

Dr. Frederick J. Thomas

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EDUCATION

Ph.D. in Science Education from Indiana University, minor in Comparative and International Education, 1976.

M.S. in Foundations of Education from Purdue University, 1972.

B.S. in Physics from Michigan State University, 1967 (National Merit Scholar, graduated with "high honor").

Additional graduate work in Physics and Meteorology at McGill University, Montreal, Quebec, Canada (1967-68) and in Physics and Chemistry at Miami University, Oxford, Ohio (1981-83)

TECHNICAL SKILLS

National Instruments LabVIEW programming

ArcVIEW GIS data presentations

Design of printed circuit boards

CURRENT MEMBERSHIPS

American Association of Physics Teachers (AAPT)

National Council of Teachers of Mathematics (NCTM)

National Science Teachers Association (NSTA)

EXPERIENCE

2007 – present President and Trustee of Learning with Math Machines, Inc., a 501(c)(3) non-profit organization.

2004 – 2008 Co-Owner and CEO of Math Machines, Ltd.

1983 – 2005 Physics and Astronomy faculty member at Sinclair Community College, Dayton, Ohio, USA. (Associate Professor 1983-1988; Professor 1988-2005; Chairman of Physics Dept. from 1989 to 1995.

2002 – 2005 Co-Principle Investigator, “Connecting Math, Science and Technology” (NSF ATE Grant DUE-0202202). This \$400,000 grant is aimed helping math and science teachers at the secondary and college levels incorporate hands-on activities that use graphing calculators in authentic, career-related learning tasks.

1995 - 1999 Co-Principle Investigator, National Center of Excellence in Advanced Manufacturing Education (NSF ATE Grant DUE-9454571). This \$5,000,000 grant was aimed at changing how manufacturing technicians are educated, particularly in aligning science and math education with the needs of modern industry.

1979 - 1983 Assistant Professor in Secondary Science Education and Environmental Education at Miami University, Oxford, Ohio.

1978 - 1979 Assistant Professor in Physics at Shawnee State Community College, Portsmouth, Ohio.

1976 - 1978 Lecturer in Physical Science and Science Education at Riverina College of Advanced Education, Wagga Wagga, NSW, Australia.

1972 - 1973 Math and science teacher at St. Johnsbury Junior High School, St. Johnsbury, Vermont.

1969 - 1971 Physics and physical science teacher at SDA Secondary School, Bekwai, Ashanti, Ghana.

SELECTED PUBLICATIONS AND PRESENTATIONS

- “Using Seismic Design Specifications to Help Teach Introductory Physics,” (with Robert Chaney and Richard Tseng), contributed paper, American Association of Physics Teachers (AAPT) Summer Meeting, July 22, 2019, Provo, Utah.
- The Physics of Destructive Earthquakes* (with Robert Chaney and Richard Tseng), Morgan & Claypool Publishers / IOP Concise Physics ebook, 2018.
- “Math Machines: Using Actuators in Physics Classes” (with Robert Chaney and Marta Gruesbeck), *The Physics Teacher*, Vol. 56, Issue 1 (January 2018), pp 49-52.
- “Making Kinematics a Dynamic Vehicle for Launching Students into Physics,” contributed paper, American Association of Physics Teachers (AAPT) Summer Meeting, Aug. 1, 2012, Philadelphia
- “Kinematics: A Dynamic Launch into Useful Physics,” Contributed Paper, Southern Ohio Section/AAPT Spring Meeting, April 28, 2012, Lancaster, Ohio
- “Math Machines: Making Mathematics the Foundation of STEM,” contributed paper, MichMATYC Conference, Oct. 8, 2011, Lansing, Michigan
- “Math Machines: Putting Mathematical Functions into Action as the Foundation for STEM,” contributed paper, T³ International Conference, Feb. 26, 2011, San Antonio
- “Connecting Math, Physics, Engineering and Technology,” American Association of Physics Teachers (AAPT) 2009 Summer Meeting, July 29, 2009, Ann Arbor,
- “Using Control Systems as a Basis for Brief Physics Projects,” Invited presentation at the AAPT 2009 Winter Meeting, Feb. 15, 2009, Chicago.
- “Math Machines: Connecting Math, Science and Technology,” Ohio Technology Education Association (OTEA) 2009 Spring Conference, April 4, 2009, Columbus.
- “CBL 2 Activities for Algebra Class,” co-presented with Robert Chaney, Teachers Teaching with Technology (T³) International Conference, March 12, 2004, New Orleans.
- "Land Use Planning on Mars: Linking Math, Astronomy and Social Science," (Co-authored with Kay Cornelius and Brian Thomas,) American Mathematical Association of Two-Year Colleges (AMATYC) Annual Conference, Toronto, Nov. 16, 2001.
- "The Math-Science-Technology Center at Sinclair Community College," Invited presentation, AAPT Summer Meeting, Rochester, NY, July 24, 2001.
- "Using a Calculator-Based Robot to Help Teach Algebra," (Co-presented with Robert Chaney), T³ International Conference, Columbus, March 17, 2001.
- "Building and Using a Calculator-Based Control Circuit." (Co-presented with Robert Chaney and Diana Hunn), Half-day short course at the National Science Teachers Association National Convention, Boston, Mar. 26, 1999
- Full-day, hands-on workshop "Calculator-Based Control Systems" for 25 faculty of East China Normal University and Yu Cai Demonstration School, Shanghai, China, Dec. 16, 1998.
- “Connecting Inquiry-Based Science Instruction with Technical Careers.” (co-presented with Diana M. Hunn and Bonnie L. Coe), National Science Teachers Association (NSTA) National Convention, March 31, 1996.
- “Background Paper on Computers in Physics Education in the U.S.” U.S.-Japan-China Conference on Physics Education, Honolulu, Hawaii, July 22-27, 1989.
- “Computers in Introductory Physics Labs.” Inter-American Conference on Physics Education, Oaxtepec, Mexico, July 20-24, 1987.
- "Calculus, Computers and the Teaching of Physics." Winner of a 1984 Gustav Ohaus-NSTA award for innovation in college science teaching
- "TI 99/4A Microcomputers As Science Laboratory Instruments." *Journal of Computers in Mathematics and Science Teaching*, Vol. 3, no. 1 (Fall 1983), pp. 25-28.
- Towards Scientific Literacy* (co-authored with Allan Kondo), International Institute for Adult Literacy Methods & Hulton Educational Publications, 1978.
- “Piaget & Lamarck,” *Science Education*, Vol. 60, (July-September 1977), pp. 279-286. (Condensed in *Education Digest*, Vol. 63, no. 3 (November 1977), pp. 47-49.)