

Education

- Ph.D. *EXPERIMENTAL NUCLEAR PHYSICS*
 National Superconducting Cyclotron Laboratory / Michigan State University, East Lansing, MI.
 Advisors: Dr. Walter Benenson and Dr. David J. Morrissey
- B.S. *APPLIED PHYSICS, MATHEMATICS MINOR*, Michigan Technological University, Houghton, MI.

Experience

Director of Multimedia Development, Sept 1999 — Present.

Third Millennium Press
 Charlottesville, Virginia.

- Responsible for myself and a small group of developers who are creating a “multimedia learning community” which will bring math students and educators together. As a key member of this small start-up company my duties are numerous, and life has become rather interesting!

Assistant Professor, Sept 1998 — Aug 1999.

University of New Haven Physics and Education Departments
 West Haven, Connecticut.

- Teaching duties in graduate level education include courses related to the sciences and technology. Active participation in the development of a reaccreditation report for the State Department of Education. Advisement for ~ 25 students in the education program.
- Physics instruction consists of the core undergraduate physics courses (calculus and non-calculus). As the Department Coordinator I am responsible for staffing, course scheduling, and programmatic development and revision. Current projects include development of new and innovative methods for integrating education and the WWW.

Lecturer, Jan 1997 — June 1998.

University of Michigan Physics Department
 Ann Arbor, Michigan.

- Responsible for teaching calculus-based introductory physics laboratory to ~160 students per semester. Job duties included 20 contact hours/week of lab instruction, development of course material, and grading of weekly quizzes, “research notebooks,” and formal reports required of the students.
- Developed web-based interactive simulations of the introductory experiments performed during the laboratory courses. This enabled students to further explore the basic physics concepts at their own pace when in-class time became a constraint, and instructors are able to use the simulations during office hours while explaining concepts to their students.

Educational Multimedia Development, Dec 1995 — Present.

*Several organizations including Princeton Plasma Physics Laboratory,
 Oak Ridge National Laboratory, COSI Toledo, Worth Publishers, and Science Curriculum Press.*

- Have created a variety of multimedia applications in a variety of formats ranging from floppy-based material for K-12 students, to college level physics simulations delivered on the WWW and CD-ROM. See “Educational Software Development” for further information.

Educational Software Development

- Design and development of one of the “50 Best Science and Technology Sites of 1998” (Popular Science Magazine, September 1998) that is extensively used by K-12 and higher education teachers. The site (located at <http://www.explorescience.com/>) has been featured at several teacher conferences as an example of implementation of the web for instructional purposes. The site has

been recognized by many organizations including a USA Today Hot Pick, a featured science site by Wall Street Journal Interactive Edition, a listing as a "Top Ten Site of the Month" by Exploratorium, multiple listings in the Classroom Connect magazine, and inclusion on Macromedia's "Main Attraction" promotional CD which showcased the most innovative use of Shockwave technology. Animations from the site were used in a recent TV commercial for Macromedia.

- Developed several educational "modules" (K-12 level) for the IPPEX (Internet Plasma Physics Education eXperience) Site which are being implemented as outreach education. The material is accessible via the WWW and implements Macromedia's Shockwave technology. IPPEX was recently "field-tested" at several high schools in New Jersey and New York. The site has been highly recognized as an innovative method to integrate cutting edge research with basic K-12 education. Similar outreach educational material was created for the ORNL Mouse House which allowed students to breed "virtual mice" on the web and learn about genetics and statistics.
- Have created "Concept Testing" simulations for the 4th edition of Tipler's Physics for Scientists and Engineers which will be available on a WWW site (in August 1999) and will also be included on a CD-ROM that will accompany future editions of the textbook.
- Authored floppy-based interactive material for COSI Toledo (a science museum) that enabled science teachers (K-8) to introduce "small scale" simulations of science exhibits to students who would later explore the full scale exhibits at the museum. A wealth of pre-visit information was also available to the teachers including maps, answers to common questions, and instructions for many science demonstrations that could be done in their classrooms with common household supplies.

Recent Publications/Presentations

- 1) R. Pfaff, "Creating Interactive Content with Macromedia Director," will be presented as a Tutorial Session at the Winter 2000 AAPT Meeting, Kissimmee, FL, January 2000.
- 2) A.P. Post-Zwicker, J. Baron, W. Davis, M. McKay, R. Pfaff, and D.P. Stotler, "An Interactive Model for Teaching Contemporary Physics Topics via the World Wide Web Using Real-Time Data", accepted for publication in the Journal of Science Education and Technology, late 1999.
- 3) R. Pfaff and D. Shuster, "Math Teachers Unite: Free Multimedia on the WWW," invited workshop, Maryland State Teachers Assoc. 132nd Annual Conv., Ocean City, MD, October 1999.
- 4) R. Pfaff, "Shock your Students: Interactive Physics on the WWW," invited talk at the Summer 1999 AAPT Meeting, San Antonio, TX, August 1999.
- 5) R. Pfaff, "Creation of Interactive Web Sites: Two Techniques and their Languages," invited talk at the Summer 1999 AAPT Meeting, San Antonio, TX, August 1999.
- 6) R. Pfaff, "Illuminating the Mind with Physics on the WWW," Worcester Polytechnic Institute Physics Department Colloquium, Worcester, MA, April 1999.
- 7) R. Pfaff, "The Interactive Web: Using Shockwave for Music and Education," invited talk at The First New England Conf. in Uses of the Internet in Music Education, West Haven, CT, April 1999.
- 8) R. Pfaff, "Web-Based Interactive Tutorials for Physics of the Body and Mind: Physics Comes Alive!", presented at the Spring APS/AAPT Meeting, Atlanta, GA, March 1999.
- 9) R. Pfaff, "Computer Technology in the Classroom," presented at the Teachers Internship Training Course, West Haven, CT, December 1998.
- 10) R. Pfaff, "Using the WWW for Physics Lab," presented at the Spring Meeting of the APS/AAPT, Columbus, OH, April 1998.

complete list of publications available on request

Professional Affiliations

American Association of Physics Teachers (AAPT).
 American Physical Society (APS).

References/Collaborators

complete list of professional/personal references available on request