65(3), 151-166. 2. M. Chi (1997). Quantifying Qualitative Analyses of Verbal Data: A Practical Guide. Larkin on think alouds (in WPI storage)
15-Oct	How to assess learning	see YJ/MSP course for additional readings ECD; Gobert JEDM; Pellegrino HLS
22-Oct	How to scaffold learning	Quintana, C., Reiser, B. J., Davis, E. A., Krajcik, J., Fretz, E., Duncan, RG., Kyza, E., Edelson, D. and Soloway, E. (2004). A scaffolding design framework for software to support science inquiry. Journal of the Learning Sciences, 13 (3), 337-386
29-Oct	Cognitive Tutors	HLS Reiser & Tabak Koedinger & Corbettt
5-Nov	Scaling up	Dede in HLS (1st ed).
12-Nov	Gobert JLS	
19-Nov	Other topics of Interest	Eye tracking & Engagement
3-Dec	Presentations	
10-Dec	Presentations	
17-Dec	Final Exam	

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24-Sep	Lecture by Dale Russakoff at Eagleton Institute	Who's in Charge of America's Schools?
1-Oct	Levels of processing	Craik & Lockhart, 1972, Levels of Processing
8-Oct	Text comprehension/coding	Kintch & van Dijk 1987
15-Oct	Mental models and conceptual change	Gobert & Buckley MBT; HLS chapter by di Sessa; Linn & Eylon? (piaget; chi; mcloskey; lowe; wiley)

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22-Oct	How to get at learners' representations/mental models; catalyzing event	1. Newell, A., Shaw, J.C., & Simon, H. (1958). Elements of a Theory of Human Problem-Solving. Psychological Review, 65(3), 151-166. 2. M. Chi (1997). Quantifying Qualitative Analyses of Verbal Data: A Practical Guide. Larkin on think alouds (in WPI storage)
29-Oct	How to scaffold learning	Quintana, C., Reiser, B. J., Davis, E. A., Krajcik, J., Fretz, E., Duncan, RG., Kyza, E., Edelson, D. and Soloway, E. (2004). A scaffolding design framework for software to support science inquiry. Journal of the Learning Sciences, 13 (3), 337-386 HLS Reiser & Tabak
5-Nov	How to assess learning	see YJ/MSP course for additional readings ECD; Gobert JEDM; Pellegrino HLS
12-Nov	Educational Data Mining: catalyzing event	1. EDM; Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Byers, A. H. (2011). Big data: The next frontier for innovation, competition, and productivity. McKinsey Global Institute, 1-137. 2. Siemens, G., & Long, P. (2011). Penetrating the Fog: Analytics in Learning and Education. Educause Review, 46(5), 30-32. 3. Behrens, J. (2013). Harnessing the Currents of the Digital Ocean. Presented at AERA.
19-Nov	Inq-ITS	Gobert JLS
3-Dec	student presentations	
10-Dec	student presentations	
17-Dec	final exam	