

Updated 1/17/18

EDP 382D: INSTRUCTIONAL PSYCHOLOGY

Spring 2018, Unique #10240

Mondays, 4:00–7:00PM, SZB 444

The University of Texas at Austin

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Course Objectives

The purpose of this course is to give you a foundation in instructional psychology. We will focus on how theory and research in psychology can be applied to facilitate learning in educative contexts broadly construed. Each week, we will delve into a new set of issues that all revolve around a particular theme (e.g., strategies for learning, motivation interventions, technology, etc.). We will engage with both micro- and macro-level psychological theories as we analyze various aspects of educational practice.

My hope is that you will develop an appreciation for the challenges and progress in this area of research, identify limitations to current work, and discuss possible directions for further research. Furthermore, I want you to acquire knowledge that enables you to foster educational innovation, regardless of your career path (e.g., teaching, designing curricula, crafting policy, etc.).

In addition to acquiring some content knowledge, a further goal is to provide you with opportunities to practice skills that will be valuable regardless of your career path:

- 1) Evaluating research and theories
- 2) Providing constructive criticism
- 3) Communicating ideas both orally and in writing

As described below, you will have numerous formal and informal opportunities for practice. My hope is that this practice, along with feedback from your classmates and myself, will help you to further develop these skills.

Finally, I want the work that you produce for this course to be useful to you outside of the course. Thus, the main piece of work that you produce will be an educational intervention or research proposal that combines your interests with a topic from the course. Hopefully, the proposal will be something that you could pursue at some point — either in the near future or later in your career.

Website and Communication

This course has a Canvas site associated with it (<http://canvas.utexas.edu/>). Canvas will be used to post announcements, course documents, assignments, supplementary materials, and lecture slides. Please check the site regularly for announcements, assignment reminders, and other messages. The best way to reach me outside of class is via email. I try to respond to email as promptly as possible; if 24 hours have passed without a response, please feel free to re-send the

message. Although I will not have set office hours, I would be happy to meet with you individually, so please let me know if you would like to talk. In particular, I encourage you to talk with me about both your papers and your plans for facilitating discussion.

Course Overview

The majority of the course will be structured around discussing articles from the literature. You will be responsible for reading the assigned articles and thinking critically about them prior to class. All readings will be posted to our Canvas site, and they will be divided into core and supplemental articles.

This class is highly discussion-based. Each student has thoughts, opinions, experience, and expertise to share on at least some of the issues discussed in the class, and the course will be greatly enhanced as we benefit from each individual student's contribution. Each week, everyone in the class will read the core articles, which will generally consist of reviews and meta-analyses. In addition, you will select one of the supplemental articles to read (but feel free to read more); the supplemental articles will generally be reports of empirical research. To encourage thoughtful reading, I will require you to craft a weekly thought paper in response to the readings.

Although this may vary slightly week-to-week, most classes will consist of the following components:

1. Discussion of the core articles in a large group. Each week, two students will be assigned to co-lead of the large group discussion. By the end of the first hour, we will have generated a few “big theme” questions that have arisen from the discussion. (~1 hour)
2. Simultaneous, small group discussions of the supplemental articles, guided by the ‘big theme’ questions. (~30 minutes), and then share out of some of the take-away points that came out of each discussion. (~30 minutes)
3. Activity (or activities) that synthesizes the topics discussed thus far, or involve work toward either the online course module project or your proposal paper. (~30 minutes)

In addition to the assigned readings and class sessions, each student will independently develop an educational intervention or research proposal over the course of the semester; it is expected that this process will involve additional reading that is directly relevant to the proposal. I encourage everyone to meet with me to discuss their ideas well in advance of the deadline. In week 14, everyone will present their proposals to the class for feedback.

Note: This syllabus is subject to change.

Schedule

Week	Date	Topic	Discussion Leaders (2/week)	Assignments Due
2	1/22	Introduction and evaluating research and theories	N/A	
3	1/29	History of instructional psychology		
4	2/5	Motivational mindsets and interventions		
5	2/12	Frameworks I: Making learning easy		
6	2/19	Frameworks II: Making learning difficult		
7	2/26	Learning strategies		
8	3/5	<i>Group project work</i>	<i>N/A</i>	<i>Finalize module; presentations</i>
	3/12	SPRING BREAK		
9	3/19	Expertise		
10	3/26	Metacognition and individual differences		Project results
11	4/2	Pedagogical approaches		Project paper
12	4/9	Serious games		
13	4/16	Assessing teaching & learning		
14	4/23	<i>Proposal presentations</i>	<i>N/A</i>	<i>Proposal presentations</i>
15	4/30	Learning technologies		Proposal due May 11th

Evaluation

The basis of evaluation is how much you learn, not how well you do in comparison to others in the class. Here are the four key components:

1. Discussion Facilitation and Participation (20%): Each class will be led by 2-3 discussion leaders. Each student will therefore be responsible for facilitating discussion twice during the course. Regardless of who is a discussion leader, all students should be active participants through each class.

Discussion leaders should read all the articles (not just the core readings) and generate questions for discussion. Main questions should come from the core readings, and auxiliary questions should bring in the supplemental readings. Discussion should also endeavor to integrate and synthesize content across classes.

Beyond generating a set of questions to guide discussion, you have a lot of freedom in how to structure and guide the discussion. You may, for example, come up with activities, use the projector, show videos, create handouts, or use props. Feel free to be creative. I also will help to facilitate discussion as needed. Discussion leaders are encouraged to discuss their plans with me well in advance of the class, but at least two days before.

2. Weekly Thought Papers (25%): Each week you will need to post onto the Canvas Discussion forum a thought paper in response to that week's assigned readings. The thought paper should touch on the core readings as well as at least one of the supplemental readings.

The thought paper should not be just a summary of the articles. Instead, I'd like to read your opinions and perspectives. Here are some examples (not exhaustive) of directions that your thought paper may take:

- You disagree with a particular claim. Explain why the claim is wrong, and why it is important that it is wrong.
- You agree with a claim. Describe extensions of the claim, possible applications, formal models that capture the essence of the claim, or future directions for research.
- Integration of or differences between the readings for the week, and the implications
- Integration with (or juxtaposition against) readings from prior weeks, and the implications

The weekly thought paper is due on the Saturday before each class, at 5pm. This deadline will ensure that the weekly discussion leaders have sufficient time to review the responses and integrate them into the discussion on Monday afternoon. *Discussion leaders for that week do not need to post thought papers.*

3. Online Module Project (30%): You will be assigned into three groups of 3-4 people and tasked with creating an online chemistry module that will teach undergraduates about buffers.

Updated 1/17/18

Students currently enrolled in CH302 will be randomly assigned to the modules, and will be studying from your module on **Friday March 9th, 2018**. After they return from spring break, they will all take a test to assess how much they can recall from the module.

There are two products to this project, both of which are group-based: (1) The online module itself, (2) a paper describing how and why the module was created in that way (linking to psychological theories of learning and motivation), an evaluation of the module, and any refinements you would want to make to improve it.

4. Proposal (25%): The work that you produce within this course should be useful for you outside of the course. Thus, the main piece of work that you produce will be an educational intervention or research proposal that combines your interests with a topic from the course. Hopefully, the proposal will be something that you could pursue at some point — either in the near future or later in your career.

The best ideas are not developed in isolation. Therefore, about two weeks before the proposal, there will be an opportunity to get feedback and insights from the rest of the class. In other words, you will present your proposal to the class (~10 minutes) and receive feedback; you will hear others' present their ideas the class and provide feedback. This feedback will both be targeted at helping you develop (a) your ideas, and (b) your presentation and communication skills.

Policy for Late Assignments

If you do not submit an assignment when it is due, then points will be deducted from the grade that you would have received had you turned in the assignment on time. 5% of the total points for the assignment will be deducted per day (or fraction thereof) that it is overdue; assignments that are more than 20 days overdue will receive a grade of 0. Extensions for individual assignments may be granted if you ask at least one day in advance.

Readings

Core readings are listed in normal font type

Supplemental readings are listed in italicized font type

Week 2 Jan 22: Introduction and evaluating research and theories

Hattie, J. (2013). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Routledge. Chapters 1-2, pp. 1-21.

Roediger, H. L., & McCabe, D. P. (2007). Evaluating experimental research. In R. J. Sternberg, H. L. Roediger, & D. F. Halpern (Eds.), *Critical thinking in psychology* (pp. 15-36). Cambridge University Press.

Dennis, S., & Kintsch, W. (2007). Evaluating theories. In R. J. Sternberg, H. L. Roediger, & D. F. Halpern (Eds.), *Critical thinking in psychology* (pp. 143-159). Cambridge University Press.

Week 3 Jan 29: History of instructional psychology

Gagne, R. M., & Dick, W. (1983). Instructional psychology. *Annual Review of Psychology*, 34, 261-295.

Glaser, R. (1982). Instructional psychology: Past, present, and future. *American Psychologist*, 37, 292-305.

Mayer, R. E. (1996). Learners as information processors: Legacies and limitations of educational psychology's second metaphor. Educational Psychologist, 31, 151-161.

Bruner, J. S. (1961). The act of discovery. Harvard Educational Review, 31, 21-32.

Skinner, B. F. (1954). The science of learning and the art of teaching. Harvard Educational Review, 24, 86-97.

Week 4 Feb 5: Motivating learning and interventions

Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research*, 81, 267-301.

Oyserman, D., Bybee, D., & Terry, K. (2006). Possible selves and academic outcomes: How and when possible selves impel action. *Journal of Personality and Social Psychology*, 91, 188-204.

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. Child Development, 78(1), 246-263.

Harackiewicz, J. M., Canning, E. A., Tibbetts, Y., Priniski, S. J., & Hyde, J. S. (2016). Closing Achievement Gaps With a Utility-Value Intervention: Disentangling Race and Social Class. Journal of Personality and Social Psychology, 111, 745-765.

Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. Psychological Science, 26, 784-793.

Walton, G. M., Logel, C., Peach, J. M., Spencer, S. J., & Zanna, M. P. (2015). Two brief interventions to mitigate a "chilly climate" transform women's experience, relationships, and achievement in engineering. Journal of Educational Psychology, 107(2), 468-485.

Week 5 Feb 12: Frameworks I: Making Learning Easy

- de Jong, T. (2010). Cognitive load theory, educational research, and instructional design: some food for thought. *Instructional Science*, 38, 105-134.
- Mayer, R. E. (2008). Applying the science of learning: Evidence-based principles for the design of multimedia instruction. *American Psychologist*, 63(8), 760-769.
- Atkinson, R. K., Renkl, A., & Merrill, M. M. (2003). Transitioning from studying examples to solving problems: Effects of self-explanation prompts and fading worked-out steps. *Journal of Educational Psychology*, 95, 774-783.
- Mayer, R. E. (2014). Incorporating motivation into multimedia learning. *Learning and Instruction*, 29, 171-173.
- Park, B., Flowerday, T., & Brünken, R. (2015). Cognitive and affective effects of seductive details in multimedia learning. *Computers in Human Behavior*, 44, 267-278.
- Cowan, N. (2014). Working memory underpins cognitive development, learning, and education. *Educational Psychology Review*, 26(2), 197-223.

Week 6 Feb 19: Frameworks II: Making Learning Difficult

- Bjork, R. A., & Bjork, E. L. (1992). A new theory of disuse and an old theory of stimulus fluctuation. *From learning processes to cognitive processes: Essays in honor of William K. Estes*, 2, 35-67.
- Kapur, M. (2016). Examining productive failure, productive success, unproductive failure, and unproductive success in learning. *Educational Psychologist*, 51(2), 289-299.
- McDaniel, M. A., & Butler, A. C. (2011). A contextual framework for understanding when difficulties are desirable. Successful remembering and successful forgetting: A festschrift in honor of Robert A. Bjork, 175-198.
- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest*, 14, 4-58.
- Kapur, M., & Bielaczyc, K. (2012). Designing for productive failure. *Journal of the Learning Sciences*, 21(1), 45-83.
- Yan, V. X., Clark, C. M., & Bjork, R. A. (2016). Memory and metamemory considerations in the instruction of human beings revisited: Implications for optimizing online learning. J. C. Horvath, J. Lodge, & J. A. C. Hattie (Eds). *From the Laboratory to the Classroom: Translating the Learning Sciences for Teachers*. pp 61-78.

Week 7 Feb 26: Making Learning Stick

- Koedinger, K. R., Booth, J. L., & Klahr, D. (2013). Instructional complexity and the science to constrain it. *Science*, 342, 935-937.
- Agarwal, P. K., Bain, P. M., & Chamberlain, R. W. (2012). The value of applied research: Retrieval practice improves classroom learning and recommendations from a teacher, a principal, and a scientist. *Educational Psychology Review*, 24(3), 437-448.
- Carpenter, S.K. (2017) *Spacing Effects on Learning and Memory*. In: Wixted, J.T. (ed.), *Cognitive Psychology of Memory*, Vol. 2 of *Learning and Memory: A Comprehensive Reference*, 2nd edition, Byrne, J.H. (ed.). pp. 465–485. Oxford: Academic Press.

- Little, J. L., Bjork, E. L., Bjork, R. A., & Angello, G. (2012). Multiple-choice tests exonerated, at least of some charges fostering test-induced learning and avoiding test-induced forgetting. *Psychological Science*, 23(11), 1337-1344.
- Mullet, H. G., Butler, A. C., Verdin, B., von Borries, R., & Marsh, E. J. (2014). Delaying feedback promotes transfer of knowledge despite student preferences to receive feedback immediately. *Journal of Applied Research in Memory and Cognition*, 3(3), 222-229.
- Smith, S. M., & Handy, J. D. (2014). Effects of varied and constant environmental contexts on acquisition and retention. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40(6), 1582.

Week 8 Mar 5: Group project work

SPRING BREAK Mar 12

Week 9 Mar 19: Developing Expertise

- Chi, M. T., Feltovich, P. J., & Glaser, R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive science*, 5(2), 121-152.
- Richey, J. E., & Nokes-Malach, T. J. (2015). Comparing four instructional techniques for promoting robust knowledge. *Educational Psychology Review*, 27(1), 181-218.
- Rittle-Johnson, B., Schneider, M., & Star, J. R. (2015). Not a one-way street: Bidirectional relations between procedural and conceptual knowledge of mathematics. *Educational Psychology Review*, 27(4), 587-597.
- Chi, M. T. (2006). Laboratory methods for assessing experts' and novices' knowledge. *The Cambridge handbook of expertise and expert performance*, 167-184.
- Richland, L. E., Stigler, J. W., & Holyoak, K. J. (2012). Teaching the conceptual structure of mathematics. *Educational Psychologist*, 47(3), 189-203.
- DeSutter, D., & Stieff, M. (2017). Teaching students to think spatially through embodied actions: Design principles for learning environments in science, technology, engineering, and mathematics. *Cognitive Research: Principles and Implications*, 2(1), 22.

Week 10 Mar 26: Metacognition and Individual differences

- Dunlosky, J. & Metcalfe, J. (2009). Metacognition. Thousand Oaks, CA: Sage Publications, Inc. Chapter 3, pp 37-59.
- Bjork, R. A., Dunlosky, J., & Kornell, N. (2013). Self-regulated learning: Beliefs, techniques, and illusions. *Annual Review of Psychology*, 64, 417-444.
- Ehrlinger, J., Mitchum, A. L., & Dweck, C. S. (2016). Understanding overconfidence: Theories of intelligence, preferential attention, and distorted self-assessment. *Journal of Experimental Social Psychology*, 63, 94-100.
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Psychological Science in the Public Interest*, 9(3), 105-119.
- Kalyuga, S. (2007). Expertise reversal effect and its implications for learner-tailored instruction. *Educational Psychology Review*, 19(4), 509-539.

Updated 1/17/18

- Koriat, A., Nussinson, R., & Ackerman, R. (2014). Judgments of learning depend on how learners interpret study effort. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40(6), 1624.
- Miele, D. B., & Molden, D. C. (2010). Naive theories of intelligence and the role of processing fluency in perceived comprehension. *Journal of Experimental Psychology: General*, 139(3), 535.
- Yan, V. X., Thai, K. P., & Bjork, R. A. (2014). Habits and beliefs that guide self-regulated learning: Do they vary with mindset? *Journal of Applied Research in Memory and Cognition*, 3(3), 140-152.

Week 11 Apr 2: Pedagogical approaches

- Crouch, C. H., & Mazur, E. (2001). Peer instruction: Ten years of experience and results. *American Journal of Physics*, 69, 970-977.
- DeLozier, S. J., & Rhodes, M. G. (2017). Flipped classrooms: a review of key ideas and recommendations for practice. *Educational psychology review*, 29(1), 141-151.
- Bowers, J. S. (2016). The practical and principled problems with educational neuroscience. *Psychological Review*, 123(5), 600-612 **and** Gabrieli, J. D. (2016). The promise of educational neuroscience: Comment on Bowers (2016). *Psychological Review*, 123(5), 613-619.
- Donoghue, G. M., & Horvath, J. C. (2016). Translating neuroscience, psychology and education: An abstracted conceptual framework for the learning sciences. *Cogent Education*, 3(1), 1267422.
- Givvin, K. B., Hiebert, J., Jacobs, J. K., Hollingsworth, H., & Gallimore, R. (2005). Are there national patterns of teaching? Evidence from the TIMSS 1999 video study. *Comparative Education Review*, 49(3), 311-343.

Week 12 Apr 9: Serious games

- Hirsh-Pasek, K., Zosh, J. M., Golinkoff, R. M., Gray, J. H., Robb, M. B., & Kaufman, J. (2015). Putting education in “educational” apps: lessons from the science of learning. *Psychological Science in the Public Interest*, 16(1), 3-34.
- Barab, S. A., Gresalfi, M., & Ingram-Goble, A. (2010). Transformational play using games to position person, content, and context. *Educational Researcher*, 39, 525-536.

TBD

Week 13 Apr 16: Assessing instruction and learning

- Sternberg, R. J. (2007). Culture, instruction, and assessment. *Comparative Education*, 43, 5-22.
- Wieman, C., & Gilbert, S. (2014). The teaching practices inventory: a new tool for characterizing college and university teaching in mathematics and science. *CBE-Life Sciences Education*, 13, 552-569.

Updated 1/17/18

Duckworth, A. L., & Yeager, D. S. (2015). Measurement matters: Assessing personal qualities other than cognitive ability for educational purposes. Educational Researcher, 44(4), 237-251.

Stroebe, W. (2016). Why good teaching evaluations may reward bad teaching: On grade inflation and other unintended consequences of student evaluations. Perspectives on Psychological Science, 11, 800-816.

TBD

Week 14 Apr 23: Proposal presentations

Week 15 Apr 30: Learning technologies

Graesser, A. C., Conley, M. W., & Olney, A. (2012). Intelligent tutoring systems. In K. R. Harris, S. Graham, & T. Urdan (Eds.), *APA Educational Psychology Handbook (Vol. 3): Application to Learning and Teaching* (pp. 451-473). Washington D.C.: American Psychological Association.

Long, P., & Siemens, G. (2011). Penetrating the Fog: Analytics in Learning and Education. *EDUCAUSE Review, 46*, 30-40.

Breslow, L., Pritchard, D. E., DeBoer, J., Stump, G. S., Ho, A. D., & Seaton, D. T. (2013). Studying learning in the worldwide classroom: Research into edX's first MOOC. Research & Practice in Assessment, 13-25.

Roll, I., Aleven, V., McLaren, B. M., & Koedinger, K. R. (2011). Improving students' help-seeking skills using metacognitive feedback in an intelligent tutoring system. Learning and Instruction, 21, 267-280.

Mettler, E., Massey, C. M., & Kellman, P. J. (2016). A comparison of adaptive and fixed schedules of practice. Journal of Experimental Psychology: General, 145(7), 897-917.

University Requirements

Services for Students with Disabilities: The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. To determine if you qualify, please contact the Dean of Students at 471-6259; TTY 471-4641.

The twelfth class day is January 31st, which is the last day to possibly get a refund if you drop a class.

Religious Holy Day Observance: Religious holy days sometimes conflict with class and examination schedules. If you miss a work assignment or other project due to the observance of a religious holy day you will be given an opportunity to complete the work missed within a reasonable time after the absence. It is the policy of the University of Texas at Austin that you must notify each of your instructors at least fourteen days prior to the classes scheduled on dates you will be absent to observe a religious holy day.

The University of Texas Honor Code: The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

Academic Dishonesty and Plagiarism: The University defines academic dishonesty as cheating, plagiarism, unauthorized collaboration, falsifying academic records, and any act designed to avoid participating honestly in the learning process. Scholastic dishonesty also includes, but is not limited to, providing false or misleading information to receive a postponement or an extension on a test, quiz, or other assignment, and submission of essentially the same written assignment for two courses without the prior permission of the instructor. Scholastic dishonesty damages both the student's learning experience and readiness for the future demands of a work-career. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. For more information on scholastic dishonesty, please visit the Student Judicial services Web site at <http://deanofstudents.utexas.edu/sjs>

Personal Pronoun Use: Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

Safety information: Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside. Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.

Updated 1/17/18

Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.

In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by The University of Texas at Austin Police Department or Fire Prevention Services office. Other important Emergency Information: <http://www.utexas.edu/safety/preparedness/>

Student Safety and Resources

Behavior Concerns Advice Line: 512-232-5050; <https://operations.utexas.edu/units/csas/bcal.php>

UT Counseling & Mental Health Center: 512-471-3515; 24/7 Crisis Line 512-471-2255; <https://www.cmhc.utexas.edu>

SURE Walk: provides walking companions on campus from the hours of 7PM - 2AM, Monday-Sunday, (512) 232-9255; <http://utsg.org/projects/sure-walk>

UT Student Safety website: <https://operations.utexas.edu/units/csas/>