

21st Century Framework for Science Teacher Preparation: Using Modern Technologies to Affect Science Teaching and Learning

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Abstract: *Modern educational technologies, such as electronic response systems, probeware, interactive white boards, computer simulations gradually enter K-12 schools. At the dawn of the 21st century, there is little doubt that the impact of these and future technologies on our schools will only increase. Yet, our process of preparing future science and mathematics teachers has not changed sufficiently to reflect these developments. Many of our pre-service teachers have not had a chance to develop a Pedagogical Technological Content Knowledge in the SMET areas necessary for successful implementation of educational technologies in their teaching. In science methods courses at the University of British Columbia we began to focus on integrating educational technologies in preparation of science teachers. We actively use these educational technologies in our courses and give multiple opportunities to pre-service teachers to design, implement and evaluate educational materials to be used with these technologies. During the 2011-2012 academic year, more than 80 pre-service and in-service teachers participated in this process. The participants also helped create rubrics to evaluate the quality of educational materials they designed. The workshop will describe how we integrated technologies in science teacher preparation, what challenges we encountered and how we were able to address them. We will also discuss the effects of technology integration on pre-service and in-service teachers' confidence and interest in technology integration in their practice. Workshop participants will experience some of these technologies firsthand and will brainstorm future directions for technology integration in preparation of SMET teachers.*

Keywords: teacher preparation, educational technologies, electronic response systems, science teaching, mathematics teaching