

SUMMARY OF FINDINGS

3. Barriers to Classroom Implementation and Teacher Training

Participants in the survey identified barriers for all 26 concepts. From the five choices offered, three barriers made the biggest difference in preventing introduction of new content.

Most Influential Barriers to Integration

- Inappropriate at this grade level
- Not enough time in the curriculum
- Lack of teacher preparation

In their written comments, teachers explained the barriers and described others that block both classroom implementation and expansion of their own content knowledge.

First of all, teachers made clear that some of the 26 concepts are simply not appropriate for their students, especially at the middle school level. Their open-ended comments clarified what “not appropriate” meant to them – too difficult for students who have not yet mastered fundamental concepts, not included in the Illinois Learning Standards or Professional Teaching Standards, and not tested by the ISAT and PSAE. According to one teacher, “Many students who enter high school have very little experience with science. Some have only memorized facts; others have experienced science as projects. Many have very poor reading skills. The disparity in reading levels and science experiences make it difficult to make science engaging and relevant.”

Teachers’ written comments also clarified problems with time. Not only over-crowded curricula, but also teaching assignments get in the way. “Since I am in a small school, I teach five different courses – Algebra II, Geometry, Calculus, Advanced Mathematics, and Physics. As much as I would like to integrate emerging technologies into my curriculum, I simply do not have the prep time.” Moreover, “...requiring only two years of science for graduation makes an impossible dream out of learning all that is and should be expected.”

State and local policies can also prevent implementation of new material. As one teacher explained, “No Child Left Behind has produced a curriculum that is driven by the PSAE. Most people believe that if a topic is not on the PSAE, then it isn’t important.”

Lack of materials and equipment made teaching advanced mathematics and science extremely difficult. One teacher’s poignant question, “What do I do when my skeleton only has one leg and half an arm?” was echoed by dozens of teachers who lacked resources for graphing calculators, software and hardware, and tools for hands-on science.

SUMMARY OF FINDINGS

Barriers to Classroom Implementation and Teacher Training (continued)

Additional barriers included state and local policies such as the content on state tests, the emphasis on reading and math to the exclusion of science, and cumbersome curriculum and textbook review processes. Teachers described experiences with ten-year old textbooks. One of the most significant barriers was lack of student preparation for middle school and then high school due to deficiencies in reading, mathematics, and lower level science.

Summary of Preferences for Learning More

Teachers expressed difficulty in finding training opportunities and teaching materials. Among all teachers who completed this survey, the number interested in learning more about specific concepts ranged from a high of 47% to a low of 8%. Their comments indicated that lack of interest also related to the concepts not being appropriate for the level of students they teach, the lack of resources to pay for professional development, and/or absence of connection with state standards and assessments.

Preferred Methods to Receive Information About Critical Technologies

Web site	36%
Special conference or seminar	25%
Written materials by mail	19%
In-service programs at school	18%

Teachers were clear, however, that they were willing to try a wide range of professional development methods. They were especially interested in the efficiencies of the Internet for learning about new content and finding teaching materials. A number asked for listservs that would share content and lesson plans about the critical technologies. Others preferred traditional methods such as professional journals and meetings. "With the cost of fuel and the distance I must travel to get to most conferences, it is difficult to expand my knowledge. The Internet is great, but it is nothing like a good presenter at a seminar." Science teachers were far more likely than mathematics teachers to use the Internet to gain knowledge about their fields.