COMPILATION: AP physics program critiqued; *Physics Today* article (May 2002)

Date: Sat, 4 May 2002
From: Jon & Sara Fishwild <fishj@INXPRESS.NET>

I just read the May 2002 issue of *Physics Today* (page 48). It contains an article delineating the need to rethink how AP physics courses are taught.

Every last innovation in physics learning is a concept that modelers aspire toward.

It is a very refreshing read and would be, in my opinion, a big step forward in the AP arena.

Date: Sun, 5 May 2002
From: "John S. Denker" jsd@MONMOUTH.COM (forwarded by Jane Jackson)

Here's sort of an outline of a 6-page article in the May 2002 issue of *Physics Today*. The whole article is at <http://www.aip.org/pt/vol-55/iss-5/p48.html>

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A study by the National Research Council makes several recommendations for improving the Advanced Placement program in the US, by Jerry P. Gollub and Robin Spital

The Advanced Placement (AP) program has a major impact on the science experience of many high-school students. It can affect admission to college, course choices and performance in college, and subsequent career decisions. Therefore, it is important to understand the consequences of this program for physics and to ensure its quality. ...

In 2000, 433 000 AP exams were taken in math and science, an increase of almost a factor of three in a decade. ...

Recent advances in the understanding of how people learn [ref] suggest many opportunities to improve the effectiveness ...

** Learning is facilitated when knowledge is structured around major concepts and principles.*
** A learner's prior knowledge is the starting point for effective learning.*
** Awareness and self-monitoring of learning ("meta-cognition") are important for acquiring proficiency.*
** Learners' beliefs about their ability to learn affect their success.*
** Recognizing and accommodating differences in the ways people learn are essential.*
** Learning is shaped by the context in which it occurs.*
** Learning can be strengthened through collaboration. ...*

The College Board should abandon its practice of designing AP physics courses primarily to replicate typical introductory college courses with their exhaustive lists of topics. Instead, the College Board should focus greater attention on helping students to achieve deep conceptual understanding. ...

Effective laboratory work must be an essential part of any high quality advanced physics program. ...