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Preparing Future Scientists and Engineers in High School: Where is the Physics?

DAVID G. HAASE, North Carolina State University

Although high school physics enrollments are growing, most state curricula make it easy for a student to avoid a physics course. Grading and graduation requirements may actually encourage a good student to skip physics. Often the physics course may be taught by a less than qualified teacher. Likewise, teacher licensure requirements and school hiring practices often encourage good teachers not to specialize in physics. I will discuss how such factors affect high school physics enrollments in North Carolina and elsewhere. As university physics instructors we should be aware of these issues and how we can support physics teaching and learning in the high schools. I will also review the activities of the AIP/AAPT/APS Task Force on Teacher Education in Physics, which is completing a review of pre-service and in-service physics teacher preparation programs across the US. These programs come in many forms that respond to the local school environments. They often involve close collaborations of the physics and education departments, flexible and creative curriculum requirements, and some faculty dedicated to shepherding undergraduates into physics teaching. We note that a university program that produces only two qualified physics teachers per year is considered successful. The Task Force is seeking common features of successful physics teacher programs to encourage other physics departments to enhance their own programs. The final report of the Task Force will be presented at the APS/AAPT Joint Meeting in February, 2010.