Designing Professional Development

immediate feedback, frequent assessments, shared assignments, and small study teams will create a cyber-community among learners” (Killion, 2002, p. 15). Creating this motivation and community of collaborative learners focused on specific and clearly identified goals is crucial to the success of technology-based learning. E-mail and other electronic communication, such as chat rooms or listservs, however, often lack the goals of other formats, such as online courses. Without a competent facilitator or guided instruction, these electronic forms of communication can become little more than places to converse, with limited learning taking place. Facilitators help initiate, contribute to, moderate, and sustain dialogues carried out online and assist in linking teacher reflection with practices in the classroom.

There are disadvantages to using technology for professional learning. Lack of appropriate hardware, software, or technology can impede teachers’ access to the medium. This is an important equity issue. Although technology improves access for those who are geographically dispersed, such as teachers in rural areas, the economically disadvantaged have less access than those with technology already in their homes and schools. This is no different from non-technology-based professional development—those who are the “haves” receive more opportunities, whereas those who are the “have-nots” receive fewer opportunities.

For those teachers who “fall behind” in an online course, it is often more difficult to catch up without face-to-face interactions and guidance. For some teachers, technology is simply not an effective means of learning or communicating. They suffer from a lack of social and visual cues that normally accompany personal interactions, and this can interfere with learning. In addition to anticipating teachers’ individual learning styles, it is important to consider their individual perceptions. For example, the Professional Development Laboratory (PDL) at New York University’s School of Education found that when it incorporated electronic networking into its mentoring program, the results were not as expected. The main reason for the lack of success was “the project hadn’t taken into account the teachers’ feelings about technology, a fear of writing, or the pulling of existing networks, such as school-based teacher communities or memberships in national organizations” (Goldenberg & Ousen, 2002, p. 29).

To address some of the disadvantages noted here, many programs have learned the value of combining technology-based learning with in-person learning in which participants have the opportunity to develop relationships face-to-face, engage in activities and discussions at their leisure through online formats, and conduct collaborative study, such as examining student work in real-time, online formats. The description of the TLRISL program described previously is one example.

For some forms of technology, there is a limit to the number of people that can effectively interact at any one time. For example, many online courses have found that they must limit their course enrollment to 30 or fewer participants if both the participants and the facilitators are to benefit from the interactions. This can make it difficult to scale up online courses to reach more teachers. This is especially true when one of the main goals of technology-based professional learning experience is to develop a learning community with in-depth discussions.

Technology is being touted by many as a critical ingredient in education for the future. Although it clearly holds great potential, professional developers must think carefully about when and where it is most appropriate and how it can extend the ability to create effective professional learning experiences for teachers. According to NSDC’s Dennis Sparks, “The ultimate test is whether the achievement of all students is increased because electronic learning deepens teachers’ content knowledge, broadens the range of research-based instructional strategies available to them, and helps them use classroom assessment more effectively” (quoted in Richardson, 2001, p. 6).

Resources

Eisenhower National Clearinghouse (ENC) and National Staff Development Council (NSDC). (2002). By your own design: A teacher’s professional learning guide [CD]. Columbus, OH: NSDC.

Maine LabNet, a Web-based professional development forum support by the Maine Mathematics and Science Alliance (MMSA) (www.mmsa.org).


Workshops, Institutes, Courses, and Seminars

In the summer of 1992, Tony Sanchez and the other mathematics teachers at his school participated in a four-week summer institute held at the school. The institute was intended to help them develop their knowledge of algebra. The instructor, in this school year, regularly used the algebra pieces, which were available in each classroom, to engage teachers in exploration of traditional algebraic concepts and procedures from new perspectives. The teachers often worked in small groups and then shared their solution strategies with the whole group. Following an activity,
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the instructor and teachers would discuss both what the teachers had done and what
the instructor had done to support their learning. They would talk about how the
algorithm pieces had been used, the kinds of questions that arose, and the decisions
the instructor had made.

Workshops, courses, institutes, and seminars are structured opportunities
for educators to learn from facilitators or leaders with specialized
ease as well as from peers. They bring together educators from the
same school or district or from different locations in a region or the country
for common experiences and learning. They provide opportunities for par-
ticipants to focus intensely on topics of interest for weeks (e.g., institutes) or
for an extended period of time (e.g., courses). Workshops and seminars tend
to be offered for shorter periods of time and address more discrete learning
goals, such as learning to use a particular set of lessons or try a new assess-
ment strategy. Workshops typically include more experiential or hands-on
activities through which participants engage with new ideas and materials.
Seminars tend to be more oriented to sharing knowledge and experiences
through discussions and reactions to others’ practice or research results.
Depending on the learning goals for a particular group, a professional
developer might choose to combine one or more of these strategies, such as
combining a multiday institute with a quarterly seminar series.

Whether implementing a workshop, institute, course, or seminar, it is
critical that each be designed to include principles of effective professional
development. Too often, they are characterized by passive learning or “sit
and get” approaches that do not meet the needs or the interests of the partic-
ipants. In the book Designing Successful Professional Meetings and Conferences
in Education (Mundry, Britton, Ratzen, & Loucks-Horsley, 2000, pp. 6-8), the
authors identify features of effective learning sessions like workshops, in-
stitutes, courses, and seminars. These are:

- Quality of leaders and facilitators: The facilitators know their content
well and are skilled in effective adult learning methods. They under-
stand and respond to the goals of the participants.

- Ongoing evaluation: Sessions are evaluated daily and feedback is
used to make adjustments and enhance future sessions.

- Quality of content and design: The content is “credible, sound, cur-
current, and interesting.”

- Resources: Participants get access to print or electronic resources that
extend their learning and provide them with reference material to use
in the future.

- Products: Participants are guided to develop artifacts or products
that reflect what they are learning. These include plans, conceptual
frameworks, assessments, or maps of their progress or thinking.

- Right audience: The session communicates clearly about its goals and
purposes to target the right people for participation.

Optimal workshops, institutes, courses, and seminars also reflect what
is known about effective adult learning (Mundry, 2003; Regional Educa-
tional Laboratories, 1995), including the following:

- Clear purpose and outcomes: Participants know the goals, expecta-
tions, purposes, and benefits of the session(s).

- Value: The session offers value to the participants by addressing their
goals for learning and growth.

- Variety: A variety of learning activities are combined that engage par-
ticipants and appeal to different learning styles.

- Networking: Session(s) provide time for participants to interact with
each other and build relationships with new colleagues.

- Effective use of time: Effective sessions make “every minute count.”
For example, lunch discussions can be tailored to help participants
process the content of the morning and to network.
Key Elements

Clearly stated goals are communicated to the participants. Leaders of effective workshops, institutes, seminars, and courses communicate with participants about the goals of the learning experience prior to and during the sessions. They receive input from learners before setting goals so that the learning experience addresses the learners' needs.

A leader or facilitator guides the participants' learning. The leader or facilitator also guides and supports the participants' learning, often by being a primary source of expertise or bringing in other information through readings, consultants, the participants' experiences and knowledge, and structured experiences.

Group structures necessitate a collegial learning environment. Because these strategies are intended for groups of people, the learning environment should be designed so that it is collegial for participants to learn from one another and from the leader of the session. Often disparaged as the "traditional form of professional development," workshops, courses, institutes, and seminars, like other professional development strategies, can range in quality, depending on the extent to which they reflect the principles of effective professional development and incorporate effective adult learning strategies. At their best, they provide adult learners with important and relevant new knowledge and opportunities to try new ideas, practice new behaviors, and interact with others as they learn. The following paragraphs describe what these strategies look like "at their best."

Workshops, courses, seminars, and institutes can use the "training" model, which has a strong research base for helping teachers learn new behaviors that contribute to improved student learning (Joyce & Showers, 1988). This model includes the following steps: explanation of theory, demonstration or modeling of a skill, practice of the skill under simulated conditions, feedback about performance, and coaching in the workplace. An example of the application of this model would be training in cooperative learning strategies for use in science and mathematics teaching.

These strategies also lend themselves to a teaching or learning model for developing conceptual understandings, such as those on which many science curricula are based. For example, a model developed by the National Center for Improving Science Education (NCISE) suggests the following four stages: invite, explore, explain, and apply (Lacocks-Horsley et al., 1990). These stages can help structure a multi-day institute, a weekend workshop, or seminar series, or a course. Table 5.2 indicates how professional developers can structure appropriate activities at each stage.

For example, during a five-day professional development institute on inquiry in environmental education, participants might engage in a variety of activities such as a beach area (in)environmental education curriculum materials (explore), discussion of that analysis with regard to questions of congruence with the National Science Education Standards (NRC, 1996a), clarification of the scientific concepts and processes embedded in the activities, and an opportunity to share insights and apply (apply and recycle).

Another conceptual model for learning goals, the "5 Es Model" (Bybee, 1997), reflects a similar flow of learning phases that includes engagement, exploration, explanation, elaboration, and evaluation. Either the NCISE or 5 Es Model can be used by professional developers to guide the design and research and practice about effective workshops and seminars as strategies for adult learning.

By nature, courses are ongoing, which provides time for teachers to practice new ideas and behaviors and return to the course setting to reflect time for these important reflections and help participants generate clear, concise ideas about how they will apply what they learn. Like workshops, seminars, and institutes are designed to include a variety of modes of writing, analysis of case studies, role playing, and small group discussions, helping students to solve problems and explore questions. Learners have ample time for follow-up opportunities to explore the application of their learning, solve problems, and generate new ideas for teaching.

In addition, the most effective workshops, institutes, seminars, and courses are designed to include a variety of learning and engaging activities. As Mundry and associates (2000, pp. 25-40) describe, there are diverse learning activities that engage participants in active learning, including breakout sessions, carousel brainstorming, case study, commitment statements, consensual decision making, demonstration, dialogue and discussion, ground rules, fishbowl, group reflection, ice breakers, interviews, observers, panel presentations, poster sessions or exhibits, product development, questionnaires, readings, review or reflection worksheets, "see-
### TABLE 5.2 What the Professional Developer or Designer Does

<table>
<thead>
<tr>
<th>Stage</th>
<th>Consistent With the Model</th>
<th>Inconsistent With the Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Invitation</strong></td>
<td>Creates interest</td>
<td>Explains concepts</td>
</tr>
<tr>
<td></td>
<td>Generates curiosity</td>
<td>Provides definitions and answers</td>
</tr>
<tr>
<td></td>
<td>Stimulates dialogue</td>
<td>States conclusions</td>
</tr>
<tr>
<td></td>
<td>Raises questions</td>
<td>Provides closure</td>
</tr>
<tr>
<td></td>
<td>Elicits responses that uncover what the teachers/learners know or think about the concepts/topics</td>
<td>Lectures</td>
</tr>
<tr>
<td><strong>Exploration, discovery, and creativity</strong></td>
<td>Encourages the teachers/learners to work together without direct instruction from the professional developer</td>
<td>Provides answers</td>
</tr>
<tr>
<td></td>
<td>Provides or stimulates multiple opportunities or experiences to explore an idea, strategy, or concept</td>
<td>Tells or explains how to work through the problem</td>
</tr>
<tr>
<td></td>
<td>Observes and listens to the teachers/learners as they interact</td>
<td>Provides closure</td>
</tr>
<tr>
<td></td>
<td>Asks probing questions to redirect teachers/learners' investigations and dialogues when necessary</td>
<td>Tells the teachers/learners that they are wrong</td>
</tr>
<tr>
<td></td>
<td>Provides time for teachers/learners to grapple with problems and challenges</td>
<td>Given information or facts that solve the problem</td>
</tr>
<tr>
<td></td>
<td>Acts as a consultant to teachers/learners</td>
<td>Leads teachers/learners step by step to solutions</td>
</tr>
<tr>
<td><strong>Preparing explanations and solutions</strong></td>
<td>Encourages teachers/learners to explain concepts and definitions in their own words</td>
<td>Accepts explanations that have no justification</td>
</tr>
<tr>
<td></td>
<td>Asks for justification (evidence) and clarification from teachers/learners</td>
<td>Neglects to solicit teachers'/learners' explanations</td>
</tr>
<tr>
<td></td>
<td>Formally provides definitions, explanations, and new labels (e.g., through lectures)</td>
<td>Introduces unrelated concepts or skills</td>
</tr>
<tr>
<td></td>
<td>Uses teachers'/learners' previous experience as the basis for explaining concepts</td>
<td></td>
</tr>
</tbody>
</table>


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sonal partners," simulations, small group activities or exercises, speeches or formal presentations, video viewing, and writing a "think piece."

### Implementation Requirements

**Expert knowledge.** Knowledgeable people must be available to provide or facilitate access to the knowledge that learners will gain during the sessions.

**Time away from the workplace, with arrangements for substitutes or stipends.** Most workshops and seminars meet during regular school hours and require that a teacher have a substitute for the classroom and teachers usually participate in courses and institutes during nonteaching time (such as the summer or evenings and weekends).

**Curriculum or syllabus.** Learners should know what content they will learn through the professional development experience.

**Access to resources and materials.** Depending on the content of the course, workshop, institute, or seminar, classroom materials, student work, texts, or articles are needed.

**Incentives.** There are a variety of incentives that can be offered for participation, such as teachers being given stipends when time is taken beyond regular school hours or graduate or professional development credit.

### Examples

The Math Learning Center at Portland State University offers a series of courses related to the Visual Mathematics curriculum. The courses are designed to help teachers become familiar with visual thinking (a hallmark of the curriculum) and its role in the teaching of mathematics. They include readings related to philosophy of the curriculum and current mathematics reform and considerable exploration of mathematical content based on a constructivist approach to learning. The courses put teachers in the role of learner and give them opportunities to explore mathematics concepts and connections, discuss solutions and strategies with their colleagues in a manner similar to that which they would use with their own students, and develop powerful representations or mathematical abstractions. The courses are offered nationwide by workshop leaders (often classroom teachers) who have considerable personal experience using the curricular materials.

In San Diego, California, at a five-day workshop conducted by a mathematics educator from San Diego State University, elementary school teachers learn geometry through immersion in mathematical problem solving. The workshops are designed to increase teachers' understanding of geometry by exploring two- and three-dimensional shapes. The mathematics
educator has designed the explorations so that teachers engage in learning in the ways in which they will teach in their classrooms. They engage in a variety of learning situations, including small group discussions and sharing of ideas between groups.

At the beginning of the workshops, the facilitator asks teachers to respond to the questions, “What is a cube? What are the characteristics of a cube?” The responses reflect what individual teachers and the group as whole already know and understand about the content. Based on the responses, the facilitator has a better understanding of how to guide their subsequent learning. The facilitator then asks the teachers to find all of the combinations of “nets”—the cube laid out. Using manipulatives, small groups begin exploring and creating tables and charts to document the nets that they identify.

As the teachers work, the facilitator moves to each table and asks probing and clarifying questions. When groups claim that they have identified all of the possible nets, the facilitator asks, “How do you know that you are done? What is the proof that you are done?” Often, this leads into discussions concerning how to respond to students who claim they are done. Teachers delve into assessing students’ understanding and discuss how to determine when students are simply applying an algorithm or are grappling with the underlying concepts.

Throughout the five-day workshop, teachers explore important mathematical content, develop their own ideas and solutions to problems, and interact with each other and with the facilitator in a collegial environment. These workshops immerse teachers in effective adult learning strategies and help them apply their new learning to their teaching of geometry in their own classrooms.

Commentary

One-time workshops or seminars are unlikely to result in significant, long-term change in teacher practice (Fullan, 1991; Joyce & Showers, 1988; Little, 1993). Change requires multiple opportunities to learn, to practice, and to reinforce the use of new behaviors. In addition, the sessions should incorporate opportunities for teachers to surface and challenge their existing beliefs and assumptions and resolve conflicts that result when new ideas and practices do not fit with existing beliefs. Too often workshops, institutes, and courses focus only on adding new skills and methods without helping teachers to understand underlying beliefs that support their use or help them know what practices they should discard as they take on new approaches. Although a single workshop may be a good kick-off for learning and can result in new knowledge or awareness on the part of participants, additional opportunities are needed for producing meaningful change in beliefs and teaching behaviors.

As stand-alone strategies, workshops, institutes, courses, and seminars fall short of providing a well-rounded professional development experience. It is wiser to combine workshops and courses with other strategies to enhance the learning experiences of the participants. For example, one workshop on mathematical pedagogy is insufficient for teachers to alter their practices. They also need opportunities that help them to translate their learning into practice (e.g., by modifying their curriculum), to actually use their new knowledge (e.g., with support from coaching), and to reflect on their practices (e.g., through examining student work resulting from the use of the new practices). When the principles of effective professional development are incorporated into the design of workshops, institutes, courses, and seminars and are then combined with other strategies, they yield greater benefits.

Resources


