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Teaching and Learning Laboratory
Massachusetts Institute of Technology
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Education

A.B., The Johns Hopkins University
Ed.D., Boston University

Professional Experience

Massachusetts Institute of Technology - January, 2004 - present

Associate Director for Assessment and Evaluation, Teaching and Learning Laboratory

Brown University School of Medicine - 1991 - 2003

1999 - 2003 Clinical Associate Professor, Department of Family Medicine
1992 - 1999 Clinical Assistant Professor, Department of Family Medicine,
1991 - 1992 Director, Office of Curriculum Affairs, Office of the Dean

Educational Consulting - 1992 - 2004

Focused on curriculum development, testing, and program evaluation of secondary and post-secondary institutions.

Brown University
Rhode Island Department of Health
Harvard Medical School
Rhode Island Department of Elderly Affairs
Kaohsiung Medical University, Taiwan
RI Department of Veterans Affairs
Ministry of Education, Republic of Georgia
Rush Medical School, Chicago, IL
National Taiwan University
Univ. of Connecticut School of Medicine
Rhode Island Career & Technical Centers
Warwick, RI Public Schools
Rhode Island Department of Education

Harvard University - 1986 - 1992

1986-1992 Lecturer on Medical Education, Harvard Medical School
1986-1991 Assistant Director for Program Evaluation,
& Research Associate, Harvard Medical School
1989-1990 Research Associate, Project Zero, Harvard Graduate School of Education

Northeastern University - 1984-1986

1984-86 Visiting Scholar, Department of Physics

1984-85 Lecturer, College of Pharmacy

U.S. Army in Europe (USAREUR), Bad Kreuznach, West Germany - 1982-84

Curriculum Specialist and Special Advisor on Test Design

Publications

Book Chapter

Kuldell N, Mitchell R. (2015). MIT's introduction to biological engineering: a longitudinal study of a freshman inquiry-based class. In P Blessinger & J Carfora (Eds.), *Inquiry-Based Learning for Science, Technology, Engineering, and Math (STEM) programs: A Conceptual and Practical Resource for Educators* (73-90). Bingley, UK: Emerald Group Publishing.

Engineering/Medical/Biomedical Education, and Test Development Publications

Pawl A, Barrantes A, Pritchard D, Mitchell R. What do seniors remember from freshman physics? *Physical Review Special Topics - physics education research*. Vol 8, no. 2. December, 2012.

Eng TL, Mitchell R, Barsion S. Assessment of Short-Term Post-Impact of Students' Learning Experience in an Oral Communication Course at MIT for EECS Majors. *ICEE-2012 Conference Proceedings of iNEER International Conference of Electrical Engineering*. August, 2012. Turku, Finland

Locknar A, Mitchell R, Rankin J, Sadoway R. Integration of information literacy components into a large first-year lecture-based chemistry course. *Journal of Chemistry Education*. Vol. 89, no. 4, 487-491, February, 2012. In 2013, *The Association of College and Research Libraries*, New England Chapter (ACRL/NEC) chose the article for its Best Paper Award.

Mitchell R, Dori JY, Kuldell, NH. Experimental Engineering Through iGEM-An Undergraduate Summer Competition in Synthetic Biology. *Journal of Science Education and Technology*. Vol.20, no. 2, 156-60, April, 2011.

Mitchell R, Eng TL. Assessment of Student's Learning Experiences in an Oral Communication Course at MIT for EECS Majors. *Proceedings of ASEE/IEEE Frontiers in Engineering Education Conference*. October, 2010. Washington, DC.

Vogel Taylor E, Mitchell R, Drennan C. Creating an Interdisciplinary Introductory Chemistry Course Without Time-Intensive Curriculum Changes. *ASC Chemical Biology*. Vol. 4, no.12, 979-982, December, 2009. Note: In the January 7, 2010 issue of the HHMI Bulletin (Howard Hughes Medical Institute publication), an article titled *Biology Examples Gives MIT Students a New Perspective on Chemistry* discussed the curricular innovations by the first and third authors and the study by RM.

Mitchell R, Regan-Smith M, Fischer M, Knox I, Lambert D. Cognitive Behavior Survey-Residency Level (rCBS): a Measure of the Cognitive, Metacognitive, and Experiential Aspects of Resident Learning. *Academic Medicine* Vol. 84, no. 7, 918-926, July, 2009.

Taylor EV, Mitchell R, Drennan C. TA Training Boot Camp Reinforces Curriculum Innovations and Improves Recitation Experience in Freshman Chemistry Course. MIT Faculty Newsletter. Vol. 21 No. 4, May, 2009.

Fischer J, Mitchell R, del Alamo J. Inquiry-Learning with WebLab: Undergraduate Attitudes and Experiences. *Journal of Science Education and Technology*. Vol. 16, no. 4, 337-348, August, 2007.

Mitchell R, Fischer J, del Alamo J. A Survey Study of the Impact of a MIT Microelectronics Online Laboratory WebLab on Student Learning. *ICEE 2006 Conference Proceedings*.

D Gould Halme, Julia Khodor, R Mitchell, G Walker. A Small-Scale Concept-Based Laboratory Component: the Best of Both Worlds. *CBE-Life Sciences Education*. Vol. 5, 41-51, Spring, 2006.

Mitchell R, Monroe A. Training Family Physicians as Preceptors in Ambulatory Settings: A family medicine faculty development program. *Journal of Medical Education (Taiwan)*. 1998;2:231-237.

Mitchell R, Jack B. Cognitive environment of a maternal and child health family medicine rotation. *Teaching & Learning In Medicine*. 1998;11:6-11.

Mitchell, R. The Influence of Harvard Medical School's New Pathway Curriculum on Student Cognitive Behavior. *Journal of Medical Education (Taiwan)* 1997;1: 267 - 274.

Mitchell R, Liu P. A study of resident learning behavior. *Teaching and Learning in Medicine* 1995;7, 233 - 240.

Moore G, Block S, Briggs-Style C, Mitchell, R. An evaluation of the impact of the New Pathway curriculum on Harvard Medical School. *Academic Medicine* 1994;69, 983 - 989. Note: In September, 2010, *Academic Medicine* selected this paper for its *AM Classic*, the primary criterion for selection is that a paper must have been cited 50 or more times by the ISI Web of Science database. The focus of the paper is the five-year program evaluation I designed.

Mitchell R. The development of the Cognitive Behavior Survey to assess medical student learning. *Teaching and Learning in Medicine*. 1994; 6,161-167.

Liu P, Mitchell R. Learning behavior differences between CA1 and CA3 residents. *Anesthesiology*. 1989.

Parrino T, Mitchell R. Diagnosis as a skill: a clinical perspective. *Perspectives in Biology and Medicine*. 1989;33,18-44.

Secondary School Curriculum Development Publications

Mitchell R. *Information Technology: A standards-based curriculum*. Providence, RI: Rhode Island Consortium of Career and Technical Directors/Principals, 2000.

Mitchell R. *Health Science: A SCANS curriculum for secondary schools. vol. I*. Providence, RI: Rhode Island Department of Education, 1999.

Mitchell R. *Health Science: A SCANS curriculum for secondary schools. vol. II.* Providence, RI: Rhode Island Department of Education, 1998.

Mitchell R. *Business Information Processing: A SCANS curriculum for secondary schools. vol. II* Providence, RI: Rhode Island Department of Education, 1998.

Mitchell R. *Business Information Processing: A SCANS curriculum for secondary schools. vol. I.* Providence, RI: Rhode Island Department of Education, 1997.

Mitchell R. *Pre-Engineering: A SCANS curriculum for secondary schools. vol. II.* Providence, RI: Rhode Island Department of Education, 1997.

Mitchell R. *Pre-Engineering: A SCANS curriculum for secondary schools. vol. I.* Providence, RI: Rhode Island Department of Education, 1996.

Mitchell R. *Marine Science: A SCANS curriculum for secondary schools,* Providence, RI: Rhode Island Department of Education, 1996.

Mitchell R. *Marine Technology: A SCANS curriculum for secondary schools,* Providence, RI: Rhode Island Department of Education, 1995.

Mitchell R. *Children and the Elderly: A Human Science Curriculum, vol. II.* Providence, RI: New England Gerontology Academy, 1994.

Mitchell R. *Children and the Elderly: A Human Science Curriculum, vol. I.* Providence, RI: New England Gerontology Academy, 1994.

Post-Secondary School Testing and Curriculum Development Publications

Mitchell R, Thompson C. *Improving soldiers' reading comprehension: a computer-based meta-cognitive approach.* Newton, MA: Educational Development Center, Inc., 1984.

Mitchell R. *Educational Test Design.* Bad Kreuznach, West Germany: U.S. Department of Defense, 1984.

Mitchell R. *BSEP Reading: Volume III Test-Taking Strategies.* Bad Kreuznach, West Germany: U.S. Department of Defense, 1984.

Mitchell R. *BSEP Reading: Volume II Comprehension and Learning.* Bad Kreuznach, West Germany: U.S. Department of Defense, 1983.

Mitchell R. *BSEP Reading: Volume I Comprehension.* Bad Kreuznach, West Germany: U.S. Department of Defense, 1983.

Mitchell R. (ed.) Special issue on Piaget and Education. *Journal of Education.* Winter, 1979; volume 161.

Tests & Survey Instruments

Mitchell, R. *The Cognitive Behavior Survey (CBS)*, preclinical and resident versions

Preclinical or resident versions of the CBS have been used at the following institutions: Albert Einstein Medical College, Baylor University, Bowman Gray School of Medicine (Wake Forest University), Brown University School of Medicine, Case Western University, Dalhousie University (Canada), Dartmouth Medical School, Harvard Medical School, The Johns Hopkins University School of Medicine, Los Angeles School of Chiropractic, McMaster University (Canada), Medical College of Pennsylvania, Medical College of South Carolina, Medical College of Wisconsin, Michigan State University, Ohio State University, Otago University (New Zealand), Queen's University (Canada), Rush Medical School, Syracuse University, Stanford, UCLA, University School of California, San Francisco, University School of Medicine, Tufts Medical School, University of Calgary (Canada), University of Connecticut, University of Hawaii, University of Nebraska Medical Center, University of New Mexico, University of North Carolina, University of Rochester, University of Southern California, University of Texas, University of Utah, Universidad Central de Venezuela (translated into Spanish by Juan Perez, MD, PhD), University of Washington, University of Wisconsin, Vanderbilt University, Wayne State University, West Virginia University School of Medicine.

Symposia and Workshops on the Cognitive Behavior Survey

Exploring How Residents Learn: Applications of the Cognitive Behavior Survey: residency years (rCBS). Workshop, *Annual Meeting of the American Association of Medical Colleges*, Chicago, IL, November 1, 2000. Speakers: Rudolph Mitchell, Brown University School of Medicine; Martha Regan-Smith, Dartmouth Medical School; Melissa Fischer, Stanford Medical School.

The Resident Cognitive Behavior Survey as a Measure of Learning Behavior. *Northeast Group on Educational Affairs*, June 26, 2000, Hanover, NH. Speakers: Martha Regan-Smith, Dartmouth Medical School and Rudolph Mitchell, Brown University School of Medicine.

The *Cognitive Behavior Survey* as a Program Evaluation Tool. Workshop, *Annual Meeting of the American Association of Medical Colleges*, Washington, DC, 4 November 1997. Speakers: Louise Deretchin, Baylor College of Medicine, Gwendolyn Camp, University of Texas, Rudolph Mitchell, Brown University School of Medicine.

The use of the *Cognitive Behavior Survey* to assess effects of curricular change. *Annual Meeting of the American Association of Medical Colleges*, Symposium. San Francisco, 11 November 1996. Speakers: Rudolph Mitchell, Brown University; Gwendolyn Camp, University of Texas; Lila Groen, Albert Einstein Medical College; Peter Schwartz, Otago University (New Zealand).

Students' Perceptions of the Learning Environment in Problem-Based and Traditional Medical School Curricula: Applications of the *Cognitive Behavior Survey*. Symposium. *Annual Meeting of the American Educational Research Association*, San Francisco, 24 April, 1992. Speakers: Phyllis Blumberg, McMaster University (Canada); Rudolph Mitchell, Brown University; Summers Kalishman, University of New Mexico; Howard Zeitz, Rush Medical School; Gwendolyn Camp, Wake Forest University. Discussant: Gerald Cohen, McMaster University.

Conference Papers and Invited Presentations:

Eng T, Mitchell R, Barsion S. Assessment of Short-Term Post-Impact of Students' Learning Experience in an Oral Communication Course at MIT for EECS Majors. *International Conference on Engineering Education*. August, 2012, Turku, Finland.

Eng T, Mitchell R. Continued assessment of students' learning experience in an oral communication course at MIT for EECS majors. *2011 Conference on Software Engineering Education and Training*. May, 2011, Honolulu, Hawaii.

Mitchell R, Taylor EV, Drennan C. Impact of TA Training on Graduate Students' Recitation Teaching in Freshman Chemistry at MIT. *Annual Meeting of the American Educational Research Association*. April, 2011, New Orleans, LA.

Mitchell R, Eng TL. Assessment of Student's Learning Experiences in an Oral Communication Course at MIT for EECS Majors. *ASEE/IEEE Frontiers in Engineering Education Conference*. October, 2010. Washington, DC.

Mitchell R, Taylor EV, Drennan C. Assessment of the Impact of an Innovative Teaching Assistant Training Program on TA Teaching In Freshman Chemistry Recitations. (poster) *American Chemical Society Annual Meeting*. August, 2010, Boston, MA. (program committee selected the poster as one of the best of the conference and included it in the conference's SciMix program).

Mitchell R, Regan-Smith M. Development of the Cognitive Behavior Survey (Residency Level) to Measure Learning and Related Cognitive Behaviors. *Annual Meeting of the American Educational Research Association*. March, 2008, New York, NY.

del Alamo J, Mitchell R, Fischer J. Working with WebLab. *NAE/CASEE Symposium (National Academy of Engineering/Center for the Advancement of Scholarship in Engineering Education)*. October 27, 2006, San Diego, CA.

Mitchell R, Fischer J, del Alamo J. A Survey Study of the Impact of a MIT Microelectronics Online Laboratory WebLab on Student Learning. *International Conference on Engineering Education*. July 24, 2006, San Juan, Puerto Rico.

Seering W, Hall S, Britter R, Breslow L, Mitchell R. An Experiment in Small-Group Teaching Modeled after the University of Cambridge Supervision System. *Annual Meeting of the Center for the Scholarship of Engineering Education (CASEE)* October, 2005, Indianapolis.

Winkler T, Mitchell R, Venegas J. Computer Simulation and a Realistic Simulator in Conjunction with the New Educational Style How People Learn (HPL) to Improve Learning Achievements. *Annual Meeting of American Society for Engineering Education*, June, 2005, Portland, OR.

Regan-Smith, MG and Mitchell, R. The Cognitive Behavior Survey: A Way to Assess Impact of Residency Duty Hours on Residents' Learning. *ACGME Annual Meeting*, March 28, 2002, Chicago, Illinois.

Mitchell R. Cognitive Behavior Survey: residency years. *Annual Meeting of the American Association of Medical Colleges*, Washington DC, 7 November, 2001.

Mitchell R. Relationship between Learning Behavior and Attitude Toward Educational Experience. *Annual Meeting of the American Association of Medical Colleges*, Chicago, 31 October, 2000.

Mitchell R. Using the Cognitive Behavior Survey to Assess Learning Behavior in Medical Settings. *Generalists in Medical Education*, 29 October, 2000, Chicago, IL.

Monroe A, Mitchell R. Measuring curricular innovations. *Annual Meeting of Association for the Behavioral Sciences and Medical Education*, Brewster, MA, 20 October, 1997

Mitchell R. Application of U.S. medical education models to Taiwanese medical schools: new solutions or new problems. Medical Faculty Assembly, Kaohsiung Medical School, Kaohsiung, Taiwan, 19 June, 1997 (invited speaker).

Mitchell R. Curriculum change in U.S. medical schools: 1980 - 1986. General assembly of health science faculty. Kaohsiung Medical School, Kaohsiung Dental School, and Kaohsiung Nursing School. Kaohsiung Medical College, Kaohsiung, Taiwan. 16 June, 1997 (invited speaker).

Mitchell R. Program Evaluation in U.S. Medical Schools. Presented at General faculty assembly of Kaohsiung Medical School, Kaohsiung School of Education, and Kaohsiung School of Behavioral Sciences. Kaohsiung Medical College, Kaohsiung, Taiwan, June 18, 1997, (invited speaker), and also presented at clinical faculty lecture series. National Taiwan University, Taipei, Taiwan, 13 June, 1997, (invited speaker).

Monroe A, Mitchell, R. Development of Brown University's Ambulatory Preceptor Self-Study Program. Presented at the *Annual Meeting of the Society of Teachers of Family Medicine*, Boston, 7 May, 1997.

Mitchell R. Use of the *Cognitive Behavior Survey* in the preclinical years. Presented at *Annual Meeting of the American Association of Medical Colleges*, San Francisco, 11 November 1996.

Mitchell R. Teaching and learning in the ambulatory setting: A faculty development program to train family physicians as preceptors. *Annual Meeting of Generalists in Medical Education*, San Francisco, 7 November, 1996.

Bayard BA, Nitzke SA, Mitchell R. Cognitive learning behavior differences among undergraduate dietetic students, graduate dietetic students, dietetic interns, and clinical dietitians and implications for educational reform. *Annual Meeting of the American Dietetic Association*, Chicago, 1 November, 1995.

Cone D, Mitchell, R. Adolescents, gerontology and the work place. *Annual Meeting of American Society on Aging*, Atlanta, 12 March, 1995.

Mitchell R, Jack B. Investigation of a Maternal Child Health resident program from a cognitive psychology perspective. *Annual Meeting of the Generalists in Medical Education*, Boston, 30 October 1994.

Mitchell R. New directions in research on student learning behavior within innovative medical curricula. *Symposium on educational research at problem-based learning medical schools*, Rush Medical College, Chicago, 13-16 August 1992 (invited speaker).

Mitchell R. The development of the Cognitive Behavior Survey for assessment of medical student learning behavior. *Annual Meeting of the American Educational Research Association*, San Francisco, 24 April, 1992.

Mitchell R. Cognitive assessment techniques for evaluating weak readers in basic science courses. *National Conference of the College Reading Association*, Nashville, 3 November 1990.

Mitchell R. Assessment of Student Learning Behavior. *Annual Meeting of the American Association of Medical Colleges*, San Francisco, 24 October 1990.

Mitchell R. Influence of a problem-based curriculum vs. a traditional curriculum on the learning behavior of medical students. *Annual Meeting of the American Educational Research Association*, Boston, 17 April 1990.

Mitchell R. Reading comprehension behavior of successful and unsuccessful students in introductory science courses. *National Conference of the College Reading Association*, Philadelphia, 3 November 1989.

Mitchell R. Review of Harvard Medical School's program evaluation efforts in the cognitive domain. Symposium: Evaluation of an Educational Experiment: A Report from the New Pathway at Harvard Medical School. *Annual Meeting of the American Association of Medical Colleges*, Washington, D.C., October 1989.

Mitchell R. and Liu, P. Learning behavior of residents in anesthesiology. *New York State Society of Anesthesiologists*, New York City, 10 December 1988 (*invited speaker*).

Liu P, Mitchell, R. Maximizing your clinical performance by improving your learning style. *82nd Annual Scientific Assembly of the Southern Medical Society*, New Orleans, 7 November 1988.

Mitchell R. Affective influences on students' cognitive performance during standardized testing. *National Conference of the College Reading Association*, Atlanta, 30 October 1988.

Mitchell R. Methodological issues in the program evaluation designs of contrasting curricula. *U.S. Department of Education FIPSE Conference*, Washington, D.C., 21 October 1988 (*invited speaker*).

Liu P, Mitchell, R. Major concerns with anesthesia education in the United States. *Ninth World Congress of Anesthesia*, Washington, D.C., 27 May 1988.

Mitchell R. Learning behavior in complex domains. Keynote address: *Annual Conference of the Society for Education in Anesthesiology*, San Diego, 3 March 1988 (*invited speaker*).

Mitchell R. Instructional techniques for the development of cognitive synthesis in marginal readers. *National Conference of the College Reading Association*, Baltimore, 30 October 1987.

Mitchell R. The influence of reading comprehension and proportional reasoning on student performance in college-level physics: a study in a college of engineering. *Annual Meeting of the American Educational Research Association*, Washington, D.C., 23 April 1987.

Mitchell R. Behavior patterns among student withdrawals from college level physics. *10th Annual Conference of the Eastern Education Research Association*, Boston, 27 February 1987.

Mitchell R. Cognitive similarities in the reading and problem-solving behavior of physics students. *National Conference of the College Reading Association*, Knoxville, 24 October 1986.

Mitchell R. Student learning strategies in college science courses. *U.S. Department of Education Conference on Literacy*, Chicago, 22 April 1986 (*invited speaker*).

Mitchell R. Strong and weak testing behaviors of adolescents and adults. *U.S. Department of Education Conference on Literacy*, Chicago, 22 April 1986 (*invited speaker*).

Mitchell R. The use of visualization tasks in the diagnosis and remediation of college students. *10th Annual Conference of the National Association for Developmental Education*, Chicago, 14 March 1986.

Mitchell R. Diagnostic and remediation techniques for first-term physics. *Annual Meeting of the Learning Assistance Association of New England*, Boston, 1 November 1985 (*invited speaker*).

Mitchell R. The meaning, significance, and interpretation of student scores on standardized tests. Keynote address, *European Conference of Secondary School Principals*, Frankfurt, West Germany, 16 February 1984.

Mitchell R. Cognitive shifts in the adult learner. *Department of Defense Conference on the Adult Learner*, Heidelberg, West Germany, 7 November 1983.

Mitchell R. Spatial construction and simultaneity in reading. *13th Symposium of the Jean Piaget Society*, Philadelphia, 2 June 1983.

Reports:

Mitchell R. Dr. Mitchell has completed more than 50 reports on studies of curriculum revisions, educational innovations, or new academic programs designed and implemented by faculty members which relate to undergraduate, graduate, or post-graduate training at MIT.

Mitchell R. *Thoughts on Building a New Georgian Curriculum*. Report to the Ministry of Education, Republic of Georgia. November, 2002.

Mitchell R. *Report to the Rhode Island Department of Health: Analysis and Recommendations of Statewide Focus Group Study of Family Planning Program*. September, 1995.

Mitchell R. *Review of Program Evaluation Efforts in the Cognitive Domain at Harvard Medical School*, September, 1990.

Mitchell R. *Annual Report of the Harvard Medical School Program Evaluation Study*, for FIPSE, July 1990.

Mitchell R. *Affects of Dominican Republic Summer Internship on First-Year Harvard Medical School Students*, September, 1989

Mitchell R. *Annual Report of the Harvard Medical School Program Evaluation Study*, for FIPSE, July 1989.

Mitchell R. *Annual Report of the Harvard Medical School Program Evaluation Study*, for FIPSE, July 1988.

Mitchell R. *Report to the College of Engineering and the Department of Physics: Recommendations and Analysis of Student Retention in Physics*, for Northeastern University, March, 1986.