PhysTEC

Major Reference Documents[1]

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In the United States, we have access to a rich array of reports not only recommending the need and urgency for reform in learning and teaching in college science, technology, engineering and, mathematics (STEM) courses, but providing suggestions of mechanisms for enhanced learning based on empirical research. The National Research Council (NRC), an arm of the National Academy of Sciences (NAS), has been a leader in this effort as indicated by a number of reports included in this list. An overall assumption in the USA is that improvement in learning in undergraduate courses will have the crucial characteristics of modeling instruction and learning for students who will become teachers.

NRC (2003). *Improving Undergraduate Instruction in Science, Technology, Engineering, and Mathematics.* Washington, D.C., National Academy Press. <http://www.nap.edu/catalog/10711.html>

NRC (2003). *Evaluating and Improving Undergraduate Teaching in Science, Technology, Engineering, and Mathematics.* Washington, D.C., National Academy Press. <http://books.nap.edu/html/improving _undergraduate instruction/>

NRC (2000). *Educating Teachers of Science, Mathematics, and Technology: New Practices for the Millennium.* Washington, DC: National Academy Press. <http://books.nap.edu/html/educating_teachers/ >

The most recently published series of recommendations, based on extensive evidence from research, about how various stakeholders might contribute individually and collectively---even systematically---to the improvement of teaching in these subject areas.

Glenn Report (2000). *Before It's Too Late* A Report to the Nation from the National Commission on Mathematics and Science Teaching for the 21st Century. <www.ed.gov/americacounts/glenn>

A set of goals and action strategies from the Glenn Commission dealing with ways of improving recruitment, preparation, retention, and professional growth for mathematics and science teachers in K-12 classrooms nationwide.

NRC (2000b). *Inquiry and the National Science Education Standards: A Guide for Teaching and Learning.* Washington DC: National Academy Press. <http://books.nap.edu/catalog/9596.html>

[1] The web sites provided for most of these references will allow downloading or copying of text to use in producing your own documents.

A guide for persons who must understand the expectation of inquiry skills in the National Science Education Standards

ACE (1999) (American Council on Education). *To Touch the Future: Transforming the Way Teachers are Taught. An Action Agenda for College and University Presidents.* Washington, D.C.
<http://www.acenet.edu/resources/presnet/report.cfm >

An action agenda for college presidents that you should recommend to your president.

NRC (1999h). *Transforming Undergraduate Education in Science, Mathematics, Engineering and Technology.* Washington, D.C., National Academy Press.
<http://books.nap.edu/catalog/6453.html>

NRC (1997) *Science Teaching Reconsidered*, Washington D., National Academy Press.
<http://books.nap.edu/catalog/5287.html>

A modern look at undergraduate science courses and improved teaching/learning thereof.

NSF (1996) (National Science Foundation). *Shaping the Future: New Expectations for Undergraduate Education in Science, Mathematics, Engineering, and Technology.* Arlington, VA.
<http://nsf.gov/cgi-bin/getpub?nsf96139>

The major NSF review of undergraduate education, including recommendations for needed reforms in our own undergraduate courses, which would be beneficial for preservice teachers.

NRC (1996). *From Analysis to Action: Undergraduate Education in Science, Mathematics, Engineering and Technology,* Washington, D.C., National Academy Press
<http://books.nap.edu/catalog/9128.html>

A report of an NRC convocation dealing with undergraduate SME&T.

NRC (1996a). *National Science Education Standards.* Washington, D.C., National Academy Press.
<http://books.nap.edu/catalog/4962.html>

The National Science Education Standards describing Science Education Standards for : Science Teaching; Professional Development; Assessment; Science Content; Programs and Systems. The first formal standards describing the appropriate conditions for the teaching and learning of science in the U. S. A.

AAAS (1990) (American Association for the Advancement of Science) *Benchmarks for Science Literacy* New York: Oxford University Press.

<http://www.project2061.org >

A pre-National Science Education Standards work providing a compendium of specific science literacy goals. Available on a CD

AAAS *(*1989). *Science for All Americans*. Washington, D.C. <http://www.project2061.org>

One of the seminal publications providing our common ground for this whole effort at reform

NCEE (1983), (National Commission on Excellence in Education) *A Nation at Risk: the Imperative for Educational Reform.* Washington D.C.: U.S. Department of Education. <http://www.ed.gov/pubs/NatAtRisk>

One of the original document initiating the call for reform. Issues at the change of national administration which lessened its impact**.**