

JOSÉ P. MESTRE
RESUME

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Previous employment:
Departments of Physics & Educational
Psychology
University of Illinois at Urbana-Champaign
e-mail: mestre@illinois.edu

Education: B.S., Physics, University of Massachusetts, 1974.
Ph.D., Physics, University of Massachusetts, 1979.

Positions Held: 1979-1981: Post-Doctoral Research Associate, UMass.
1982: Acting Director, Minority Engineering Program, UMass.
1981-1987: Visiting Assistant Professor of Physics, UMass.
1987-1992: Associate Professor of Physics, UMass.
1992-2005: Professor of Physics, UMass.
2003 Associate Dean, College of Natural Sciences and Mathematics,
UMass.
2005-2019: Professor of Physics and Educational Psychology,
University of Illinois, Urbana-Champaign.
2010-2011: Associate Dean for Research, College of Education.
2011-2014: Chair, Department of Educational Psychology.

Research Interests: Cognitive processes pertaining to learning science; transfer of learning;
role and interaction of language in problem-solving; expert-novice
differences.

Honors and Awards: Selected one of "125 Alumni to Watch," U. of Massachusetts, 1988.
Distinguished Faculty Lecturer, UMass 2000-2001
Recipient of the Chancellor's Medal for exemplary and extraordinary
service to the University of Massachusetts, April 10, 2001.
Education Mentor in the Life Sciences, National Academy of Science, 2008.
Elected Fellow of the American Physical Society, 2010. [Citation: "*For
ground-breaking applications of principles and methodologies from
cognitive science to physics education research and for elucidating expert-
novice performance differences in physics learning and problem solving.*"]

Manuscript Referee: *American Journal of Physics, Cognition and Instruction, Contemporary
Educational Psychology, Instructional Science, Journal of Computers in
Mathematics & Science Teaching, Journal of Educational Psychology,
Journal of the Learning Sciences, Physical Review Special Topics:
Physics Education Research.*

Proposal Referee: National Science Foundation, US Department of Education Institute of
Education Sciences, Fulbright Specialist Program in Physics Education.

**Professional
Organizations:** American Educational Research Association, American Association
of Physics Teachers, International Society of the Learning Sciences,
American Physical Society.

National Service: Advisory Board, Dept. of Physics, Kansas State University. NSF FIRE grant on Exploring Visual Cueing to Facilitate Problem Solving in Physics, 2014-2019.

Advisory Board, Dept. of Psychology and Learning Research & Development Center, University of Pittsburgh. NSF CORE grant on Investigating Motivation and Transfer in Physical Science through Preparation for Future Learning Instruction, 2015-2019.

Advisory Board, Dept. of Physics, University of Wisconsin and Rochester Institute of Technology. NSF grant on Exploring Factors that Shape Education & Workplace Training on Essential 21st Century Competencies: A Translational Study in Four High-STEM Job Regions, 2016-2018.

Principal Member, Institute of Education Sciences' Mathematics and Science panel, 2011-2015.

External Advisory Committee, Physics Teacher Education Collaborative (PhysTEC) American Physical Society and American Association of Physics Teachers, 2010-2015.

Committee on Undergraduate Physics Education Research and Implementation, National Academy of Sciences/National Research Council, 2011-2013.

External Advisory Board, project NEXUS (National Experiment in Undergraduate Science Education). Howard Hughes Medical Institute, 2011-2013.

Evaluation Advisory Group, Westat, to evaluate the National Science Foundation's Discovery Research K-12 Program, 2011-2013.

Peer Reviewer, Fulbright Specialist Program, 2010-2013.

Reviewer for selecting Vision and Change Fellows, Partnership for Undergraduate Life Science Education (PULSE), a collaborative project funded by the National Science Foundation (NSF), National Institutes of Health (NIH-NIGMS), and the Howard Hughes Medical Institute, 2012-2013.

Committee on Education, American Physical Society, 2007-2010.

Elected Member, Physics Education Research Leadership Organizing Council, American Association of Physics Teachers, 2008-2011.

Editorial Board, *Journal of the Learning Sciences*, 2007-2011.

Steering Committee, National Academies Summer Institute on Undergraduate Education in Biology, National Research Council, 2006-2011.

Curriculum Development and Assessment Committee, The College Board, 2008-2009.

Technical Advisory Committee, Graduate Record Examination, 1999-2006. Educational Testing Service.

National Service (Continued):

Blue Ribbon Committee, National Science Foundation's Centers for Learning and Teaching Program, 2003-2006.

Committee on Assessing Technological Literacy, National Academy of Engineering, National Research Council, 2003-2006.

National Task Force on Undergraduate Physics, American Physical Society, American Association of Physics Teachers, and American Institute of Physics, 1999-2004.

Member Expert Panel on Research & Development, Rand Corporation, commissioned by the White House Office of Science and Technology Policy, the National Inst. of Child Health and Development, & the National Science Foundation. 2002-2004.

Congressional Testimony before the US House Science Committee's Subcommittee on Research at a hearing titled "Classrooms as Laboratories: The Science of Learning Meets the Practice of Teaching." Washington, D.C., May 10, 2001.

(See: <http://www.house.gov/science/research/reshearings.htm> and <http://www.house.gov/science/research/may10/mestre.htm>)

Committee on Learning Research and Educational Practice, 1998-1999, Commission on Behavioral & Social Sciences & Education;
Committee on Developments in the Science of Learning, 1995-1998, Commission on Behavioral & Social Sciences & Education;
Mathematical Sciences Education Board, 1988-1991.
National Academy of Sciences/National Research Council.

Editorial Review Board, 1998-1999. Journal of Computers in Mathematics and Science Education.

Advisory Panel—Project QUASAR, 1990-1997.
Learning Research & Development Center, University of Pittsburgh.

Expert Panel, 1992-1993. Federal Coordinating Council for Science, Engineering & Technology, Washington, D.C.

Research in Physics Education Committee, 1992-1995, and 1998-2000, American Association of Physics Teachers

Sciences Advisory Committee, member 1986-1989, chair 1989-1992;
Council on Academic Affairs, 1989-1992; Scholastic Aptitude Test Committee, 1987-1991; Pacesetter Task Force in Science, 1992-1996;
National Advisory and Review Board, Culture & Practice of Science, 1995-1998.
The College Board.

Governing Board, 1992-1997. Coalition to Increase Minority Degrees, Arizona State University.

Standing Review Panel, 1988-1990. Applications for Advanced Technologies Program, National Science Foundation.

National Service (Continued):

Visiting Committee, 1987-1990; Algebridge Task Force, 1987-1989.

Educational Testing Service.

Advisory Board, 1990-1992. The Role of Standardized Assessments on Mathematics and Science Instruction, Boston College Center for the Study of Testing, Evaluation & Educational Policy.

National Review Panelist in Physics, June 23-26, 1990. EDUCOM/NCRIPTAL, Higher Education Software Awards, University of Michigan.

Editorial Board, 1990-1993. The Physics Teacher.

Education Survey Committee, 1992. American Physical Society-American Association of Physics Teachers.

Advisory Panel, 1987-1990. Improving Urban Elementary Science, Education Development Center.

Service at UMass:

Dept. of Physics Service

Gluckstern Chair Committee, Dept. of Physics (5 years)

Head's Advisory Committee, Dept. of Physics (8 years).

Physics Personnel Committee (served 5 years, 2 years as chair)

Undergraduate Curriculum Revision Committee (co-chair, served 1 year)

Instructional Support Committee (served 2 years)

College of Natural Sciences & Mathematics Service

Committee on Curriculum, Teaching and Learning (founding member of committee; served two years, both as chair).

Steering Committee for an Inter-College Science/Math Education Doctoral Program (chaired this committee for 5 years)

University Service

Provost's Planning Group, and Steering Committee (served 2 years).

Research Council (served 4 years, one year as chair, one year as vice chair).

Academic Priorities Council (served 2 years).

University Writing Committee (served 4 years, two years as chair).

General Education Task Force (served 4 years; chaired its Scientific Inquiry Subcommittee, and also served on its Implementation Subcommittee).

Graduate Council (served 2 years).

Service at UIUC:

Dept. of Physics Service

Faculty Advisory Committee, 2009-2012.

Diversity Committee, 2009-present.

Qualifying Exam Committee, 2010-2011.

Organizer, Illinois Sec. of the American Assoc. of Physics Teachers Conf. (2008).

Dept. of Educational Psychology Service

Curriculum Technology and Education Reform Re-visioning Task Force, 2008-2009

Executive Committee, 2007-2009

Department Chair, 2011-2014

College of Engineering Service

Teacher Evaluation & Improvement Committee (2007-2010)

Education Innovation Fellow (2014-2016)

Reviewer/Evaluator for Strategic Instructional Innovations Program (2012-present)

College of Education Service

Diversity and Equity Working Group (2007-2008)

College Research Committee (2008-2011)

Faculty Excellence Nomination Committee (2008-2009)

Dean's Office Reorganization Task Force (2010-2011)

Associate Dean for Research 2010-2011

Grant Support:

National Science Foundation, grant DUE-1630128. “Conference Title: Improving STEM Teaching and Learning by Collaborations Between Cognitive Scientists and Discipline-Based Education Researchers.” 2016-2017. Funded amount: \$71,000. (Principal Investigators: Jose Mestre and Mark McDaniel)

National Science Foundation, grant IIS-1441563. “Developing Crosscutting Concepts in STEM with Simulation Theatres for Embodied Learning.” 2014-2018. Funded amount: \$1,349,504. (Principal Investigator: Robb Lindgren, Co-PIs: Alan Craig, Guy Garnett & Jose Mestre).

National Science Foundation, grant DUE-1347722. “Scaling cultures of collaboration: Evidence-based reform in portal STEM courses.” 2013-2016. Funded amount: \$2,000,000. (Co-Principal Investigators: Jennifer Greene, Geoffrey Herman, Jonathan Tomkin, and Matthew West).

National Science Foundation, grant DRL-1252389. “Using computer adaptive testing (CAT) to improve STEM learning, test performance, and retention.” 2013-2016. Funded amount: \$500,000. (Co-Principal Investigators: Carolyn Anderson, Hua Hua Chang, Gary Gladding, and Katherine Ryan).

National Science Foundation, grant DUE 08-17185 . “Enhancing Student Learning in Introductory Physics Through the Use of Multimedia Learning Modules.” 2008-2012. Funded amount: \$500,000. (Co-Principal Investigators: Gary Gladding, Mats Selen, & Timothy Stelzer).

Institute of Education Sciences, US Department of Education grant R305B070085, “Conceptual Analysis and Student Learning in Physics.” 2007-2010. Funded amount: \$1,230,000. (Co-Principal Investigators: Brian Ross & Timothy Nokes).

University of Illinois at Urbana/Champaign, College of Engineering’s Grants for Advancement of Teaching in Engineering program, “Improving Conceptual Understanding and Retention in Physics Among Under-Prepared and Mainstream Students.” 2007-2009. Funded amount: \$110,000 (Co-Principal Investigator: Gary Gladding).

National Science Foundation, grant REC-0106771, "Researching the Role of Qualitative Analysis." 2001-2004. Funded amount: \$864,000. (Co-Principal Investigators: R. Dufresne, W. Gerace, & W. Leonard).

National Science Foundation, grant ESI-9730438, "Assessing-to-Learn: Formative Assessment Materials for High School Physics." 1998-2002. Funded amount: \$1,002,000. (Co-Principal Investigators: R. Dufresne, W. Gerace, & W. Leonard).

Subcontract from Louisiana State University for a grant from the National Science Foundation, "Evaluation of Operation Primary Physical Science (OPPS) Project." 9/15/99-12/31/01. Funded amount: \$472,000.

National Science Foundation, grant ESI-9453881, “Transforming Technical Education with a Classroom Communication System.” 1994-1997. Funded amount: \$708,000. (Co-Principal Investigators: R. Dufresne, W. Gerace, & W. Leonard).

National Science Foundation, grant ESI-9255713, “MINDS-ON PHYSICS: An Integrated Curriculum for Developing Concept-Based Problem Solving in Physics”. 1993-1996. Funded amount: \$970,000. (Co-Principal Investigators: R. Dufresne, W. Gerace, & W. Leonard).

Grant Support (Continued):

National Science Foundation, grant UCC-9155859, "A Computer Environment to Encourage a Conceptual Approach to Problem Analysis." 1992-1993. Funded amount: \$110,000. (Co-Principal Investigators: R. Dufresne, W. Gerace, & W. Leonard).

National Science Foundation grant MDR-9050213, "Materials for Developing Concept-Based Problem Solving Skills in Physics," 1990-1993. Funded amount: \$430,000. (Co-Principal Investigator: W. Gerace).

National Science Foundation grant BNS-8511069, "Effect of Menu-Driven, Problem-Analysis Environments on Novice Problem Solving Skills in Physics," 1985-1989. Funded amount: \$268,000. (Co-Principal Investigator: W. Gerace).

Fund for the Improvement of Post-Secondary Education, U.S. Department of Education grant G008541042, "Microcomputer Based Diagnosis and Remediation of Mathematical Misconceptions," 1985-1988. Funded amount: \$130,000.

Digital Equipment Corporation's, Special Investment Grants Program, "Computer Assisted Instructional Modules to Improve Problem Solving in Mathematics and Physics," 1985-1987. Funded amount: \$50,000 in microcomputer equipment and peripherals.

National Institute of Education Grant NIE-G-83-0072, "A Study of Ethnolinguistic Group Differences in Problem Solving: Effect of Negations, Bias and Training Upon Performance," 1983-1985. Funded amount: \$97,000. (Co-Principal Investigator: W. Gerace)

National Institute of Education Contract #400-81-0027, "A Study of the Cognitive Development of Hispanic Adolescents Learning Algebra Using Clinical Interview Techniques," 1981-1982. Funded amount: \$32,000. (Co-Principal Investigator: W. Gerace)

National Institute of Education Grant #NIE-G-79-0094, "Identifying Learning Handicaps of College Age Spanish-Speaking Bilingual Students Majoring in Technical Subjects," 1979-1983. Funded amount: \$157,000. (Co-Principal Investigator: W. Gerace)

Conference Presentations, Reports & Workshops:

Mestre, J.P. Some factors affecting the technical education of college-age Hispanics. Presented at the Ninth Annual International Bilingual Education Conference, National Association for Bilingual Education, April, 1980, Anaheim, California. (ERIC: ED186284)

Mestre, J.P. & Gerace, W.J. The interdependence of mathematical skills, grade-point average and language proficiency for Hispanic college students. Presented at the Remedial and Developmental Mathematics in College: Issues and Innovations Conference, April 9-11, 1981. City University of New York, NY. (ERIC: ED204150)

Mestre, J.P. & Gerace, W.J. Problem-solving skills of Hispanic college students). Presented at the Remedial and Developmental Mathematics in College: Issues and Innovations Conference, April 9-11, 1981, City University of New York, NY. (ERIC: ED204151)

Mestre, J.P., Gerace, W.J. & Robinson, H. Factors influencing the performance of Hispanic students in math and science-related areas. Presented at the Remedial and Developmental Mathematics in College: Issues and Innovations Conference, April 9-11, 1981, City University of New York, NY. (ERIC:ED204149)

Burns, M., Gerace, W.J., Mestre, J.P. & Robinson, H. The current status of college Hispanic technical students: How can we improve recruitment and retention. Presented at the Tenth Annual International Bilingual Education Conference, National Association for Bilingual Education, May 23-30, 1981, Boston, MA.

Mestre, J.P. A study of the cognitive development of Hispanic adolescents learning algebra using clinical interview techniques: Preliminary results. Presented at the Research Pre-Session of the 60th Annual Meeting of the National Council of Teachers of Mathematics, April 13, 1982, Toronto, Canada.

Mestre, J.P. & Gerace, W.J. A study of the cognitive development of Hispanic adolescents learning algebra using clinical interview techniques. Final Report, National Institute of Education Contract #400-81-0027, December, 1982, Washington, D.C. (ERIC ED231613)

Mestre, J.P. & Gerace, W.J. The learning of algebra by 9th graders: Research findings relevant to teacher training and classroom practice. Prepared for the National Institute of Education, December, 1982, Washington, D.C. (ERIC ED231612)

Mestre, J.P. & Gerace, W.J. Identifying learning handicaps of college age Spanish-speaking bilingual students majoring in technical subjects, Final Report, National Institute of Education Grant #NIE-G-79-0094, September, 1983, Washington, D.C.

Mestre, J.P. Thought processes underlying subjects' solutions to semantically complex problems. Presented at the Conference on Thinking, Harvard University, August 19-23, 1984, Cambridge, MA. (ERIC ED268819).

Mestre, J.P., Gerace, W.J., Hasse, H., Kutney, K. & Lochhead, J. Toward weaning students from formula-centered approaches to solving physics problems: A hierarchical problem analyzer. *AAPT Announcer*, 1985, 15, #4, 82. Presented at the Joint Winter Meeting of the American Association of Physics Teachers and the American Physical Society, Atlanta, GA, January 27-30, 1986.

Conference Presentations, Reports & Workshops (Continued):

Touger, J.S., Gerace, W.J., Leonard, W.J. & Mestre, J.P. Nurturing the shift from formula-centered to hierarchically organized knowledge in physics: Report on a pilot effort. *AAPT Announcer*, 1986, 16, #4, 74. Presented at the Joint Winter Meeting of the American Association of Physics Teachers and the American Physical Society, January 28-31, 1987, San Francisco, CA.

Touger, J.S., Dufresne, R., Gerace, W.J. & Mestre, J.P. Hierarchical knowledge structures, explanations, and problem solving in elementary mechanics. *AAPT Announcer*, 1987, 17, #4, 80. Presented at the Joint Winter Meeting of the American Association of Physics Teachers and the American Physical Society, January 25-28, 1988, Crystal City, VA.

Mestre, J.P. Hispanic and Anglo students' misconceptions in mathematics. *ERIC Digest #9-89*, 1989. ERIC Clearinghouse on Rural Education and Small Schools, Appalachia Educational Laboratory, Charleston, WV.

Touger, J.S., Dufresne, R., Gerace, W.J., Hardiman, P.T. & Mestre, J.P. Student explanation preferences in elementary mechanics. *AAPT Announcer*, 1988, 18, #4, 78. Presented at the Joint Winter Meeting of the American Association of Physics Teachers and the American Physical Society, January 14-19, 1989, San Francisco, CA.

Mestre, J.P., Dufresne, R., Gerace, W. & Leonard, W. Activities for promoting conceptual understanding and problem solving skills in mechanics. *AAPT Announcer*, 1991, 21, #4, 34. Workshop presented at the Joint Winter Meeting of the American Association of Physics Teachers and the American Physical Society, Jan 4-9, 1992, Orlando, FL.

Leonard, W., Dufresne, R., Gerace, W. & Mestre, J. Encouraging conceptual development through problem-solving activities among high school students. *AAPT Announcer*, 1991, 21, #4, 78. Presented at the Joint Winter Meeting of the American Association of Physics Teachers and the American Physical Society, January 4-9, 1992, Orlando, FL.

Dufresne, R., Gerace, W., Leonard, W. & Mestre, J. The value of teaching undergraduates to construct concept-based problem-solving strategies. *AAPT Announcer*, 1991, 21, #4, 78. Presented at the Joint Winter Meeting of the American Association of Physics Teachers and the American Physical Society, January 4-9, 1992, Orlando, FL.

Carlo, M., Royer, J., Dufresne, R. & Mestre, J. Reading, inferencing and problem identification: Do experts and novices differ in all three? Paper presented at the annual meeting of the American Educational Research Association, April, 1992, San Francisco, CA,.

Dufresne, R., Gerace, W., Leonard, W. & Mestre, J. The long-term effects of teaching undergraduates to construct concept-based problem-solving strategies. Presented at the Summer Meeting of the American Assoc. of Physics Teachers, August 10-15, 1992, Orono ME.

Driscoll, G., Dufresne, R., Gerace, W., Leonard, W. & Mestre, J. Thinking patterns exhibited by students engaged in concept-based problem-solving activities in kinematics. Presented at the Summer Meeting of the American Association of Physics Teachers, August 10-15, 1992, Orono ME.

Gerace, W., Dufresne, R., Leonard, W. & Mestre, J. An approach to promoting conceptual understanding of physics through problem-solving activities. *AAPT Announcer*, 1992, 22, #4, 34. Presented at the Winter Meeting of the American Association of Physics Teachers, January 2-9, 1993, New Orleans, LA.

Conference Presentations, Reports & Workshops (Continued):

Dufresne, R., Gerace, W., Leonard, W. & Mestre, J. CONPSEP: A concept-based problem solving environment for introductory physics. *AAPT Announcer*, 1992, 22, #4, 83. Presented at the Winter Meeting of the American Association of Physics Teachers, January 2-9, 1993, New Orleans, LA.

Mestre, J. Probing conceptual development and understanding through problem posing. *AAPT Announcer*, 1993, 23, #4, 41. Presented at the Winter Meeting of the American Association of Physics Teachers, January 3-8, 1994, San Diego, CA.

Mestre, J.P. Problem posing as a tool for probing conceptual development and understanding in physics. Paper presented at the annual meeting of the American Educational Research Association, April, 1994, New Orleans, LA.

Mestre, J.P. Assessing the development and understanding of concepts in physics. Five College Symposium on Teaching Introductory Science, Smith College, June 1, 1994.

Dufresne, R.J. & Mestre, J.P. Engaging students by promoting interaction in large lectures using a classroom communication system. Five College Symposium on Teaching Introductory Science, Smith College, June 1, 1994.

Leonard, W.J., Dufresne, R.J., Gerace, W.J., & Mestre, J.P. Students' reflections on an introductory physics course. *AAPT Announcer*, 1994, 24, #2, 56. Presented at the Summer Meeting of the American Association of Physics Teachers, Aug. 8-13, 1994, South Bend, IN.

Leonard, W.J., Dufresne, R.J., Gerace, W.J., & Mestre, J.P. Assessment as a learning experience for students and teachers. *AAPT Announcer*, 1994, 24, #2, 56. Presented at the Summer Meeting of the American Association of Physics Teachers, August 8-13, 1994, South Bend, IN.

Dufresne, R.J., Gerace, W.J., Leonard, W.J., & Mestre, J.P. Using "extended scenario" to enhance learning during interactive lectures. *AAPT Announcer*, 1994, 24, #2, 60. Presented at the Summer Meeting of the American Association of Physics Teachers, August 8-13, 1994, South Bend, IN.

Gerace, W.J., Dufresne, R.J., Leonard, W.J., & Mestre, J.P. Minds-on physics: An integrated curriculum for developing concept-based problem solving skills. *AAPT Announcer*, 1994, 24, #2, 102. Presented at the Summer Meeting of the American Association of Physics Teachers, August 8-13, 1994, South Bend, IN.

Mestre, J. Probing conceptual understanding through the posing of problems. *AAPT Announcer*, 1994, 24, #4, 76. Presented at the Winter Meeting of the American Association of Physics Teachers, January 14-29, 1995, Orlando, FL.

Dufresne, R. & Mestre, J. Minds-On Physics. Workshop presented at the Fall meeting of the New England Section of the American Association of Physics Teachers, Nov. 8-9, 1996, Amherst, MA.

Dufresne, R.J., Gerace, W.J., Leonard, W.J., & Mestre, J.P. Physics Analysis Workbench (PAW): Incorporating conceptual analysis into physics electronic homework. *AAPT Announcer*, 1999, 29, #4, 58. Presented at Winter Meeting of the American Association of Physics Teachers, January 15-19, 2000, Kissimmee, FL.

Conference Presentations, Reports & Workshops (Continued):

Gerace, W.J., Mestre, J.P., Leonard, W.J., & Dufresne, R.J. Assessing to learn (A2L): Formative assessment for high school physics." *AAPT Announcer*, 1999, 29, #4, 88. Presented at Winter Meeting of the American Association of Physics Teachers, January 15-19, 2000, Kissimmee, FL.

Leonard, W.J., Gerace, W.J., Mestre, J.P., & Dufresne, R.J. Multiple-choice questions: searching for some answers. *AAPT Announcer*, 1999, 29, #4, 98. Presented at Winter Meeting of the American Assoc. of Physics Teachers, January 15-19, 2000, Kissimmee, FL.

Koch, T.C., Mestre, J., Leonard, W., & Dufresne, R. Animation and video vs. paper: Does representation make a difference? *AAPT Announcer*, 2000, 30, #2, 75. Presented at Summer Meeting of the American Assoc. of Physics Teachers, July 29-Aug. 2, 2000, Guelph, Canada.

Mestre, J., Dufresne, R., Gerace, W., & Leonard, W. The multidimensionality of assessing for understanding. *AAPT Announcer*, 2000, 30, #4, 118. Presented at Winter Meeting of the American Association of Physics Teachers, January 6-11, 2001, San Diego, CA.

Dufresne, R., Gerace, W., Mestre, J. & Leonard, W. Assessing to learn (A2L): Research on teacher implementation of continuous formative assessment. *AAPT Announcer*, 2000, 30, #4, 119. Presented at Winter Meeting of the American Association of Physics Teachers, January 6-11, 2001 San Diego, CA.

Koch, T.C., Mestre, J., Leonard, W., & Dufresne, R. Student reasoning: Race results vs. realistic rolling. *AAPT Announcer*, 2000, 30, #4, 119. Presented at Winter Meeting of the American Association of Physics Teachers, January 6-11, 2001, San Diego, CA.

Koch, T.C., Mestre, J., Dufresne, R & Leonard, W. Student reasoning about balls rolling on tracks: Does introductory physics help or hinder? *AAPT Announcer*, 2001, 31, #4, 103. Presented at Winter Meeting of the American Association of Physics Teachers, January 19-23, 2002, Philadelphia, PA.

Mestre, J. "Extreme context sensitivity of student activation and coordination of knowledge in reasoning about motion." Symposium: "On the nature of students' knowledge: Contrasting epistemologies in science and mathematics education research. American Educational Research Association, April 11-15, 2005, Montreal, Canada.

Thaden-Koch, T. & Mestre, J. (2006). The application of coordination class theory to students' judgments about animated motion (2006). Presented at the 7th International Conference of the Learning Sciences, Indiana University, June 27-July 1, 2006, Bloomington IN.

Feil, A. & Mestre, J. Representation of diagrams in memory after short exposures. *AAPT Announcer*, 2006, 36, #2, 79. Presented at the Summer Meeting of the American Association of Physics Teachers, July 24-26, 2006, Syracuse, NY.

Mestre, J., Feil, A., Boot, W., and Kramer, A. Tracking eye-movements in students' judgments of realistic motion. *AAPT Announcer*, 2006, 36, #2, 117. Presented at the Summer Meeting of the American Association of Physics Teachers, July 24-26, 2006, Syracuse, NY.

Mestre, J. & Feil, A. Bait-and-switch: Problem solver reaction to a (secretive) problem switch. Presented at Summer Meeting of the American Association of Physics Teachers, July 28-August 1, 2007, Greensboro, SC.

Conference Presentations, Reports & Workshops (Continued):

Feil, A & Mestre, J. Effect of viewing order on students' judgments of realistic motion. Presented at Summer Meeting of the American Association of Physics Teachers, July 28-August 1, 2007, Greensboro, SC.

Feil, A. & Mestre, J. Using a recognition memory test to measure expert-novice differences in the encoding of physics diagrams. Presented at Summer Meeting of the American Association of Physics Teachers, July 28-August 1, 2007, Greensboro, SC.

Mestre, J.P., Ross, B.H., Nokes, T.J., Brookes, D.T., & Feil, A. Conceptual Analysis and Student Learning in Physics. Poster Presentation, Principal Investigator Conference, Institute for Education Sciences, Department of Education, June 11, 2008, Washington D.C.

Brookes, D.T., Ross, B.H., & Mestre, J.P. The specificity effect: Separating efficiency from innovation in learning physics. Presented at the Winter Meeting of the American Association of Physics Teachers, Feb. 14-16, 2009, Chicago, IL.

Nokes, T. J., Mestre, J. P., Ross, B. H., Feil, A., Brookes, D., & Smith, A. Conceptual analysis promotes learning and transfer in physics. Paper presented at the annual meeting of the American Education Research Association, April 14, 2009, San Diego, CA.

Nokes, T. J., Ross, B. H. Mestre, J. P., Strohm, E., Brookes, D. T., & Feil, A. Conceptual analysis facilitates learning and transfer in both laboratory and classroom settings. Poster presented to the 50th Annual Meeting of the Psychonomic Society, November 2009, Boston, MA.

Ross, B. H., Mestre, J. P., Nokes, T. J., Brookes, D. T., Feil, A., & Smith A. D. Conceptual analysis and student learning in physics. Poster presented to the 2009 Institute for Education Sciences Research Conference, June, 2009, Washington, D.C.

Smith, A.D., Mestre, J.P. & Ross, B.H. Learning from worked examples: What do students actually read? Presented at the Summer Meeting of the American Association of Physics Teachers, July 25-29, 2009, Ann Arbor, MI.

Mestre, J.P., Brookes, D.T., & Stine-Morrow, E.A.L. The semantics of students' mental models. Presented at the Summer Meeting of the American Association of Physics Teachers, July 25-29, 2009, Ann Arbor, MI.

Docktor, J.L., Strand, N.E., Gladding, G.E., Mestre, J.P., & Ross, B.H. Design and implementation of a synthesizing lecture on mechanics concepts. Presented at the Summer Meeting of the American Association of Physics Teachers, July 17-21, 2010, Portland, OR.

Mestre, J.P., Docktor, J.L., Strand, N.E., & Ross, B.H. A conceptual analysis approach to physics problem solving. Presented at the Summer Meeting of the American Association of Physics Teachers, July 17-21, 2010, Portland, OR.

Strand, N.E. & Mestre, J.P. Detecting changes to physics diagrams. Presented at the Summer Meeting of the American Association of Physics Teachers, July 17-21, 2010, Portland, OR.

Brookes, D.T., Landy, D.H., & Mestre, J.P. If mathematics is the language of physics, does it have grammar? Presented at the Summer Meeting of the American Association of Physics Teachers, July 17-21, 2010, Portland, OR.

Conference Presentations, Reports & Workshops (Continued):

Docktor, J.L., Mestre, J.P., Gire, E., & Rebello, S. An eye tracking analysis of physics representations. Presented at the Summer Meeting of the American Association of Physics Teachers, July 28-Aug. 1, 2012, Philadelphia, PA.

Gire, E., Docktor, J.L., Rebello, S., & Mestre, J.P. Exploring representational fluency with eye tracking. Presented at the Summer Meeting of the American Association of Physics Teachers, July 28-Aug. 1, 2012, Philadelphia, PA.

Mestre, J.P. Discipline based education research. Discussant at session the Summer Meeting of the American Association of Physics Teachers, July 28-Aug. 1, 2012, Philadelphia, PA.

Docktor, J., Mestre, J., Gire, E., Rebello, N.S., & Madsen, A. Eye Movements While Interpreting Graphical Representations of Motion. Presented at the Winter Meeting of the American Association of Physics Teachers, Jan. 5-9, 2013, New Orleans, LA.

Nokes-Malach, T. & Mestre, J.P. (2013, April). A theoretical framework for transfer as sense making: Applications and example. Presented at The Transfer Showcase: Exciting Contemporary Advances About an Educationally Central Phenomenon (structured poster session). American Educational Research Association Conference, April 28, 2013, San Francisco.

Chen, Z., Gladding, G., Mestre, J., Selen, M., & Stelzer, T. Improving Exam Performance for Diligent but Failing Students. Presented at the Summer Meeting of the American Association of Physics Teachers, July 13-17, 2013, Portland, OR.

Docktor, J., Mestre, J., Gire, E., Rebello, N.S., & Madsen, A. Tracking Eye Movements While Viewing Motion Graphs. Presented at the Summer Meeting of the American Association of Physics Teachers, July 13-17, 2013, Portland, OR.

Herman, G. L., Mena, I.B., Greene, J., West, M., Tomkin, J., & Mestre, J. (2015). Creating Institution-Level Change in Instructional Practices through Faculty Communities of Practice, In Proceedings of the 2015 American Society for Engineering Education Annual Conference and Exposition. Seattle, WA. June 14-17.

Herman, G. L., Mena, I.B., West, M., Tomkin, J., & Mestre, J. (2015). Work in Progress: Understanding STEM faculty motivation in their adoption of RBIS in communities of practice, In Proceedings of the 2015 ASEE/IEEE Frontiers in Education Conference, (submitted), El Paso, TX. Oct. 21-24.

Roesler, J., Mestre, J.P., Herman, G. L., Mena, I. (2015). Campus Oriented Project-Based Learning Course in Civil and Environmental Engineering, In Proceedings of the 2015 ASEE/IEEE Frontiers in Education Conference, (submitted), El Paso, TX. Oct. 21-24.

Herman, G. L., Mestre, J.P., Tomkin, J., Greene, J., West, M., & Mena, I.B. (2015). Illinois WIDER - Scaling Cultures of Collaboration: Evidence-based Reform in Gateway STEM Courses. Poster presented at the Illinois Learning Sciences Design Laboratory, Champaign, IL. Feb. 27.

Mestre, J. P., Morphey, J. W., & Gladding, G. E. (2015). Learning from Different Styles of Animated Solutions Among Low-Performing Students (Poster). Annual Meeting of the Physics Education Research Conference. College Park, MD.

Conference Presentations, Reports & Workshops (Continued):

Docktor, J., Mestre, J., Rebello, N.S. & Gire, E. Using Eye Tracking Technology to Investigate Motion Graphs. Presented at the Winter Meeting of the American Association of Physics Teachers, Jan. 9-12, 2016, New Orleans, LA.

Morphew, J.W., Mestre J.P. & Gladding, G.E. (2016). Effects of Animated Video Solutions on Learning and Metacognition. Presented at the Summer Meeting of the American Association of Physics Teachers, July 16-20, 2016, Sacramento, CA.

Ma, S., Herman, G. L., West, M., Tomkin, J., Mestre, J. (2016). Studying faculty communities of practice through social network analysis. In *Proceedings of the 46th ASEE/IEEE Frontiers in Education Conference*, Erie, PA, Oct. 12-15. DOI: [10.1109/FIE.2016.7757561](https://doi.org/10.1109/FIE.2016.7757561)

Morphew, J.W., Lin, R., Kwon, P.J. & Mestre J.P. (2017). Linking intuition to embodied experience: The case for regaining balance. Presented at the Summer Meeting of the American Association of Physics Teachers, July 22-26, 2017, Cincinnati, OH.

Morphew, J.W., Mestre J.P. & Gladding, G.E. (2017). Learning from animated video solutions: Does solving the problem matter? Presented at the Summer Meeting of the American Association of Physics Teachers, July 22-26, 2017, Cincinnati, OH.

Mestre, J.P., Morphew, J.W., Kwon, P.J. & Lin, R. (2018). Are intuitions and embodied experiences for regaining balance aligned? Presented at the Winter Meeting of the American Association of Physics Teachers, January 6-9, 2018, San Diego, CA.

Morphew, J.W. & Mestre J.P. Accuracy of Metacognitive Predictions in an Introductory Physics Course. Presented at the Summer Meeting of the American Association of Physics Teachers, July 28-Aug. 1, 2018, Washington D.C.

Morphew, J. W. & Mestre, J. (2020, Apr 17 - 21) *Effect of Animated Worked Examples on Metacognitive Monitoring Accuracy* [Roundtable Session]. AERA Annual Meeting San Francisco, CA <http://tinyurl.com/wnh37s8> (Conference Canceled).

Invited Conferences, Presentations and Workshops:

Mestre, J.P. The Latino science and engineering student: Some recent research findings. Latino College Students Conference, Educational Testing Service, January 28-29, 1983, Princeton, NJ.

Mestre, J.P. 'Sorry but you solved the wrong problem': The role of language comprehension in problem solving. Mathematics Achievement Among Language Minority Students Conference, National Institute of Education, March 10-11, 1983, Washington, D.C.

Mestre, J.P. A case study of a pattern of misconceptions in kinematics. Invited Presentation at the Spring Meeting of the New England Section of the American Association of Physics Teachers, April 6-7, 1984, Wellesley College, Wellesley, MA.

Mestre, J.P. Incorporating cognitive research findings into software design: Examples from algebra and physics. Seminar presented at the Harvard Educational Technology Center, March 11, 1986, Cambridge, MA.

Mestre, J.P. Cognitive research on problem solving: Findings and implications for educators. Invited Presentation at the New Hampshire Science Teachers Association Conference, March 16, 1987, Exeter, NH.

Mestre, J.P. Fostering critical thinking: New findings in cognitive research. Invited Presentation at the National Conference of the Council of State Science Supervisors: Exeter III, June 21-27, 1987, Exeter, NH.

Mestre, J.P. Impedances in the circuit of learning. Keynote Address at the Conference on Dialogues on Curricular Articulation Between High School and College, New Hampshire College and University Council, November 3-4, 1987, Manchester, NH.

Mestre, J.P. Implications of cognitive research findings for mathematics instruction. Keynote Address at the Success for Everyone: Conference on Mathematics Remediation in High School, February 6, 1988, University of Illinois, Chicago, IL.

Mestre, J.P. Implications of cognitive research for curriculum design. Invited Plenary Address at the Planning Session for Science Teacher Preparation, National Science Foundation, June 5-10, 1988, Airlie, VA.

Mestre, J.P. Workshop Leader in Science, Educational Equality Project 1988 Summer Institute, The College Board, July 20-24, 1988, Santa Cruz, CA.

Mestre, J.P. Implications of cognitive research for physics instruction. Banquet Speaker at the Fall Meeting of the New England Section of the American Physical Society, October 7, 1988, University of Massachusetts, Amherst, MA.

Mestre, J.P. Expert-novice reasoning in physics. Invited Symposium: Development of Thinking Skills in the Sciences and Mathematics. American Association for the Advancement of Science, January 15-19, 1989, San Francisco, CA.

Mestre, J.P. & Royer, J.M. Cultural and linguistic influences on Latino testing. Invited Presentation at the Assessment and Access Conference on Hispanics in Higher Education, April 28-29, 1989, Educational Testing Service, Princeton, NJ.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J.P. Cognition and math/science instruction. Workshop for math/science faculty, January 19, 1990, Comprehensive Regional Center for Minorities in Science and Engineering, City College of New York, NY.

Mestre, J.P. College Board Training Workshop for Academic Preparation in Science, March 23-24, 1990, New York, NY.

Mestre, J.P. Workshop Leader, Faculty Development Workshop in Science, February 23, 1990, Concord School System, Concord, NH.

Mestre, J.P. Workshop Leader, SPACEMET Project, Five Colleges Inc., July 9, 1990 and April 9, 1991, Amherst College, Amherst, MA.

Mestre, J.P. Promoting skilled problem solving in classical mechanics: Are students capable of getting the message. Seminar, Center for the Development of Educational Computing, Carnegie-Mellon University, November 15, 1990, Pittsburgh, PA.

Mestre, J.P. Are physicists made or are they just born that way? Colloquium, Department of Physics & Astronomy, October 9, 1991, University of Massachusetts, Amherst, MA.

Mestre, J.P., Dufresne, R., Gerace, W., Leonard, W. Developing students' conceptual understanding of mechanics. AAPT Announcer, 1990, 20, #4, 48. Invited Session on Cognitive Research and Physics Education, Joint Winter Meeting of the American Assoc. of Physics Teachers and the American Physical Society, January 19-23, 1991, San Antonio, TX.

Mestre, J.P. Research on learning and problem solving: Implications for instruction. Invited presentation at the Massachusetts Academy for Teachers, University of Massachusetts at Boston, Feb. 29, 1992, and at the University of Connecticut, Department of Physics, March 20, 1992, Storrs, CT.

Mestre, J.P. Research studies on the nature of expertise. Colloquium, Department of Physics, The Ohio State University, March 12, 1992, Columbus, OH.

Mestre, J.P. Organizing scientific ideas for use in analytical reasoning. Invited workshop, National Science Foundation's Project Directors' Meeting, Teacher Enhancement Program, May 29-30, 1992, Washington, DC.

Wingspread Conference: "Research To Practice: Improving Teaching and Learning of Science and Mathematics." Organized/Sponsored by: Council of Science Society Presidents, American Psychological Association, American Chemical Society, National Association of Biology Teachers, National Association for Research on Science Teaching, National Science Teachers Association, National Council of Teachers of Mathematics, Johnson Foundation, and the National Science Foundation. Wingspread Conference Center, Sept. 18-20, 1992, Racine, WI.

National Science Foundation, Conference: "Role of Faculty from the Disciplines in the Preparation of Science and Mathematics Teachers." Nov. 5-6, 1992, Washington, DC. (Chaired Assessment Group and editor of assessment section of conference proceedings).

Mestre, J.P. The nature of expertise in physics: Research findings from experiments on teaching and learning. Colloquium, Inter-College Science Education Committee, University of Arizona, April 1, 1993, Tucson, AZ.

Invited Conferences, Presentations and Workshops (Continued):

Joint College Board-Educational Testing Service, Pacesetter Science Working Group, Educational Testing Service, April 30-May 2, 1993, Princeton, NJ.

Mestre, J.P. Cognitive Aspects of Learning and Instruction in Science. Workshop, 5C-5E Teacher Enhancement Program, University of Massachusetts, July 9, 1993, Amherst, MA.

Mestre, J.P. Why Should Teachers Be Interested in Cognitive Research Findings. Workshop, Vermont Institute for Science, Math & Technology, Vermont Technical College, July 26, 1993, Randolph Center, VT.

Mestre, J.P. Cognitive Aspects of Learning and Instruction in Science. Invited Speaker, National Science Foundation Invitational Forum: Teacher Enhancement in Science and Mathematics--Status, Issues and Problems. Academy for Educational Development, July 29, 1993, Washington, DC.

Mestre, J.P. Research findings on the nature of expertise in physics and their implications for instruction. Colloquium, Department of Physics & Astronomy, University of Maine, March 25, 1994, Orono, ME.

Mestre, J.P. The UMass teaching experience using Classtalk. Invited presentation, Development of Pedagogical Techniques for Classroom Communication Systems Conference, May 21, 1994, Williamsburg, VA.

Mestre, J.P. Assessment and instructional strategies for promoting conceptual understanding in physics, Featured Speaker, The Sixth International Conference on Thinking, Massachusetts Institute of Technology, July 17-22, 1994, Cambridge, MA.

Mestre, J.P. Constructivism and misconceptions. Workshop, Frontier Regional School System, July 26, 1994, Deerfield, MA.

Workshop on Issues in Physics Education Research, Invited Conference, North Carolina State University, Raleigh, NC, Sept. 30-Oct. 1, 1994.

Member of two-person site visit team to advise NSF on funding a 5-year, \$10,000,000 Institute for Science Education (also reviewed all 6 final proposals). Visited the University of Wisconsin-Madison on Oct. 25, 1994, and Harvard University on November 1, 1994. Wrote reports to NSF based on these site visits.

Methodologies for Research in Learning and Teaching Science and Mathematics, Dec. 8-11, 1994, Santa Fe, NM. Invited conference for a project sponsored by NSF to design a research methodology "manual" for science and mathematics education.

Mestre, J.P. Turning Passive Lectures into Interactive Learning Environments with a Classroom Communication System. *AAPT Announcer*, 1994, 24, # 4, 63. Invited Session on Enhancing Physics Learning Via Research: Technology Induced Interaction in Lecture Settings, Winter Meeting of the American Association of Physics Teachers, January 14-19, 1995, Orlando, FL.

Mestre, J.P. Research & Development into Problem Solving and the Nature of Expertise. Colloquium, Peabody College of Vanderbilt University, February 22, 1995, Nashville, TN.

Invited Conferences, Presentations and Workshops (Continued):

Presenter at “Engaging Students as Active Learners: Ideas for Developing Writing in the Classroom.” March 7, 1995, University of Massachusetts. Sponsored by the Center for Teaching and the Junior Year Writing Program, Amherst, MA.

Mestre, J. Turning Passive Lectures into Interactive Learning Environments with a Classroom Communication System. Bulletin of the American Physical Society, 40, #2, 1995, 917. Invited Session on Enhancing Physics Learning Via Research: Technology Induced Interaction in Lecture Settings, Joint April Meeting of the American Physical Society and the American Association of Physics Teachers, April 17-21, 1995, Washington, D.C.

Mestre, J. Blurring the Line Between Research and Instruction in Physics Education. Colloquium, Department of Physics, Purdue University, May 18, 1995, West Lafayette, IN.

Grade 13: Articulation, Equity, and Literacy Issues. Invited conference, Wisconsin Center for Education Research, University of Wisconsin, June 23-24, 1995, Madison, WI.

Mestre, J.P. Cognitive aspects of learning and teaching high school science. Workshop, Catalyst for Reform: A Conference of the Urban Systemic Initiatives, July 17-19, 1995, Washington DC.

Mestre, J.P. Using a classroom communication system for promoting active learning in large lectures. Featured speaker at invitational conference: Teaching Undergraduates: Lessons Learned at New England Land Grant Universities, January 11-12, 1996, Durham, NH.

Mestre, J.P. How will technology affect our teaching methods? Invited presentation, College of Engineering Faculty Retreat, University of Massachusetts. Willits Hallowell Conference Center, Mt. Holyoke College, January 25, 1996, South Hadley, MA.

Presenter at “How technology has changed the way we teach.” University of Massachusetts. Sponsored by the Center for Teaching’s “Teaching Well with Technology” series, March 6, 1996, Amherst, MA.

Mestre, J.P. Designing innovative physics instruction based on cognitive research findings. Invited plenary speaker, Puerto Rico Alliance for Minority Participation, Resource Center for Science and Engineering of Puerto Rico, March 22, 1996, Ponce, PR.

Mestre, J.P. Blurring the line between research and instruction in science education. Colloquium, Learning Research and Development Center, University of Pittsburgh, April 29, 1996, Pittsburgh, PA.

Mestre, J.P. Designing innovative physics instruction based on cognitive research findings. Invited speaker, Center for Complex Systems Research, Beckman Institute, University of Illinois at Urbana-Champaign, June 10, 1996, Urbana, IL.

Mestre, J.P. Promoting active learning in large classes using a classroom communication system. Invited “Sample Class” presenter, International Conference on Undergraduate Physics Education, University of Maryland, July 31-Aug. 3, 1996, College Park, MD.

Invited Conferences, Presentations and Workshops (Continued):

Gerace, W.J., Leonard, W.J., Dufresne, R.J., Mestre, J.P. & Feldman, A. Minds-On Physics: Materials for Developing Concept-Based Problem Solving Skills. *AAPT Announcer*, 1997, 27, #2, 85. Invited Session on Applications of Physics Education Research to Curriculum Development. Summer Meeting of the American Association of Physics Teachers, August 11-16, 1997, Denver, CO.

Mestre, J. Research on Learning Physics and its Application to Instruction. Colloquium, Dept. of Physics, Worcester Polytechnic Institute, January 26, 1998, Worcester, MA.

Mestre, J.P., Dufresne, R.J., Gerace, W.J., Leonard, W.J. Pedagogical Strategies for Active Learning in Large Introductory Classes Using the *Classtalk* Classroom Communication System. *AAPT Announcer*, 1997, 27, # 4, 90. Invited Session on Pedagogical Techniques for Classroom Communication Systems, Winter Meeting of the American Association of Physics Teachers, January 3-8, 1998, New Orleans, LA.

Mestre, J. Promoting Expertise, and Probing Conceptual Understanding Among Novice Physics Students: A Report of Two Research Studies. Seminar, Department of Physics, University of Illinois, April 3, 1998, Urbana, IL.

Mestre, J. Designing PER Studies, and Measuring Student Outcomes: Time for a Fresh, New Look. *AAPT Announcer*, 1999, 29, #2, 135. Invited Session on Underlying Assumptions of Physics Education Research, Summer Meeting of the American Association of Physics Teachers, August 3-7, 1999, San Antonio, TX.

Mestre, J. Frontiers in Physics Education Research. *Proceedings of the 1998 Physics Education Research Conference* (Thomas C. Koch & Robert G. Fuller, Eds.), University of Nebraska, 1999, pp. 113-116, Lincoln, NE.

Mestre, J. Lone Rangers Get Lonely: Getting Your PER Team Larger than One Professor. *Proceedings of the 1998 Physics Education Research Conference* (Thomas C. Koch & Robert G. Fuller, Eds.), University of Nebraska, 1999, pp. 147-150, Lincoln, NE.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Colloquium, College of Sciences and School of Education, Boston College, Dec. 2, 1999; Department of Physics, University of Nebraska, April 17, 2000, Lincoln, NE.

Leonard, W., Dufresne, R., Gerace, W. & Mestre, J. Minds-On Physics: Materials for developing concept-based problems-solving skills. Invited Poster Session at the National Science Foundation Conference for Developers of Comprehensive K-12 Math and Science Curriculum Programs, February 3-6, 2000, Alexandria, VA.

Mestre, J. Transforming Science Teaching and Assessment Through Learning Research. Keynote address, Washington Educational Research Association, March 9, 2000, Seattle, WA.

Mestre, J. Transforming Science Teaching and Learning Through Learning Research. Invited presentation to the National Research Council's Committee on Programs for Advanced Study of Mathematics and Science in American High Schools, Beckman Center, March 25, 2000, Irvine, CA.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J. General Lessons Learned in the Preparation of Teachers. Conference of Physics Department Chairs: Undergraduate Physics in the New Century, American Center for Physics, April 15, 2000, College Park, MD.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Colloquium, Department of Physics, University of Nebraska, April 17, 2000, Lincoln, NE.

Mestre, J. The Role of Physics Departments in Preservice Teacher Preparation: Obstacles and Opportunities. Invited speaker at The Role of Physics Departments in Preparing K-12 Teachers: A Working Conference, University of Nebraska, June 8-9, 2000, Lincoln, NE. (Sponsored by AIP, AAPT, APS, & UNL.)

Pellegrino, J. & Mestre, J. How Do Adults Learn New Information? Invited presentation at the National Research Council's Exploratory Planning Meeting on Improving Science Communication, Beckman Center, January 12, 2001, Irvine, CA.

Mestre, J. Using Learning Research to Transform the Way We Teach Science, and The Context Dependence of Student Reasoning and Alternatives for Assessing Conceptual Understanding in Physics. Invited presenter of the "Philips Lectures," Haverford College, February 26-27, 2001, Haverford, PA.

Mestre, J. What Makes Learning Science So Difficult? Distinguished Faculty Lecture, University of Massachusetts, April 10, 2001, Amherst, MA.

Mestre, J. Using Learning Research to Transform the Way We Teach. Keynote Address at the First Annual Rensselaer Colloquium on Teaching and Learning. Rensselaer Polytechnic Institute, May 7, 2001, Troy, NY.

Mestre, J. Using Learning Research to Transform the Way We Teach Science, and Designing Research Studies in Science Learning, With Specific Examples. Invited presentations, Summer Academy of the Maine Mathematics and Science Teaching Excellence Collaborative, Lewiston Maine, June 25-29, 2001, Lewiston, ME.

Invited Workshop Panelist, Advances in cognition, measurement, and technology. The National Academies' Workshop on Technology and Assessment, National Research Council, November 14, 2001, Washington DC.

Mestre, J. Experimental Techniques to Probe the Organization and Application of Physics Knowledge Among Undergraduates. Seminar, The Ohio State University, Department of Physics, January 9, 2002, Columbus, OH.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Invited Plenary Speaker, Project Kaleidoscope meeting (2 plenary talks to 400 participants), June 1-2, 2002, Williamsburg VA.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Invited Plenary Speaker, SENCER project (Science Education for New Civic Engagements and Responsibilities), Association of American Colleges and Universities, Santa Clara University, August 5, 2002, Santa Clara, CA.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J. How People Learn. Invited Talk, Faculty Enhancement Program, Training and Health Communications Branch (THCB), Division of Sexually Transmitted Disease Prevention (DSTD), Centers for Disease Control, September 24, 2002, Atlanta, GA,.

Mestre, J. Research on Learning: A Personal View from the Field. Invited Talk, Education and Human Resources Directorate, National Science Foundation, October 8, 2002, Washington DC.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Invited Plenary Speaker, Wartburg College, January 6, 2003, Waverly, IA.

Mestre, J. Probing the Organization and Application of Physics Knowledge Among Undergraduates. Colloquium, Kansas State University, April 22, 2003, Manhattan, KS.

Mestre, J. Invited lecturer of 3-hr mini-course at the *International School of Physics "Enrico Fermi"*, Course CLVI, *Research on Physics Education*. July 14-25, 2003, Varenna, Italy.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Invited Plenary Speaker, SENCER project (Science Education for New Civic Engagements and Responsibilities), Association of American Colleges and Universities, Santa Clara University, Aug. 9, 2003, Santa Clara, CA.

Mestre, J. The Dependence of Knowledge Deployment on Context Among Physics Novices. Colloquium, Haskins Lab, Yale University, October 9, 2003, New Haven, CT

Mestre, J. Probing the Organization and Application of Physics Knowledge Among Undergraduates. Colloquium, Worcester Polytechnic Institute, October 13, 2003, Worcester, MA.

Mestre, J. Using Learning Research to Transform the Way We Teach. Plenary address, Planning Technology-rich Spaces for Learning Workshop, PKAL/NITLE, DePauw University, October 24-25, 2003, Greencastle, IN.

Mestre, J. Using Problem Posing to Probe the Organization and Application of Physics Knowledge Among Undergraduates. Seminar, Department of Physics & Astronomy, Rutgers University, November 10, 2003, New Brunswick, NJ.

Mestre, J. The Dependence of Knowledge Deployment on Context Among Physics Novices. Colloquium, Rutgers University Center for Cognitive Science, November 11, 2003, New Brunswick, NJ.

Mestre, J. The Dependence of Knowledge Deployment on Context Among Physics Novices. Colloquium, Department of Physics, Purdue University, January 15, 2004, West Lafayette, IN.

Mestre, J. The Dependence of Knowledge Deployment on Context Among Physics Novices. Seminar, Physics Department, The Ohio State University, February 10, 2004, Columbus, OH.

Mestre, J. Using Learning Research to Transform the Way We Teach. Plenary address, What Faculty and Administrators Need to Know About Learning, American Association for Higher Education, February 20-22, 2004, College Park, MD.

Mestre, J. Research on Human Learning: Understanding and Applications. Keynote address, Math/Science Partnerships Workshop on How People Learn, National Research Council, March 8 and June 28, 2004, Washington DC.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J. The Dependence of Knowledge Deployment on Context Among Physics Novices. Seminar, Physics Department University of Illinois, April 12, 2004, Urbana, IL.

Mestre, J. Research on Human Learning: Understanding and Applications. Keynote address, Institute on the Teaching and Learning of Math and Science, State of Georgia's PRISM (Partnership for Reform in Science and Math) Math/Science Partnership NSF Grant, Georgia Institute of Technology, April 24, 2004, Atlanta, GA.

Mestre, J. Using Learning Research to Transform the Way We Teach. Plenary address, Harvard Graduate School of Education's Teacher Education Program, July 27, 2004, Cambridge, MA.

Mestre, J. Is Transfer Ubiquitous or Rare: New Paradigms for Studying Transfer. Invited speaker, American Association of Physics Teachers, California State University, August 4, 2004, Sacramento, CA.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Invited Plenary Speaker, SENCER project (Science Education for New Civic Engagements and Responsibilities), Association of American Colleges and Universities, Santa Clara University, August 7, 2004, Santa Clara, CA.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Keynote address, Regional meeting of the State of Georgia's PRISM (Partnership for Reform in Science and Math) Math/Science Partnership NSF Grant, Armstrong Atlantic State University, August 27, 2004, Savannah, GA.

Mestre, J. Using Learning Spaces to Encourage Deeper Learning. Plenary address, National Learning Infrastructure Initiative, Fall Focus Session: Learning Space Design for the 21st Century, Massachusetts Institute of Technology, September 9, 2004, Cambridge, MA.

Mestre, J. Physics Education Research and its Implications for Improving Instructional Practices. Colloquium, Department of Physics, University of North Carolina, September 27, 2004, Chapel Hill, NC.

Mestre, J. Misconceptions in Science and Math: Two Views of What They Really Are and Implications for Teaching. Plenary Address, Institute on the Teaching and Learning of Math and Science, State of Georgia's PRISM (Partnership for Reform in Science and Math) Math/Science Partnership NSF Grant, Georgia Institute of Technology, October 10, 2004, Atlanta, GA.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Keynote Address, The New York State Biology-Chemistry Mentor (Professional Development) Network Fall Conference, October 21, 2004, Schenectady, NY.

Mestre, J. Misconceptions in Science and Math: Two Views of What They Really Are and Implications for Teaching. Plenary Address, Watershed-Integrated Sciences Partnership (WISP) Program, University of Massachusetts, November 20, 2004, Boston, MA.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Seminar, The McGraw Center for Teaching and Learning, and the Council on Science and Technology, Princeton University, December 6, 2004, Princeton, NJ.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J. Sense Making and Transfer in Science Learning: Dependence of Knowledge, Expectations, and Observations on Context. Colloquium, College of Education, University of Illinois, February 24, 2005, Champaign, IL.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Plenary Address, Mitchell College, March 11, 2005, New London, CT.

Mestre, J. Translating 'How People Learn' into a Roadmap for Institutional Transformation: Framing Some of the Issues. Plenary Address, Project Kaleidoscope's Roundtable on the Future, Cranbrook Educational Community, April 1-3, 2005, Bloomfield Hills, MI.

Mestre, J. Cognitive Research: Evolving Insights for Pedagogical Innovation. Keynote Address, PEDAGOGIES OF ENGAGEMENT: Deepening Learning In and Across the Disciplines, American Association of Colleges and Universities, April 14-16, 2005, Bethesda, MD.

Mestre, J. Vision for ESIE. Seminar to the Elementary, Secondary and Informal Education Division of the National Science Foundation, May 5, 2005, Alexandria, VA.

Mestre, J. Using Learning Research to Improve Teaching and Learning. Plenary Address, Virginia Commonwealth University, November 4, 2005, Richmond, VA.

Mestre, J. Using Learning Research to Transform the Way We Teach Science and other Subjects. Plenary Address, College of St. Rose, March 22, 2006, Albany, NY.

Mestre, J. Using Learning Research to Transform the Way We Teach. Keynote Address, All-Campus Teaching Assistant Orientation, University of Illinois, August 16, 2006 Urbana, IL.

Mestre, J. Moving Toward Institutional Change in Teaching and Learning: Obstacles & Opportunities. National Research Council's Board on Agriculture and Natural Resources, Teaching and Learning in Undergraduate Education: A Leadership Summit (invited panel on the agriculture classroom), October 3-5, 2006, Washington DC.

Mestre, J. What do Studies of Physics Learning Look Like? Brown Bag Seminar, Child Development Division, Department of Educational Psychology, University of Illinois, October 11, 2006, Champaign, IL.

Mestre, J. Using Learning Research to Transform the Way We Teach. Seminar, Teaching and Learning Workshop Series "Understanding How Learning Happens," College of Business Learning Advancement Board, University of Illinois, October 18, 2006, Champaign, IL.

Mestre, J. Using Cognitive Research: Evolving Insights for Pedagogical Innovation. All-Campus Faculty Development Session, University of Northern Arizona, October 20, 2006, Flagstaff AZ.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Keynote Address, Retirees Enhancing Science Education through Experiments and Demonstrations (RE-SEED Program), Center for STEM Education, Northeastern University, December 12, 2006, Boston, MA.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Semi-annual Colloquium, Center of Science and Math in Context, University of Massachusetts, December 12, 2006, Boston, MA.

Mestre, J. Using Learning Research to Transform the Way We Teach. Keynote Address, All-Campus Teaching Assistant Orientation, University of Illinois, January 9, 2007, Urbana, IL.

Mestre, J. Using Learning Research to Transform the Way We Teach. Plenary speaker, Research Symposium on College Teaching and Learning, Auburn University, February 2, 2007, Auburn AL.

Mestre, J. Transfer in Physics from Two Diverse Perspectives. Cognitive Science Colloquium Series, TERC, March 1, 2007, Cambridge MA.

Mestre, J. Organizer of Targeted Poster Session, Experimental paradigms from cognitive science to learn about learning. Physics Education Research Conference: "Cognitive Science and Physics Education Research." August 1-2, 2007, Greensboro, NC.

Invited participant to Research Agenda Workshop, Hispanic Association of Colleges and Universities, University of Houston, September 11-12, 2007, Houston, TX.

Co-organized a workshop for the Western Association of Schools and Colleges titled "The Science of Learning: Supporting Teaching and Learning in the Classroom and Beyond" held in Kellogg West Conference Center, September 28-30, 2007, Pomona CA. Gave a plenary address, "How People Learn: What the Science of Learning Tells Us about Teaching and Learning," and two breakout talks, "Active Learning in Both Large and Small Classes Using Clickers," and "Institutional Change and Pedagogies of Engagement."

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Plenary Address, *How Students Learn: The Implications of Learning Research for Science Education* conference, Franklin & Marshall College, October 6, 2007, Lancaster, PA.

Mestre, J. Bait-and-switch: Problem solver reaction to (secretive) problem switch. Seminar, Department of Educational Psychology, October 23 2007, and Department of Psychology, University of Illinois, October 19 2007, Champaign, IL.

Mestre, J. Using Learning Research to Transform the Way We Teach Science. Keynote Address, Leadership Dinner, Pennsylvania Science Teachers Association, December 5, 2007, Hershey, PA.

Mestre, J.P. Using Learning Research to Transform the Way We Teach Science and Engineering. Seminar, Parkland College Science Department, April 3, 2008, Champaign IL.

Mestre, J.P. Using Learning Research to Transform the Way We Teach Science. Howard Hughes Medical Institute and National Research Council Summer Institute in Biology. University of Wisconsin, June 23, 2008, Madison, WI.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J.P. Learning Goals in Undergraduate STEM Education and Evidence for Achieving Them in Undergraduate STEM Curricular Reform. Promising Practices in Undergraduate STEM Education Workshop, National Academies' Board on Science Education, June 30, 2008, Washington DC.

Mestre, J.P. Using Learning Research to Transform the Way We Teach Science and Engineering. University of Illinois Graduate Academy for College Teaching, Aug. 18 2008, Champaign IL.

Mestre, J.P. Cognitive Research and Active Learning: A Review of the Current Literature on How People Learn. Plenary presentation, Faculty Enhancement Workshop, University of Hartford, Sept. 11, 2008, West Hartford, CT.

Mestre, J.P. From Expert-Novice Reasoning to Classroom Practice: Pure and Applied Studies of Physics Cognition. Colloquium, Department of Physics, Indiana University Purdue University Indianapolis, Oct. 16, 2008, Indianapolis, IN.

Mestre, J.P. From Expert-Novice Reasoning to Classroom Practice: Pure and Applied Studies of Physics Cognition. Plenary address, Annual Best Practices Conference on Teaching and Learning, Puerto Rico Resource Center for Science and Engineering, Oct. 24, 2008, San Juan, PR.

Mestre, J.P. Cognitive Research and Active Learning: A Review of the Current Literature on How People Learn. Plenary Address, Annual Best Practices Conference on Teaching and Learning, Puerto Rico Resource Center for Science and Engineering, Oct. 24, 2008, San Juan, PR.

Mestre, J.P. Cognitive Research and Active Learning: A Review of the Current Literature on How People Learn. Grants for Advancement of Teaching in Engineering Program, College of Engineering, University of Illinois, November 6, 2008, Urbana, IL.

Mestre, J.P. Translating Cognitive Research into Student-Centered Learning in the STEM Disciplines. Plenary address, University System of Georgia STEM Initiative State Institute, , Feb. 28, 2009, Stone Mountain, GA.

Mestre, J.P. From Expert-Novice Reasoning to Classroom Practice: Pure and Applied Studies of Physics Cognition. Colloquium, Department of Physics, University of Colorado, April 8, 2009, Boulder, CO.

Mestre, J.P. Eye-tracker study of learning from worked examples. Seminar, Department of Physics, University of Colorado, April 9, 2009, Boulder, CO.

Mestre, J.P. Using Learning Research to Transform the Way We Teach Science. Howard Hughes Medical Institute and National Research Council Summer Institute in Biology. University of Wisconsin, June 24, 2009, Madison, WI.

Mestre, J.P. Writing qualitative strategies to highlight the role of concepts in problem solving. Invited session: Research Based Studies on Writing to Learn: From the Large Scales to the Fine Grained. Presented at the Summer Meeting of the American Association of Physics Teachers, July 25-29, 2009, Ann Arbor, MI.

Mestre, J.P. Methods and experimental design in cognitive studies. Invited Workshop, Physics Education Research Across Paradigms, Physics Education Research Conference, The University of Michigan, July 29-30, July 25-29, 2009, Ann Arbor, MI.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J.P. Physics Learning and Classroom Practice: Clinical and Classroom-Based Studies of Physics Cognition. Colloquium, Department of Physics, Washington University, September 29, 2010, St. Louis, MO.

Mestre, J.P. Physics Learning and Classroom Practice: Clinical and Classroom-Based Studies of Physics Cognition. Colloquium, Department of Physics, Illinois State University, February 22, 2011, Normal, IL.

Mestre, J.P. Physics Learning and Classroom Practice: Clinical and Classroom-Based Studies of Physics Cognition. Colloquium, Department of Physics, Western Michigan University, March 20, 2012, Kalamazoo, MI.

Mestre, J.P. Using Change Blindness to Study Expertise in Physics. Seminar, Mallinson Institute for Science Education, Western Michigan University, March 21, 2012, Kalamazoo, MI.

Mestre, J.P. One of two reviewers of the undergraduate program in physics and astronomy, Department of Physics & Astronomy, Dornsife College, University of Southern California, March 26-28, 2012, Los Angeles, CA.

Mestre, J.P. Cognitive research: What it tells us about student learning and how it can inform teaching, Keynote Speaker, Opening Day Symposium, Rose-Hulman Institute of Technology, August 24, 2012, Terre Haute, IN.

Mestre, J.P. One of two reviewers of the Masters and Ph.D. programs in STEM education, College of Education and The Graduate School, University of Texas, October 29-31, 2012, Austin, TX.

Mestre, J.P. Writing competitive STEM proposals. Presented at annual meeting of The Independent Colleges, February 18, 2013, Washington, D.C.

Mestre, J., Docktor, J., Gire, E., Rebello, S. Using Eye Tracking to Explore Expert-Novice Differences. Presented at the Winter Meeting of the American Association of Physics Teachers, Jan. 4-7, 2014, Orlando, FL.

Mestre, J.P. Cognitive research: What it tells us about student learning and how it can inform teaching. Seminar, Department of Physics & Astronomy, Purdue University, March 28, 2014.

Mestre, J.P. Cognitive research in STEM: What it tells us about student perception and performance and how it can inform teaching. Plenary speaker, Integrating Cognitive Science with Innovative Teaching in the STEM Disciplines, Washington University, September 11-12, 2014, St. Louis, MO.

Mestre, J.P. How people learn: A scientist's perspective. Plenary speaker to STEM faculty, Bates College, October 1, 2014, Lewiston, ME.

Mestre, J.P. Relating cognitive research to teaching and learning in the STEM disciplines. Seminar, Department of Psychology, Indiana University, February 20, 2015, Bloomington IN.

Mestre, J.P. Relating cognitive research to teaching and learning in physics. Plenary Speaker, *100th meeting of the Argentinean Physical Society*, Merlo, Argentina, Sept. 23, 2015.

Invited Conferences, Presentations and Workshops (Continued):

Mestre, J.P. Useful cognitive findings that could be incorporated in reforming introductory physics courses, Workshop, *100th meeting of the Argentinean Physical Society*, Merlo, Argentina, Sept. 24, 2015.

Mestre, J.P. How people learn: A scientist's perspective. Plenary speaker, *Teach to Reach: Innovations in Immunization Training*, Gates Foundation, Nov. 2, 2015, Seattle, WA.

Mestre, J.P. Relating cognitive research to teaching and learning in physics. Colloquium, Department of Physics, University of Illinois at Urbana/Champaign, Feb. 10, 2016, Urbana, IL.

Mestre, J.P. Relating cognitive research to teaching and learning in physics. Colloquium, Department of Physics, Purdue University, Feb. 11, 2016, West Lafayette, IN.

Mestre, J.P. How people learn: A scientist's perspective. Plenary speaker, Jackson State University, April 7, 2016, Jackson, MS.

Mestre, J.P. Relating cognitive research to teaching and learning in physics. Colloquium, Department of Physics, Jackson State University, April 7, 2016, Jackson, MS.

Mestre, J.P. Relating cognitive research to teaching and learning in physics. Colloquium, Department of Physics, Rollins College, March 2, 2017, Winter Park, FL.

Mestre, J.P. How people learn: A scientist's perspective. Plenary Talk, Rollins College, March 2, 2017, Winter Park, FL.

Mestre, J.P. Relating cognitive research to teaching and learning in physics. Colloquium, Department of Physics, University of Central Florida, March 3, 2017, Orlando, FL.

Docktor, J. & Mestre, J. Conceptual Problem Solving in High School Physics. Presented at the Summer Meeting of the American Association of Physics Teachers, July 22-26, 2017, Cincinnati, OH.

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- Gerace, W.J. & Mestre, J.P. (1977). High spin members of the 4p-4h triaxial band in ^{40}Ca . *Nuclear Physics, A285*, 253-261.
- Mestre, J.P. (1980). Pion scattering from the mass three system. Doctoral Dissertation, University of Massachusetts, 1979. *Dissertation Abstracts International, Sec. B, 40*, Feb. 1980, p. 3811.
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- Mestre, J.P., Gerace, W.J. & Sparrow, D.A. (1981). The effect of center of mass correlations and intermediate states on π -He Scattering. *Physical Review, C24*, 2363-2366.
- Mestre, J.P. (1981). Predicting academic achievement among bilingual Hispanic college technical students. *Educational and Psychological Measurement, 41*, 1255-1264.
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- Mestre, J.P., Gerace, W.J. & Lochhead, J. (1982). The interdependence of language and translational math skills among bilingual Hispanic engineering students. *Journal of Research in Science Teaching, 19*, 399-410.
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