

Course: Learning and Technology (EDUC 578)

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Course Website:

Semester:

Schedule:

Location:

Course Description:

Learning and Technology (EDUC 578). Schools and educators are quickly integrating technology into the school environment and curriculum. However, before implementing new technology, it is important to understand how students learn. This course examines both the context and process of learning, as well as critically analyzes the empirical evidence regarding the use of technology in promoting learning.

Above all, this class is about making connections between theory, empirical research, and educational practice with regard to the use (benefits and drawbacks) of different technologies.

This course explores the relationship between learning and technology at both a theoretical and empirical level. Specifically, the course examines the process and environments in which technology can promote learning. The following questions are explored throughout the course.

1. How does learning occur?
2. In what environment can technology promote learning?
3. What is the process by which technology enhances learning?

Students will (ACE):

Academic Excellence, Critical Inquiry, and Reflection

1. Learn to critically analyze technology and the environment in which it promotes learning.

Community and Service

2. Integrate both theoretical and empirical research through research projects.

Ethics, Values, and Diversity

3. Learn from readings and discussion about the relationship between theoretical and empirical research and technology.

Activities:

1. *Class participation* (35% of grade): Students are responsible for completing the assigned readings before class. Additionally, students are expected to actively engage in critical dialogue in each class session.
 - a. Summary: One student is responsible for summarizing the weekly articles (one and a half hours) -- this is not a presentation.
 - i. Provide the class with thought provoking questions regarding the articles.
 - b. Video: One student is responsible for finding and summarizing a video that is related to learning and/or technology (e.g., TED talk, etc.) -- students will watch the video in class.
 - i. Provide the class with thought provoking questions regarding the video.
 - c. Notes: One student is responsible for keeping class notes each week.
 - d. Out the door paper: Following each class, students will respond to two or three questions. For example:
 - i. What did you learn?
 - ii. What do you need?
2. ¹*Experiment participation* (5% of grade): Students are required to participate in one experiment and to produce a short paper (250+ words) reflecting on (due within one week of participation) . . .
 - a. The overall experience.
 - b. What did you learn and how does it relate to what is discussed in class?
3. *Project* (40% of grade): Each week, one or two students are responsible for developing and presenting a project that is based on both the weekly theoretical and empirical readings, and incorporates technology (one hour presentation and 15 minutes of discussion) -- when applicable, projects should be posted to Connexions. Additionally, if students have trouble relating their project to the weekly readings, they may find four articles, two empirical and two technical, which support the theory(s) and their project. Students are required to meet with the instructor at least one week prior to their presentation to discuss and develop their idea and project. Each project must include a section that explains how the articles were represented in the project, as well as answer the three main questions of the course:
 - a. How does learning occur?
 - b. In what environment can technology promote learning?
 - c. What is the process by which technology enhances learning?
4. *Reflection paper* (20% of grade): At the end of the semester each student will produce a paper (4,000+ words), reflecting on . . .
 - a. What have you learned from the course?
 - b. What is the future of the use of technology?
 - c. How will you apply what you learned?

Grades:

¹ Students, who do not wish to participate in an experiment, may opt to complete an alternative assignment.

Grades are composed of four parts: class participation (35%), experiment participation (5%), semester projects (40%), and a reflection paper (20%). The standard University grade scale is utilized. Please read:

Roosevelt, M. (2009). Student expectations seen as causing grade disputes. *The New York Times*. New York, NY. Retrieved from <http://www.nytimes.com/2009/02/18/education/18college.html>.

Rojstaczer, S. (2003). Where all grades are above average. *The Washington Post*, A21. Washington, DC. Retrieved from <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&contentId=A52648-2003Jan27>.

Course Standards:

- Students are expected to be tolerant of others' viewpoints and courteous in their interaction.
- Prompt and regular attendance is expected.
- Please turn off or silence electronic communication devices (no texting).
- Laptops are not permitted.
- Please review the University's student handbook and policies regarding, student discipline, academic integrity, attendance, etc.
- Please check the course website at least once a day and email twice a day.
- All material must conform to APA standards.
- Most course readings are available through the University ereserves (<http://copleylib.sandiego.edu/eres/> -- the password is:)
- Late assignments are not accepted.
- All assignments are to be emailed to the instructor before class on the due date.

Connexions:

When applicable, projects should be posted to Connexions (<http://www.cnx.org>), a collection of educational resources. Please create an account online and remember that anything posted online is open to the world to view.

Turnitin:

The University subscribes to a service called Turnitin.com. Turnitin.com is an online application that compares the content of submitted papers to the Turnitin.com database, and checks for textual similarities. All assignments for this course may be subject to submission to Turnitin.com for textual similarity review and to verify originality. All assignments will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting textual similarities and verifying originality. Students may request in writing that their assignments not be submitted to Turnitin.com. However, if a student chooses this option, the student may be required to provide documentation in a form required by the faculty member to substantiate that the papers are the student's original work.

Academic Dishonesty:

Academic dishonesty will not be tolerated. Students are expected to adhere to all of the University policies, procedures, guidelines, and recommendations. Any form of academic dishonesty will result in:

1. automatic failure of the course
2. notification sent to the department head, the dean, and University authorities
3. other actions could involve, but are not limited to -- expulsion from the University, legal action, etc.

Disabilities:

Students with disabilities should contact the instructor and the office of disability services within the first two weeks of the semesters.

Reasonable accommodations in accordance with the Americans with Disabilities Act will be made for course participants with disabilities who require specific instructional and testing modifications. Students with such requirements must identify themselves to the University of San Diego Disability Services Office (619.260.4655) before the beginning of the course. Every effort will be made to accommodate students' needs, however, performance standards for the course will not be modified in considering specific accommodations.

Incompletes:

The grade of Incomplete ("I") may be recorded to indicate (1) that the requirements of a course have been substantially completed but, for a legitimate reason, a small fraction of the work remains to be completed, and, (2) that the record of the student in the course justifies the expectation that he or she will complete the work and obtain the passing grade by the deadline. It is the student's responsibility to explain to the instructor the reasons for non-completion of work and to request an incomplete grade prior to the posting of final grades. Students who receive a grade of incomplete must submit all missing work no later than the end of the tenth week of the next regular semester otherwise the "I" grade will become a permanent "F."

Note:

The instructor reserves the right to modify the policies, procedures, syllabus, or schedule as he deems necessary. Any changes made to the policies, procedures, syllabus, or schedule contained within the course will be announced either in class, email, or on the course website. By taking this course, students have agreed to follow all of the policies, procedures, guidelines, and recommendations of the University.

Required Reading: (I recommend purchasing books from: <http://www.abebooks.com/>)
Fogarty, M. (2008). *Grammar Girl's quick and dirty tips for better writing*. New York, NY: Holt Paperbacks.

- Gardenfors, P., & Johansson, P. (Eds.). (2005). *Cognition, education, and communication technology*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- VandenBos, G. (Ed.). (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: American Psychological Association.

Recommended Reading:

- Stigler, J. W., & Hiebert, J. (2009). *The teaching gap: Best ideas from the world's teachers for improving*. New York, NY: Free Press.
- Willingham, D. (2009). *Why don't students like school: A cognitive scientist answers questions about how the mind works and what it means for the classroom*. San Francisco, California: Jossey-Bass.

Schedule:

Week 1 (Overview -- introduction to the course, format, expectations, etc.)

- Chew, S. L. (2007). Study more! Study harder! Students' and teachers' faulty beliefs about how people learn. *Essays from E-xcellence in Teaching*, 7, 22-25.
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2009). Learning styles: Concepts and evidence. *Psychological Science*, 9(3), 105-119.
- Rohrer, D., & Pashler, H. (2007). Increasing retention without increasing study time. *Current Directions in Psychological Science*, 16(4), 183-186.
- Tugend, A. (2008). Multitasking can make you lose ... um ... focus. *The New York Times*. New York, NY. Retrieved May 30, 2011, from <http://www.nytimes.com/2008/10/25/business/yourmoney/25shortcuts.html>.

Week 2 (Generation Y)

- Hutchins, E. (2001). Cognition, Distributed. In N. Smelser & P. Baltes, *International Encyclopedia of the Social & Behavioral Sciences* (pp. 2068-2072). Oxford: Pergamon.
- Wilson, M. (2002). Six views of embodied cognition. *Psychonomic bulletin & review*, 9(4), 625-636.
- Jones, S., & Fox, S. (2009). *Generations online in 2009*. Washington, DC: Pew Research Center.
- Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775-786.
- Dretzin, R. (2010). Digital Nation. Frontline. Retrieved from <http://www.pbs.org/wgbh/pages/frontline/digitalnation/view/>.

Week 3 (Technology and Learning)

- Gureckis, T. M., & Goldstone, R. L. (2006). Thinking in groups. *Pragmatics & Cognition*, 14(2), 293-311.
- Clark, A. (1999). An embodied cognitive science? *Trends in Cognitive Sciences*, 3(9), 345-351.
- Wegerif, R. (2002). *Thinking skills, technology and learning*. Harbourside, Bristol: Futurelab.
- Greenhow, C., Robelia, B., & Hughes, J. (2009). Learning, teaching, and scholarship in a digital age. *Educational Researcher*, 38(4), 246-259.

- Warschauer, M. (2007). The paradoxical future of digital learning. *Learning Inquiry*, 1(1), 41-49.
- Carr, N. (2008). Is Google making us stupid? *The Atlantic*. Retrieved from <http://www.theatlantic.com/magazine/archive/2008/07/is-google-making-us-stupid/6868/>.
- Goldberg, D. (2010). If technology is making us stupid, it's not technology's fault. *DMLcentral.net*. Retrieved from <http://dmlcentral.net/blog/david-theo-goldberg/if-technology-making-us-stupid-its-not-technology%E2%80%99s-fault>.

Week 4 (Laptops)

- Johansson, P., & Gardenfors, P. (2005). Introduction to cognition, education, and communication technology. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 1-20). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Vigdor, J. L., & Ladd, H. F. (2010). *Scaling the Digital Divide: Home computer technology and student achievement*. Cambridge, MA: National Bureau of Economic Research.
- Fried, C. B. (2008). In-class laptop use and its effects on student learning. *Computers & Education*, 50(3), 906-914.
- Truman, G. E. (2005). An empirical assessment of student computer use behaviors in the classroom. In *Hawaii International Conference on System Sciences* (Vol. 1, pp. 6a-6a).
- Stross, R. (2010). Computers at home: Educational hope vs. teenage reality. *The New York Times*. Retrieved from <http://www.nytimes.com/2010/07/11/business/11digi.html>.
- Brooks, D. (2010). The medium is the medium. *The New York Times*. Retrieved from <http://www.nytimes.com/2010/07/09/opinion/09brooks.html>.

Week 5 (Gaming)

- Schwartz, D., Martin, T., & Nasir, N. (2005). Designs for knowledge evolution: Towards a prescriptive theory for integrating first- and second-hand knowledge. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 21-54). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Lenhart, A., Kahne, J., Middaugh, E., Macgill, A., Evans, C., Vitak, J., et al. (2008). *Teens, video games and civics*. Washington, DC: Pew Research Center.
- Squire, K. (2006). From content to context: Videogames as designed experience. *Educational Researcher*, 35(8), 19-29.
- Nardi, B., & Harris, J. (2006). *Strangers and friends: Collaborative play in World of Warcraft*. Paper presented at the Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work, Banff, Alberta, Canada.
- Corbett, S. (2010). Learning by playing: Video games in the classroom. *The New York Times*. New York, NY. Retrieved from <http://www.nytimes.com/2010/09/19/magazine/19video-t.html>.

Week 6 (Wiki's)

- Plowman, L. (2005). Getting the story straight: The role of Narrative in teaching and learning with interactive media. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education,*

and communication technology (pp. 55-76). Mahwah, New Jersey: Lawrence Erlbaum Associates.

- Rainie, L., & Tancer, B. (2007). *Wikipedia users*. Washington, DC: Pew Research Center.
- Bonk, C. J., Lee, M. M., Kim, N., & Lin, M. G. (2009). The tensions of transformation in three cross-institutional wikibook projects. *The Internet and Higher Education*, 12(3-4), 126-135. Elsevier Inc.
- Grant, L. (2009). 'I DON'T CARE DO UR OWN PAGE!' A case study of using wikis for collaborative work in a UK secondary school. *Learning, Media and Technology*, 34(2), 105-117.
- Bronson, P., & Merryman, A. (2010). Forget brainstorming. *Newsweek*. New York, NY. Retrieved from <http://www.newsweek.com/2010/07/12/forget-brainstorming.html>.

Week 7 (Blogging)

- Resnick, L., Lesgold, A., & Hall, M. (2005). Technology and the new cultural of learning: Tools for education professionals. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 77-108). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Rainie, L. (2005). *The state of blogging*. Washington, DC: Pew Research Center.
- Kerawalla, L., Minocha, S., Kirkup, G., & Conole, G. (2009). An empirically grounded framework to guide blogging in higher education. *Journal of Computer Assisted Learning*, 25(1), 31-42.
- Churchill, D. (2009). Educational applications of Web 2.0: Using blogs to support teaching and learning. *British Journal of Educational Technology*, 40(1), 179-183.
- Carey, B. (2010). Forget what you know about good study habits. *The New York Times*. New York, NY. Retrieved from <http://www.nytimes.com/2010/09/07/health/views/07mind.html>.

Week 8 (Social Media)

- Clancey, W. (2005). Modeling the perceptual component of conceptual learning -- A coordination perspective. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 109-146). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). Social media and mobile Internet use among teens and young adults. Washington, DC: Pew Research Center.
- Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook, social integration and informal learning at university: It is more for socialising and talking to friends about work than for actually doing work. *Learning, Media and Technology*, 34(2), 141-155.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook “‘friends:’” Social capital and college students’ use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168.

Week 9 (Clickers)

- Kirsh, D. (2005). Metacognition, distributed cognition, and visual design. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 147-180). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Beatty, I. (2004). Transforming student learning with classroom communication systems. Boulder, Colorado: EDUCAUSE.
- Trees, A., & Jackson, M. (2007). The learning environment in clicker classrooms: Student processes of learning and involvement in large university-level courses using student response systems. *Learning, Media and Technology*, 32(1), 21-40.
- Keller, C., Finkelstein, N., Perkins, K., Pollock, S., Turpen, C., & Dubson, M. (2007). Research-based practices for effective clicker use. *Proceedings for the Physics Education Research Conference* (pp. 128-131). Greensboro, North Carolina.

Week 10 (Virtual Worlds)

- Scaife, M., & Rogers, Y. (2005). External cognition, innovative technologies, and effective learning. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 181-202). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Dickey, M. D. (2005). Three-dimensional virtual worlds and distance learning: Two case studies of Active Worlds as a medium for distance education. *British Journal of Educational Technology*, 36(3), 439-451.
- Roussos, M., Johnson, A., Moher, T., Leigh, J., Vasilakis, C., & Barnes, C. (1999). Learning and building together in an immersive virtual world. *Presence: Teleoperators & Virtual Environments*, 8(3), 247-263.
- Bainbridge, W. S. (2007). The scientific research potential of virtual worlds. *Science*, 317(5837), 472-476.

Week 11 (Interactive Boards)

- Ivarsson, J., & Saljo, R. (2005). Seeing through the screen: Human reasoning and the development of representational technologies. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 203-222). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Moss, G., Jewitt, C., Levaaiç, R., Armstrong, V., Cardini, A., Castle, F., et al. (2007). The interactive whiteboards, pedagogy and pupil performance evaluation: An evaluation of the schools whiteboard expansion (SWE) project: London challenge. London, UK: Institute of Education.
- Higgins, S., Beauchamp, G., & Miller, D. (2007). Reviewing the literature on interactive whiteboards. *Learning, Media and Technology*, 32(3), 213-225.
- Smith, H. J., Higgins, S., Wall, K., & Miller, J. (2005). Interactive whiteboards: Boon or bandwagon? A critical review of the literature. *Journal of Computer Assisted Learning*, 21(2), 91-101.
- McCrummen, S. (2010). Some educators question if whiteboards, other high-tech tools raise achievement. *The Washington Post*. Washington, DC. Retrieved from <http://www.washingtonpost.com/wp-dyn/content/article/2010/06/10/AR2010061005522.html>.

Week 12 (Mobile Phones)

- Linn, C. (2005). WISE design for lifelong learning -- Pivotal cases. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 223-256). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Brown, E. (2010). *Education in the wild: Contextual and location-based mobile learning in action*. Nottingham, UK: University of Nottingham.

- Librero, F., Ramos, A. J., Ranga, A., Triñona, J., & Lambert, D. (2007). Uses of the cell phone for education in the Philippines and Mongolia. *Distance Education*, 28(2), 231-244.
- Thornton, P., & Houser, C. (2005). Using mobile phones in English education in Japan. *Journal of Computer Assisted Learning*, 21(3), 217-228.
- Green, E. (2010). Dial-a-Class. *The New York Times*. New York, NY. Retrieved from <http://www.nytimes.com/2010/09/19/magazine/19Essays-cellphone-t.html>.

Week 13 (eBooks)

- de Jong T., Beishuizen, J., Hulshof, C., Prins, F., & Wilhelm, P. (2005). Determinants of discovery learning in a complex simulation learning environment. In Gardenfors, P., & Johansson, P. (Eds.), *Cognition, education, and communication technology* (pp. 257-284). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Bulk, F., Jaeck, L., Bocking, D., Soteros, C., McCullough, D., Fox, D., et al. (2009). *Towards the digital university: A brief introduction to e-texts and open access*. Saskatoon, Saskatchewan: University of Saskatchewan.
- Dyson, M., & Haselgrove, M. (2001). The influence of reading speed and line length on the effectiveness of reading from screen. *International Journal of Human-Computer Studies*, 54(4), 585-612.
- Lam, P., Lam, S. L., Lam, J., & Mcnaught, C. (2009). Usability and usefulness of eBooks on PPCs: How students' opinions vary over time The rise of mobile eBooks. *Australasian Journal of Educational Technology*, 25(1), 30-44.
- Marklein, M. B. (2010). Can college students learn as well on iPads, e-books?. *USA Today*. McLean, VA. Retrieved from http://www.usatoday.com/news/education/2010-08-10-ebooklearning10_CV_N.htm.

Week 14 (Reflection)

Reflection paper due