

How We Learn: Mind, Brain, and Education
HCOL 185G
Fall 2018

Instructor

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Course

Date: Tues. & Thurs 11:40pm – 12:55pm
Location: University Heights North 034F

Course Description:

This course will explore what it means to think, learn, know, and understand, and the cognitive structures and processes involved with those activities. Much of the content will pertain to learning as it occurs in formal learning environments (i.e., classrooms) because much of the research has taken place in those contexts with the goal of improving classroom instruction, but this course will extend what has been learned in classroom settings to learning in other contexts. We will also learn about the techniques used to study thinking and learning, both traditional and novel, and consider the strengths and weaknesses of various approaches.

Topics to be covered:

Topics will include learning by analogy, the transfer of knowledge across different domains, the development of expertise and what it means to be an expert, the role of motivation and emotion in learning, and learning disabilities/differences. We will also cover how recent developments in neuroscience have informed our understanding of how people learn, and also how some of these findings have been misinterpreted and/or overextended to the field of Education. Knowledge gained in this course will help students understand how learning takes place and what can be done to maximize learning in various contexts.

Course Materials:

There is no assigned text for the class. We will use portions of *How People Learn: Brain, Mind, Experience, and School* (Committee on Developments in the Science of Learning, 2000), a publication of the National Research Council, as a starting point for many of the topics. This book is freely available as a PDF, but students may purchase a hard copy if desired. The main readings for the course will be influential research reports (journal articles) that have informed our knowledge about thinking and learning. These will be made available on Blackboard. I have selected the readings for the first few weeks of class, and your feedback as well as my perception of their effectiveness will help guide my selections of readings for future sessions. Readings will be made available on Blackboard at least one week before the class meeting with which they are associated.

Course Policies:

1. **Due Dates:** Assignments are due at 4pm on their respective due dates. Assignments turned in late will result in the grade for that assignment being lowered by 5% of the possible points for each day the assignment is late. If extenuating circumstances prevent you from turning in an assignment on time, please communicate this as soon as possible PRIOR to the due date. **Please turn in all assignments as PDF documents via Blackboard, and include your name in the filenames of the documents you upload.**
2. **Readings:** Assigned readings are to be completed **before** the meetings with which they are associated on the syllabus. Most of the readings will be research reports (journal articles), and reading research reports is a little bit different than reading traditional expository text. You should read actively and critically, questioning the authors assumptions, methods, and conclusions as you go along. It is often necessary to read these types of articles more than once, and to backtrack to previous sections of the article, so the process is not entirely linear. I hope that learning how to read scientific journal articles will be a useful side-effect of taking this class.
3. **Attendance & participation:** Effective learning requires active participation on your part -- you will learn a lot more (and class will be a lot more interesting) if you come to class prepared to contribute to the discussion of the material. Regular attendance in class is required. Missing more than two classes will put you at risk for failing the course. **If you are late to class or cannot attend class, it is your responsibility to collect handouts, notes, new deadlines, etc. from your classmates.** Please work out a relationship with one or two members of the class such that you can collect information about your missed session. Please inform your instructors at the beginning of the semester of any religious holidays or other obligations that will prevent you from attending a class meeting (students who miss work for the purpose of religious observance can make up this work).
4. **Academic Integrity:** please read the University's code of academic integrity (<http://www.uvm.edu/~uvmppg/ppg/student/acadintegrity.pdf>), and speak with your instructor as soon as possible if you find yourself in a grey area.
5. **Accommodations for learning differences:** If you have a formal accommodation plan developed in conjunction with UVMs Student Accessibility Services Office or would like to discuss the supports that you need in order to learn well in this class, please contact the instructor in the beginning of the semester. Adaptations and instructional supports are available through consultation with the instructor and the Student Accessibility Services Office.
6. **Laptops and other electronic devices:** You are welcome to bring a laptop or other device to class for the purpose of taking notes, looking up information relevant to the class discussion, etc. Please limit your activity on these devices to information related to course content. Please turn cell phones off or to vibrate before each class session out of respect for our community. Unless directly related to this course, please refrain from texting, visiting Facebook, etc.

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussions, and/or activities without the advance written permission of the instructor. Any such recording properly approved in advance are solely for the student's own private use.

Course Requirements (% of grade):

Short Papers (25%): Throughout the semester students will complete brief (2-3 double spaced pages) reflection papers on topics related to the content of the course. Specific topics for each paper will be announced at least one week prior to the day the paper is due. Topics will vary depending on where we are in the course. Examples include relating course content to your own experiences as a learner, reflecting on one or more aspects of the course readings, or relating course readings to one another. In these papers you should demonstrate both understanding and thoughtfulness in regards to the course content, as well as skillful written expression. However, the papers are intended to be informal and do not require citations of sources outside the course material. There will be at least 4 of these papers due throughout the semester.

Mid-term Exam (25%): There will be a take-home, essay-based, mid-term examination in which students will be asked to respond to two of three writing prompts provided by the instructor. The responses to these prompts should have greater scope and depth than the short papers, and should make reference to course content such as readings or in-class materials. Responses to each of these prompts should be about 4-6 double spaced pages, but if you write concisely and do a good job with fewer words that is fine. Please do not exceed 6 double spaced pages.

Final Project (25%): The final project for the course will be an analysis of an instance of your own learning. Think of a time when you learned something new (perhaps the same event you described in your first short paper) and write a detailed analysis of the process of learning. Think back to how you first started to learn this new thing, and describe the steps you went through as you learned the material. Be sure to relate your experience to the specific relevant topics from the course and cite relevant readings. The more you can relate the course content to your own learning experience the better, but you should be able to tie-in **at least** three topics we have covered. I expect that most of your analyses will be around 5-6 double-spaced pages. You will turn in a draft of the paper on November 16th, and will have an opportunity to incorporate my feedback for the final draft due on December 11th. We will go over this assignment in more detail as the due dates draw nearer.

Peer Review Assignment (10%): To learn about the peer review process that is so crucial to gaining scientific knowledge, students will be asked to provide a review of one of their peers' short papers. The review process will be anonymous – you will not know whose paper you are reviewing or who reviewed your paper. The reviews should clearly describe the strengths of the paper as well as areas for improvement. Criticism should be presented constructively and with the goal of helping the peer improve their writing and comprehension of the course material. In addition to the written review you will provide a summative assessment of the paper you review.

Participation / Leading discussions (15%):

Your participation is vital to the success of this seminar. This is **your** seminar, and while I am here to help facilitate the discussion and provide any necessary clarification about the readings I do not plan on lecturing and my voice should not dominate the discussion. Participation means coming to class on time, having done the readings, and having given some thought to issues/concepts you would like to explore more fully with the group. Listen carefully and respectfully to others; contribute to class discussion regularly (but be careful not to dominate). Pay attention to the other students in the class, and if you can tell that someone has something to say please give them the space to do so. Direct your comments to the other students and not just the instructor. **Do not assume that silences are unproductive.** Give others time to think, consider, and formulate ideas.

For many class sessions, **I will assign a student to be the discussion facilitator for that day.** Each student will have the opportunity to facilitate (or co-facilitate, if necessary) one class session. The role of the facilitator will be to come prepared with a number of topics/comments/issues that they would like to discuss as a class, in small groups, or both. I will let you know one week before it is your turn to facilitate a class meeting. Please send me your ideas for discussion topics by **6pm the evening before** the class you are facilitating. If you would like to meet with me to come up with a plan for facilitating the class just let me know and we can set up a time. The class you facilitate count towards 5% of your participation grade for the course.

If speaking in a classroom setting is difficult for you or you find yourself less active in the discussion than you would like to be, please set up a time to meet with me and we can come up with some strategies to facilitate your participation.

This syllabus is and will be a work in progress – I have certain learning goals in mind, but we might deviate from the specific initial schedule if that would help us reach those goals. A current copy of the syllabus, including any changes to readings, etc., will always be available on Blackboard and we will discuss any deviations in class.

Schedule of Topics

(subject to change!)

Date	Topic	Readings
8/28	Introduction to the course	
8/30	History of the study of thinking and learning	HPL Ch. 1 Danziger 1980 Short paper #1 due
9/4	History of the study of thinking and learning	Skinner 1950 Watson & Raynor 1920
9/6	History of the study of thinking and learning	Connectionism primer (online) Rummelhart & McClelland (1987)
9/11	How do we learn about learning? Methods of inquiry	McBurney (1998) Ch. 1 Rauscher & Zupan (2000)
9/13	How do we learn about learning? Methods of inquiry	Bornstein & Benasich (1986) Replicability crisis video
9/18	Advances in Neuroscience and neuromyths	HPL Ch. 5 Geake (2007) Dekker et al (2012)
9/20	Advances in Neuroscience and neuromyths	Bruer 1997 Bennett et al (2009)
9/25	Socioeconomic status and the developing brain	Mackey et al (2015) Pakulak et al (2013)
9/27	Schema theory	Bransford & Johnson (1972) Sulin & Dooling (1974) Short Paper 2 due

Date	Topic	Readings
10/2	Schema theory	Marsh et al. (2006) Brewer & Treyns (1981)
10/4	Schema Theory	
10/9	Schema Theory Learning by analogy	Gick & Holyoak (1983)
10/11	Learning by Analogy	Novick (1988)
10/16	What it means to be an “expert” at something	HPL Ch. 2 National Geographic “Expertise” video
10/18	The development of expertise	Ericsson Ch. 1 Sloboda Ch. 4
10/23	Midterm take-home exam – no class meeting	
10/25	The development of expertise	No Readings
10/30	Transfer of knowledge from one domain to another	HPL Ch. 3 Gentner et al. (1997)
11/1	The meaning of intelligence	Topic proposal for Learning Analysis due Sternberg (1985)
11/6	Measuring intelligence	Anderson (1995) Ackerman et al. (2005)
11/8	Emotion, motivation and learning	Short Paper 3 due Bandura (1977)
11/13	Emotion, motivation and learning	Yusuf (2011) Ryan & Deci (2000)
11/15	Cognitive self-regulation	First draft of Learning Analysis due Bandura (1991)
11/20	Thanksgiving Break	
11/22	Thanksgiving Break	
11/27	Cognitive self-regulation	Butler & Winne (1995) Duncan et al. (2007)
11/29	Learning differences and disabilities	“Headstrong” Video

Date	Topic	Readings
12/4	Lifelong learning	Short Paper 4 due Ardelt (2000) Schulz & Heckhausen (1996)
12/6	Lifelong learning	Williams & Kemper (2010)
12/10	No meeting	Final draft of Learning Analysis due at 4:15pm