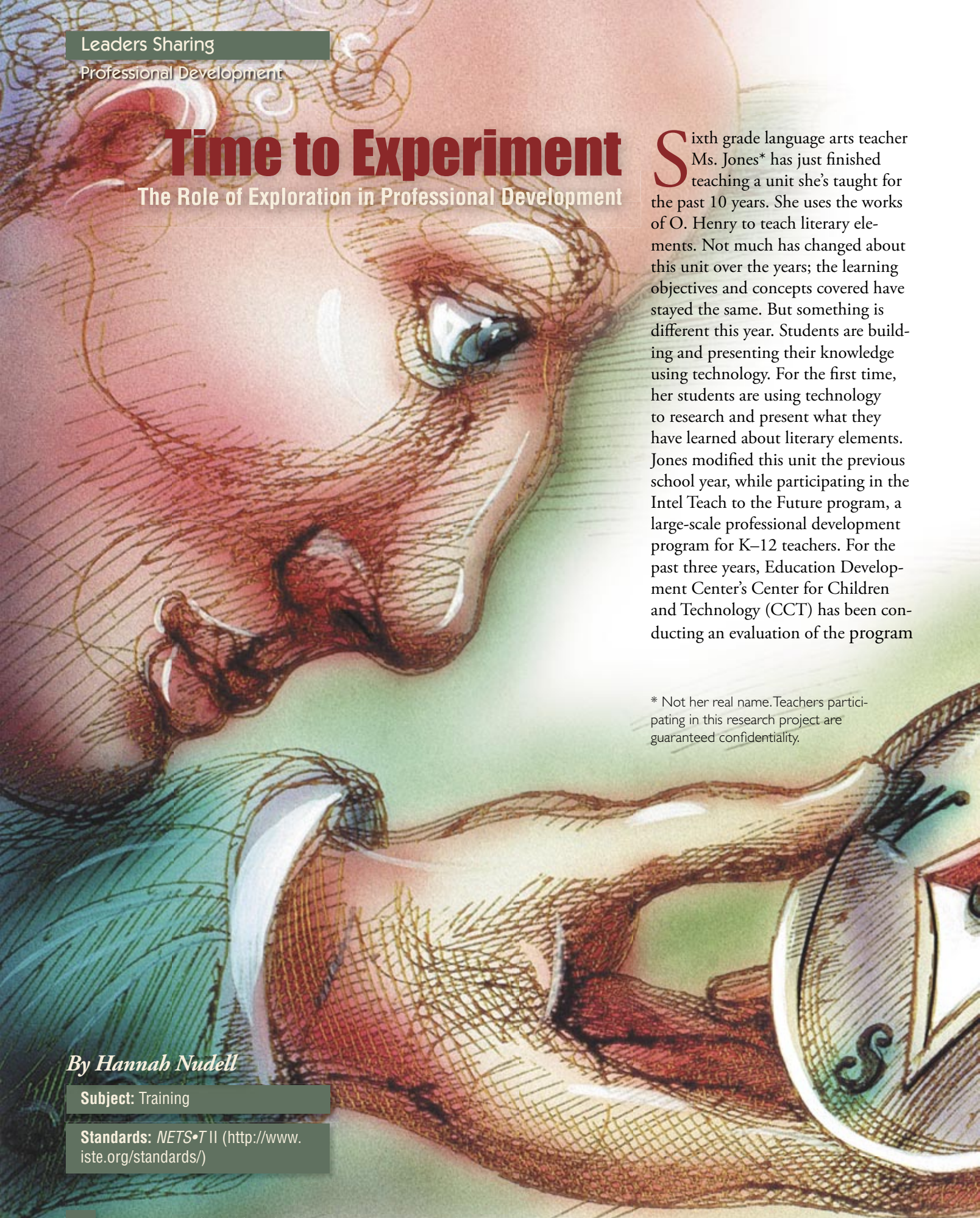
Time to Experiment

The Role of Exploration in Professional Development



Sixth grade language arts teacher Ms. Jones* has just finished teaching a unit she's taught for the past 10 years. She uses the works of O. Henry to teach literary elements. Not much has changed about this unit over the years; the learning objectives and concepts covered have stayed the same. But something is different this year. Students are building and presenting their knowledge using technology. For the first time, her students are using technology to research and present what they have learned about literary elements. Jones modified this unit the previous school year, while participating in the Intel Teach to the Future program, a large-scale professional development program for K–12 teachers. For the past three years, Education Development Center's Center for Children and Technology (CCT) has been conducting an evaluation of the program

* Not her real name. Teachers participating in this research project are guaranteed confidentiality.

By Hannah Nudell

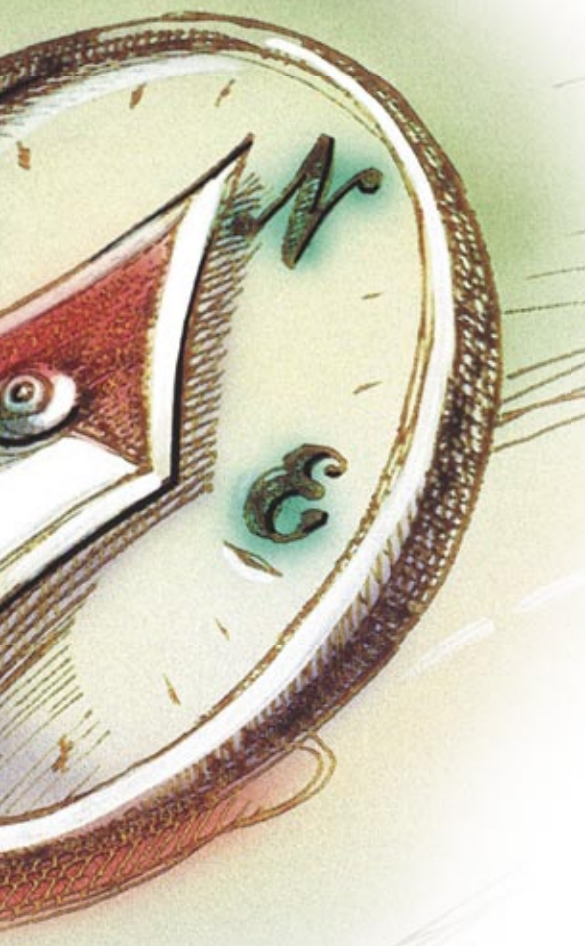
Subject: Training

Standards: *NETS•T* II (http://www.iste.org/standards/)

in the United States. This article draws from my participation on the research team.

The Effects of Training

Although Jones doesn't know everything there is to know about technology, she has long considered herself to be computer literate. But before this training, she had rarely used technology in her teaching or asked her students to do so. She had never had a chance to explore how she could incorporate the technologies she does know into her teaching, how her familiarity with the Internet could be a valuable resource for lesson planning and creating lessons focused on student-driven inquiry, or how her word processing skills could be built on to explore other publishing software programs, giving her more options for integrating technology into her lessons.



What is striking about Jones' account of her experience with the Intel Teach to the Future program was that the training had provided her, a teacher who was unsure of how to bring her existing technology skills into the classroom, an opportunity to explore different curricular uses of technology. I use *explore* here to mean engaging in an activity simply for the pleasure of achieving mastery, free of any immediate expectation to perform or produce anything for an audience. Although participants move through a structured and complex professional development curriculum, that curriculum allows them to experiment with meaningful technology integration and to investigate both new and familiar software tools in the context of a project-based pedagogy. What Jones and many teachers like her may need most to become comfortable with and expand and improve their use of technology is this opportunity to explore, check out new tools, ask questions of colleagues, and experiment with new ideas and new resources.

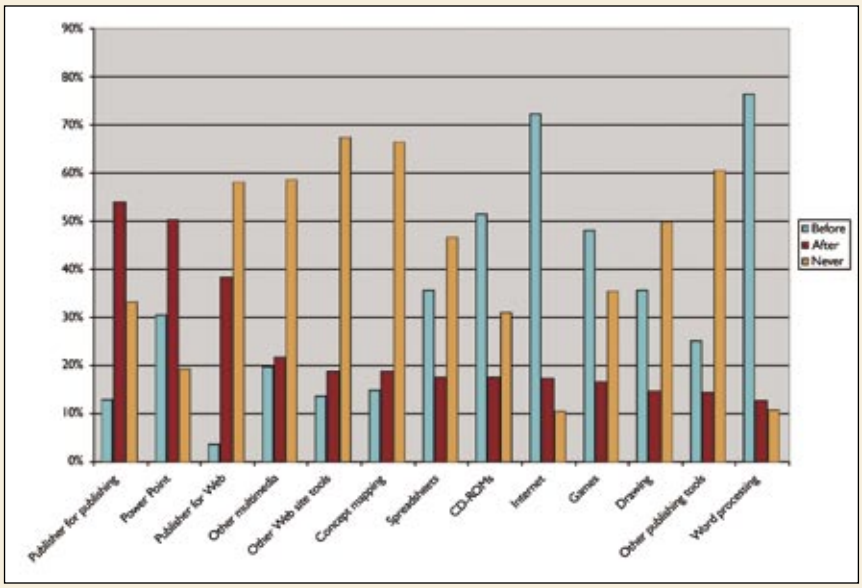
The Value of Exploration

Teachers, like students, come into any new situation with a range of skills, abilities, and experiences, and are in a continual process of learning. One of the major challenges in developing effective professional development offerings is meeting all participating teachers at their particular levels of skill, motivation, and prior knowledge, while also making the content engaging and relevant to what goes on in each teacher's classroom. A growing number of teachers, like Jones, have some technology skills and are likely to use computers in their personal lives, but have not yet brought technology into the everyday work of their teaching. In our evaluation, the research team found that the approach used in this program, which emphasizes exploration, helps teachers to make the transition from knowing about computers to actually using them in their classrooms. Teachers talked about being allowed to sit down and experiment with technology in a way they had not previously been invited to do—having the opportunity to create unit plans that accommodate the realities of their classrooms—and the experience of gradually increasing their level of comfort

What Is the Intel Teach to the Future Program?

This professional development program uses a train-the-trainer model. To date, the program has trained more than one million teachers in 32 countries around the world, including more than 180,000 in the United States. Master teachers from local districts go through the training themselves. They then deliver the training to cohorts of teachers in their districts.

The curriculum involves 40 hours of in-class training and a minimum of 20 hours of out-of-class work. The training can be delivered in one week, over several weeks, or even over several months. During this time, teachers create a complete unit plan they can implement in their classrooms and that involves student use of multiple technology tools, including presentation software, the Internet, and desktop publishing tools. Over the course of the training, teachers design their unit plans, create model student work, and prepare assessment rubrics aligned with curricular standards, using a pedagogy that encourages inquiry-oriented, project-based teaching and learning. As they develop these materials and concepts, teachers are introduced to widely available Microsoft software programs as well as Internet research methods.



Software teachers used before and after the training program.

with technology over the course of the training. We found that teachers leave the training feeling significantly more prepared to use technology than they did before the training:

- Eighty-eight percent of teachers felt "moderately" or "very well" prepared to integrate technology into their curriculum/integrate technology into the grade or subject level they teach.
- Eighty-eight percent of teachers felt "moderately" or "very well" prepared to support their students in using technology in their schoolwork.
- Teachers are using a wider range of software with their students. In addition to an increasing number of teachers using software featured in the training, we found a notable increase in the number of teachers using other software programs.

In creating a professional development program, it's important to recognize that we are all lifelong learners and to identify the conditions that are most conducive for teachers to learn and experiment with new skills, knowledge, and pedagogy. Building knowledge takes time, and needs to be reinforced with hands-on activities, collaborative exploration of new materials, and the freedom to create activities, make mistakes, revise work, or try something new. By engaging in this kind of active learning and making a product that responds to a need the teacher has defined (improving an existing lesson or unit), teachers gain a better understanding of how to help their students build new knowledge in similar ways. The approach used in this program invites teachers to do this throughout the training; instead of exploring technology as an end in and of itself. Teachers are encouraged to explore meaningful uses of technology as part of a process to develop a comprehensive unit plan that is tied to project-based pedagogy. For example, a middle school math teacher spent time during the training trying to incorporate technology into a lesson on the stock market. He added a number of technology components to an investment simulation he does with his students. The lesson now includes students conducting Internet research on companies in which to invest, creating a PowerPoint presentation on their stock portfolio, and developing a newsletter to report on the companies they researched.

Supporting Teachers' Learning

Creating an environment in which teachers feel supported and comfortable trying new things can be difficult. With extensive guidance from a master teacher, a group of peers and a detailed professional development curriculum, teachers can pursue largely self-directed goals, working on a lesson plan of their own choosing while knowing support is available to them. Teachers can focus on their own interests and professional pursuits, learning actively, discussing their ideas with colleagues, and reflecting on the types of activities they may want to add to their teaching repertoire.

The following features of the program are particularly important to the program's ability to create a productive learning environment for teachers. You may notice that these qualities are also ones frequently mentioned in the research on effective professional development.

Treat Teachers as Active Learners.

A range of research has demonstrated that, just like their students, teachers learn best when they are given opportunities to engage in active learning experiences. In this case, teachers were invited to create, review, and revise a unit plan that incorporates technology in multiple ways. The process of adding this new element (technology integration) into a familiar activity (writing curriculum) created a context for learning in which teachers could gradually test the opportunities technology might offer their students, while also creat-

ing something of immediate relevance and value to them (a revised and improved unit plan). One teacher revamped a lesson she designed on lifestyles where students choose a career, learn the income they will earn, and then spend that money to buy and furnish a house and to construct a lifestyle. Technology components she added to the lesson include students conducting Internet research on career options and related incomes; creating a PowerPoint presentation to depict their profile, finances, and a floor plan and picture of their house; using Publisher to make a mock housewares catalog; and developing a classwide Web page illustrating a virtual neighborhood out of all the students' homes.

Provide Opportunities to Collaborate with Peers. The Intel Teach to the Future curriculum emphasizes group work. Teachers participated in group discussions, reviewed and commented on each other's works in progress, and often developed their unit plans in small groups. These kinds of activities help establish a supportive environment in which teachers can learn from each other as well as from the trainer or the printed curriculum. We found that teachers often sought to carry out sustained collaborations with others who taught similar grade levels or complementary content areas, but they also were likely to share ideas and information throughout the whole training group. Through these kinds of communication, teachers began to establish real learning communities and increased the likelihood that they would continue to share knowledge and support one another in the future.

Train over an Extended Period of Time. Our evaluation found that the length of this training was an important strength of the program, providing the time teachers need for inquiry, reflection, and collaboration. Although many teachers were intimidated by the idea of 40+ hours of training, by asking teachers to carve out 60 hours for this learning experience, the program ensures that teachers will have the chance to do more than listen to a lecture or briefly try out skills presented to them by a trainer. One teacher commented that she appreciated the speed of the training: "I usually learn quickly, but I needed that slow pace to work through these new programs." Over the course of the training, teachers have time to establish a supportive environment where they can ask questions, build on one another's knowledge, and learn at their own pace. For many teachers, this was the first time they had been able to spend a significant amount of time exploring different uses of technology and, more important, developing a unit plan drawing on those tools that they could implement in their classroom.

Conclusion

The structure and core features of any professional development program are major determinants of its effectiveness. Our evaluation suggests that for many teachers, the intensity of the time commitment and the amount of work required to complete the training actually helped them engage deeply enough with the core ideas of the training to have an effect on their instructional use of technology. The Intel Teach to the Future program has given these teachers permission to spend time exploring, pursuing new ideas, and testing new skills as well as the opportunity to come up with their own ideas about how to use technology with their students. As one teacher reflected after having participated in the program, "It's an ongoing learning process. I look forward to learning more things, doing more advanced projects, [and] allowing the students more flexibility in what they do."

Sustaining the Learning

The following are some general recommendations to help sustain the effects of staff development efforts:

- Assess and build on teachers' skill level and knowledge to make the training coherent.
- Provide ongoing, extended training that goes beyond a "one-shot" seminar to allow teachers the time to explore new skills and uses as well as build relationships that will help support technology use in the future.
- Give teachers the time or incentive to participate in prolonged staff development.
- Assess teachers' curricular goals and objectives to make the training content specific/relevant to their classroom.
- Make the training adaptable to accommodate teachers of diverse disciplines, grade levels, and teaching conditions.
- Have teachers make a product they can use in their classroom.
- Create activities for peer collaboration and model ways teachers can collaborate in the future.
- Provide follow-up to the training to sustain interest and continual learning.

Resources

Intel Teach to the Future: http://www.intel.com/education/

EDC's Center for Children and Technology: http://www.edc.org/cct/

Hannah Nudell has been working in education research for the past four years. She is currently a researcher at Education Development Center's Center for Children and Technology.