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Web-based Pedagogical Assistance for Under-prepared Teachers of Physics*

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Abstract

Recently President Obama noted a serious concern about secondary science education in the United States. “Yet in high schools, more than 20 percent of students in math and more than 60 percent of students in chemistry and physics are taught by teachers without expertise in these fields.” This problem is not new, so several years ago we began a Web-based effort to address it. The Physics Teaching Web Advisory (Pathway) is an effort to demonstrate the ability to address pedagogical issues of many physics teachers via the Web. Pathway’s “Synthetic Interviews” are a unique way to engage inexperienced teachers in a natural language dialog about effective teaching of physics. These virtual conversations and related video materials are now providing pre-service and out-of-field in-service teachers with much needed professional development, and well-prepared teachers with new perspectives on teaching physics. The database is a growing digital library and now contains about 6,000 different recorded answers and over 10,000 question/answer pairs. An additional component is a collection of videos which can be used directly in the classroom. This collection includes both professional and teacher-produced videos. Unlike YouTube they are screened for usefulness before posting, but also will soon take advantage of the vast resources on YouTube and other similar sites. Pathway is available at <http://www.physicspathway.org>

Paper coming soon. Only abstract for now.

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Dean Zollman Brief Bio

Dean Zollman is the William & Joan Porter University Distinguished Professor, Distinguished University Teaching Scholar, and Head of the Department of Physics at Kansas State University. He has focused his scholarly activities on research and development in physics education since 1972. He has received three major awards – the National Science Foundation’s Director’s Award for Distinguished Teacher Scholars (2004), the Carnegie Foundation for the Advancement of Teaching Doctoral University Professor of the Year (1996), and American Association of Physics Teachers’ Robert A. Millikan Medal (1995). His present research concentrates on investigating how students transfer learning while applying physics to new contexts and the effects of different pedagogies on future teachers. He also applies technology to the teaching physics and to providing instructional and pedagogical materials to physics teachers. Dr. Zollman earned his PhD in Theoretical Nuclear Physics from the University of Maryland – College Park (1970) and his MS (1965) and BS (1964) from Indiana University – Bloomington.