

## Dr. Frederick J. Thomas

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### EDUCATION

Ph.D. in Science Education from Indiana University with a 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 (Completed training through "Intermediate II," 2005)

ArcVIEW GIS data presentations

Design of printed circuit boards

### 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 – present 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) Retired in June 2005 but continuing to teach part-time.

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

- “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 (T<sup>3</sup>) International Conference, March 12, 2004, New Orleans.
- “My Name Is SAM,” co-authored with Robert Chaney and Wheeler Conover (Southeast Community College, Kentucky), NISOD Conference, May 24, 2004, Austin, Texas.
- “Project-Based Physics Workshop,” co-Leader with David Weaver, Thomas O’Kuma and Curtis Hieggelke, June 24-26, 2004, Lee College, Baytown, TX.
- “Community College Programs for K-12 Teachers” (Co-presented with Jerry Sarquis, Miami Univ.), Ohio Project to Enhance Undergraduate Science Education, Columbus, Nov. 14, 2002.
- “Schmidt Crater: Making Data from the Mars Global Surveyor Accessible to Introductory Astronomy Students,” poster at NASA-OSS Education and Outreach Conference, Chicago, June 12, 2002.
- “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), T<sup>3</sup> 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
- “Calculator-Based Control Systems: Linking Mathematics and Physics to Real-World Applications,” IT Educational Exhibition '98, Hong Kong, China, Dec. 19, 1998.
- 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.)