

EDUC 616: Foundations of Teaching and Learning
Fall 2017
Professor Ryan Baker

SYLLABUS

Instructor Info

Email: rybaker@upenn.edu

Office: GSE 439

Office hours: Wednesday 330pm-420pm, or by appointment

Course time: Wednesday, 430pm-620pm

Required Texts

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Dewey, J. (1938/1963). *Experience and education*. New York: Collier Books.

Other course readings will be available in Canvas.

Course Goals

In this class, we explore key theoretical perspectives on teaching and learning. What is knowledge and knowing? What is learning? What is teaching? What are good teaching and learning? How do contexts influence teaching, knowing, and learning?

In the course, students will learn foundational theoretical perspectives on these questions, while being encouraged to develop answers for themselves, and develop an underpinning for the work that they will carry forward in their professional careers, whether in research or in practice.

Course Pre-requisites: None.

Assignments

A theoretical paper will be due on December 1. This theoretical paper will require the student to select a topic (in consultation with the instructor), and argue for a specific position for how the field of learning analytics must change to meet the needs of 21st century education or learning sciences. Students will be required to turn in a 1-page paper prospectus for the theoretical paper on October 20, which will be graded as well. Extensions for the paper and prospectus deadlines will only be available in case of instructor error or extreme circumstances (assignments in other classes, research studies, and so on do not count as extreme circumstances; serious injury, illness, or death in the family do count as extreme circumstances). Outside of these circumstances, late hand-ins will not be accepted (e.g. zero credit will be given).

All assignments should be sent to the instructor via email to penn.learninganalytics@gmail.com. The assignment title and email title should be 616-YOURLASTNAME-ASSIGNMENTNAME. Assignments can be submitted in Microsoft Word or PDF format.

Midterm and final exams will be given. Both exams are open-book; open-resource; open-web. However, collaborating on the exam with other students or anyone else at all is NOT ALLOWED. The exams will be made available on the course webpage 48 hours before the due date.

Class participation involves both attendance and active (and constructive) participation in classroom discussions. Simply attending class and sitting silently will not result in a high grade for class participation.

Eleven factual quizzes will be given at the beginning of class, without prior announcement. These quizzes will be based on the week's reading. If a student misses a quiz due to an excused absence (email me), that quiz will not be averaged into their grade. Each student's lowest quiz grade will be dropped from calculation.

Please note that assignment criteria and dates may be changed and/or further detailed during the term.

Grading

- Theoretical Paper Prospectus 5%
- Theoretical Paper 15%
- Midterm Exam 20%
- Final Exam 20%
- Class Participation 20%
- Quizzes 20%

Course Schedule and Readings :

See <http://www.upenn.edu/learninganalytic/ryanbaker/Foundations2017/course-schedule-2017.html> for the most up-to-date schedule.

PLAGIARISM and CHEATING

Don't do it. If you are unsure whether an action involves plagiarism or cheating, please talk to me first.

Using CANVAS

1. Go to <http://penngse.instructure.com>
2. Click on Log in and enter your PennNet ID and password.
3. Click on EDUC616-001-2017 MASTERS FNDS TCH & LRN

Periodically, I will email the class via Canvas. To be sure that you receive these messages, please make sure that your contact information is up-to-date.

COURSE SCHEDULE

August 30 Introductions and Overview

Wortham, S. (2003). Learning in education. In L. Nadel (Ed.), *Encyclopedia of Cognitive Science* (pp. 1079-1082). New York: Macmillan/Nature Publishing Group.

September 6 Behaviorism

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

Goodman, J. (2013). Character Management Organizations and the Regulated Environment: Is it worth the prize? *Educational Researcher*, 42(2), 89-96.

Carr, S. (2013) *Hope Against Hope: Three Schools, One City, and the Struggle to Educate America's Children*, 92-112, 144-161.

September 13 Cognitive Perspective/Classic Constructivism

Siegler, R. S. (1998). *Children's thinking, Third edition* (Chapter 2). Englewood Cliffs, NJ: Prentice-Hall.

Duckworth, E. (1987). *The having of wonderful ideas and other essays on teaching and learning* (Chapter 1). New York: Teachers College Press.

September 20 Constructionism

Papert, S., & Harel, I. (1991). Situating constructionism. *Constructionism*, 36, 1-11.

Hay, K. E. & Barab, S. A. (2001). Constructivism in practice: A comparison and contrast of apprenticeship and constructionist learning environments. *The Journal of the Learning Sciences*, 10(3), 281-322.

Peppler, K. A., & Kafai, Y. B. (2007). What Videogame Making Can Teach Us About Literacy and Learning: Alternative Pathways into Participatory Culture. *Proceedings of DIGRA 2017*.

September 27 Vygotsky

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (pp. 1-91). Cambridge, MA: Harvard University Press.

October 4 Dewey

Dewey, J. (1938/1963). *Experience and education*. New York: Collier Books.

October 11 Bloom

Bloom, B. *Taxonomy of Educational Objectives: Book 1: Cognitive Domain*. Pp. 1-24, 62-77, 89-96, 120-124, 144-148, 162-172, 185-192, 201-207. White Plains, NY: Longman.

Bloom, B.: The 2 sigma problem: The search for methods of group instruction as effective as one-to-one tutoring. *Educational Researcher*. 13(6), 4-16 (1984)

October 18 Education, Social Change, and Responsiveness

Freire, P. (1973). *Education: The Practice of Freedom*. Ch.5 Education and Conscientização (Links to an external site.)Links to an external site. (Becoming aware of one's self).

Freire, P. (1968) *Pedagogy of the Oppressed*. Ch. 2.

hooks, b. (1994). *Teaching to transgress: Education as the practice of freedom*. New York: Routledge. (pp. 13-22).

Freire, P. (1986). Letter to north-american teachers. *Obra de Paulo Freire; Série Manuscritos*.

October 20 Theoretical Paper Prospectus Due noon

October 25 Community of Learners and Practice

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32-42.

Ching, C. C. & Kafai, Y. B. (2008). Peer Pedagogy: Student collaboration and reflection in learning through design. *Teachers College Record*, 110(12), 2601-2632.

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*(Chapters 1 and 2). Cambridge: Cambridge University Press.

Midterm handed out in class

October 27 Midterm due 1159pm

November 1 Identity and Diversity

Gee, J. P. (2001). Identity as an analytic lens for research in education. In W. G. Secada (Ed.), *Review of research in education* (pp. 99-126). Washington, DC: AERA.

Zhang, J. (2013). Collaboration, technology, and culture. In Cindy Hmelo-Silver, Angela O'Donnell, Carol Chan, & Clark Chinn (Eds.), *International Handbook of Collaborative Learning* (pp.495-508). Philadelphia, PA: Taylor & Francis.

Gutierrez, K. D., & Rogoff, B. (2003). Cultural ways of learning: Individual traits or repertoires of practice. *Educational Researcher*, 32(5), 19-25.

Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R., (2009). Learning Styles: Concepts and Evidence. *Psychological Science in the Public Interest*, 9(3), 105-119.

November 8 Motivation

Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., ... & Gomez, E. M. (2016). Teaching a lay theory before college narrows achievement gaps at scale. *Proceedings of the National Academy of Sciences*, 201524360

Elliot, A. J. (2005). A conceptual history of the achievement goal construct. *Handbook of competence and motivation*, 16(2005), 52-72.

Wigfield, A., Tonks, S., & Klauda, S. L. (2009). Expectancy-value theory. *Handbook of motivation at school*, 55-75.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *Journal of personality and social psychology*, 92(6), 1087.

November 15 Robust Learning and Engagement

D'Mello, S., & Graesser, A. (2012). Dynamics of affective states during complex learning. *Learning and Instruction*, 22(2), 145-157

San Pedro, M.O.Z., Baker, R.S.J.d., Bowers, A.J., Heffernan, N.T. (2013) Predicting College Enrollment from Student Interaction with an Intelligent Tutoring System in Middle School. *Proceedings of the 6th International Conference on Educational Data Mining*, 177-184.

Bransford, J. D., & Schwartz, D. L. (1999). Rethinking transfer: A simple proposal with multiple implications. *Review of research in education*, 24, 61-100.

Rohrer, D., & Pashler, H. (2010). Recent research on human learning challenges conventional instructional strategies. *Educational Researcher*, 39(5), 406-412.

November 22 – No class – University Holiday

November 29 Architectures and Frameworks

Koedinger, K. R., Corbett, A. T., & Perfetti, C. (2012). The Knowledge-Learning-Instruction framework: Bridging the science-practice chasm to enhance robust student learning. *Cognitive science*, 36(5), 757-798.

Bloom, B.S. (1978) *Human Characteristics and School Learning*. Ch.1: Individual Differences in Learners and Learning

Ritter, S., Anderson, J. R., Koedinger, K. R., & Corbett, A. (2007). Cognitive Tutor: Applied research in mathematics education. *Psychonomic bulletin & review*, 14(2), 249-255.

December 1 Theoretical paper due 1159pm

December 6 Emerging Methods: EDM and Automated Experimentation

Baker, R. S., & Yacef, K. (2009). The state of educational data mining in 2009: A review and future visions. *JEDM-Journal of Educational Data Mining*, 1(1), 3-17.

Baker, R., Siemens, G. (2014) Educational data mining and learning analytics. In Sawyer, K. (Ed.) *Cambridge Handbook of the Learning Sciences: 2nd Edition*, pp. 253-274.

Heffernan, N. T., & Heffernan, C. L. (2014). The ASSISTments ecosystem: building a platform that brings scientists and teachers together for minimally invasive research on human learning and teaching. *International Journal of Artificial Intelligence in Education*, 24(4), 470-497.

December 13 Emerging Methods: Design Experiments

Collins, A., Joseph, D., & Bielaczyc, K. (2004). Design research: Theoretical and methodological issues. *The Journal of the learning sciences*, 13(1), 15-42.

Koedinger, K. R., & Sueker, E. L. (1996). PAT goes to college: Evaluating a cognitive tutor for developmental mathematics. In *Proceedings of the 1996 international conference on Learning sciences* (pp. 180-187). International Society of the Learning Sciences

Final Exam handed out in class

December 15 1159pm Final Exam due