RI Phenomenal Physics-A Guided Inquiry Curriculum for Pre-College Education and Conceptual Physics Instruction at the College Level

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So, you’d like to teach inquiry? The word inquiry has become a buzzword of late, often used by equipment vendors as a promotional tool. As a result, we might as what IS guided inquiry and what is its place in the classroom? How does it differ from laboratory instruction? Are limitations imposed by this methodology and how might we minimize those?

Using exercises gleaned from a textbook authored by the presenter originally inspired by work performed under NSF grant Project INSPIRE, participants explore a hands-on method of instruction that can lead to remarkable levels of retention (as indicated by FCI and CLASS data) and, most importantly, interest in the subject and total lack of apprehension. The curriculum, with only minor modifications in application, can be used effectively by high school teachers offering conceptual physics courses, and at the college level in the areas of teacher preparation and conceptual “General Education” courses. Many colleges and universities are now substituting these and similar inquiry exercises for the more traditional approaches in laboratories for both algebra and calculus based instruction. One of the beauties of the approach is its minimal cost and use of readily available materials. The curriculum is not without a sense of humor, enhancing its acceptance by even the most “physics phobic” students. Motivation is achieved through relevance and enjoyable, hands-on experiences that avoid conceptual conflicts, giving students a sense of accomplishment. Similar to the McDermott’s approach, this curriculum was designed with more flexibility to adapt to a wider range of student populations, including mature students and is anything but “cookbook”.

1. Force Concept Inventory
2. Colorado Learning Attitudes about Science Survey
3. Lillian McDermott, Univ. of Washington, “Science by Inquiry"