Introduction to Geology: A Major Source of Content Knowledge

Introductory courses play a particularly important role in the preparation of future teachers. Joan Prival (NSF) reminded workshop participants that teachers teach as they were taught. Thus strong pedagogy in these courses is particularly important. In addition to strengthening the pedagogy inintroductory courses in general, workshop participants discussed alternative models for introductory courses for teachers:

- Separate courses designed specifically for pre-service teacher—these may be smaller sections that employ a range of teaching methods, they could be linked to courses in educational methods, or they could include linked discussions of content and teaching.
- Supplementary instruction for pre-service teachers—employing either a lab section or a shadow course, future teachers could receive additional instruction designed to convey best practices by teaching inquiry, constructivist theory, meta-cognition, pedagogical reflection, and other techniques that students could in turn use in their own teaching.
- Courses designed for elementary education students that take an integrated science approach. The strength of this approach is that it reflects the way elementary science is taught and builds connections between the disciplines.

Other Important Roles

Workshop participants discussed several other ways in which geoscience departments can be particularly helpful in preparing or supporting future teachers.

- Recruiting, mentoring and advising future teachers
- Providing research and teaching experiences for future teachers
- Developing strong links between education and geoscience departments
- Supporting alumni in the teaching profession

Suggestions in each of these areas are provided on the workshop website.

Keys to Success

Drawing on her experience with the Centers for Excellence in Teacher Preparation, Joan Prival at NSF offered these characteristics of successful programs.

- Collaboration among STEM and Education faculty
- Involvement of two-year colleges
- Multi-faceted collaboration between institutions of higher education and K-12 schools
- Reformed content and methods courses
- Integration of technology
- Faculty development and in-service teacher professional development
- Recruitment/future teacher conferences
- Mentoring
- Early field experiences in schools
- Research experiences
- Support through the transition from school to work

Workshop participants provided essays describing their programs which contain examples of these critical ideas.

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