

SECTION 3

MODELS AND BEST PRACTICES IN TEACHER PROFESSIONAL DEVELOPMENT

GUIDING QUESTIONS

- What are the needs of teachers in our country, and how will teacher professional development (TPD) address these needs?
- Which of the three models of TPD are most appropriate to the needs of our teachers?
- Which models are currently being used in our schools?
- How can ICTs improve and extend current or projected TPD efforts?

SUMMARY

To be effective and successful, teacher professional development must be of high quality and relevant to teachers' needs. No amount of ICT can compensate for TPD that lacks these characteristics.

TPD is the tool by which policymakers convey broad visions, disseminate critical information, and provide guidance to teachers. Effective TPD begins with an understanding of teachers' needs and their work environments—schools and classrooms. TPD then combines a range of techniques to promote learning; provides teachers with the support they need; engages school leadership; and makes use of evaluation to increase its impact. Essential techniques include mentoring, teamwork, observation, reflection and assessment. TPD programs should engage teachers as learners—typically involving the process of “modeling.”²

When computers are involved, TPD programs must address not only teachers' technical skills, but also their concerns about logistics, about how to use computers with students, and about risks to their status in the classroom. Successful computer-supported or computer-focused TPD provides teachers with hands-on opportunities to build technical skills and work in teams while engaging them in activities that have substantial bearing on their classroom practices or on other aspects of the school workplace.

TPD can be divided into three broad categories:

■ **Standardized TPD**

The most centralized approach, best used to disseminate information and skills among large teacher populations

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- Professional Development vs. Training
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² Modeling is an instructional method in which teachers experience the kinds of learning that they are expected to implement in the classroom. Design of TPD might, for example, have teachers working in pairs or teams to help build their understanding of collaborative learning.

■ Site-based TPD

Intensive learning by groups of teachers in a school or region, promoting profound and long-term changes in instructional methods

■ Self-directed TPD

Independent learning, sometimes initiated at the learner's discretion, using available resources that may include computers and the Internet

Standardized TPD includes the Cascade model, frequently used in TPD programs that involve ICTs. In the Cascade model, one or two “champion” teachers at a school might attend centralized workshops to build computer skills or learn about integrating computers into teaching and learning. When they return to their schools, these champion teachers provide TPD to their colleagues that *also* builds computer use and integration skills.

Different approaches to TPD can complement each other, and can be implemented in a variety of forms, enabling TPD programs to grow to reach large numbers of teachers while supporting teachers in their efforts to improve student learning. *However, site-based TPD, since it addresses locally based needs and reflects local conditions, should be the cornerstone of teacher development across the education system.*

UNDERSTANDING PROFESSIONAL DEVELOPMENT

Teachers need a wide variety of ongoing opportunities to improve their skills. TPD (also known as “in service” or “teacher education”) is the instruction provided to teachers to promote their development in a certain area (e.g., technology, reading instruction, subject mastery, etc.). TPD is the tool by which policy-makers’ visions for change are disseminated and conveyed to teachers. Though the recipient of TPD is the teacher, the ultimate intended beneficiary is the student. *Consequently, professional development is often the most critical component of any ICT project.*

Professional Development vs. Training

Professional development is much more than training, though technology training may be one part of TPD. Professional development—including the ongoing workshops, follow-up, study, reflections, observations and assessment that comprise TPD—accommodates teachers as learners, recognizes the long-term nature of learning, and utilizes methods that are likely to lead teachers to improve their practice as professionals.

Professional development takes many forms, such as: when teachers plan activities together; when a master teacher observes a young teacher and provides feedback; and when a team of teachers observes a video lesson and reflects on and discusses the lesson. These methods of TPD are all more effective models of teacher learning than simple training.

Making TPD Effective

Effective TPD addresses the core areas of teaching—content, curriculum, assessment and instruction. Regardless of whether ICTs are involved, all TPD projects should:

- **Address teacher and student needs** via approaches that are appropriate for conditions in schools
- **Be long-term, ongoing, sequenced, and cumulative**, providing teachers opportunities to gain new knowledge and skills, reflect on changes in their teaching practice, and increase their abilities over time

CHARACTERISTICS OF EFFECTIVE TPD

Highly applied, practice-oriented, participatory, and iterative: TPD is often a process of step-by-step familiarization/mastery via “learning by struggling”, and TPD initiatives are too often designed to be “one-size-fits-all”, uni-modal (i.e., lecture-based), and overly theoretical, such that teachers never obtain a working knowledge or practice new content/techniques.

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- **Focus on student learning outcomes** in ways that enable teachers to use their new knowledge and skills
- **Model learner-centered instruction** so that teachers experience and reflect on the learning activities that they will lead
- **Use formative and summative evaluation** for program improvement

BUILDING TEACHERS' COMPUTER SKILLS

Many computer-supported TPD projects focus on technical concerns, to the exclusion of all others. Underlying these projects is the assumption that learning *how to use* computers equals knowing *how to teach* with computers.

Some degree of technical knowledge is necessary—basic keyboard and mouse skills, familiarity with the operating system and with basic software applications. However, computers are not designed to be used as instructional tools and most teachers need suggestions on how to use them with students. Without those suggestions—and without sensitivity to the array of teachers' concerns—improving teachers' computer skills is not likely to lead to students' use of computers as tools for learning.

Computers raise many concerns among teachers, including:

- *Technical concerns* (“How do I use the computer?”)
- *Functional concerns* (“What can computers help me do?”)
- *Logistical concerns* (“How can I use so few computers with so many students?”)
- *Affective concerns* (“Will these computers replace me as a teacher? Will my students lose respect if they think the computer knows more than me?”)
- *Organizational concerns* (“How do I organize my classroom to support the use of computers? How can they be used as part of what I already do in the classroom?”)
- *Conceptual concerns* (“How can I learn from and with computers?”)
- *Instructional concerns* (“How can computers help my students learn in different ways? How can they support the curriculum? How can they support my teaching? How should I teach using computers?”)
- *Evaluation concerns* (“How do I assess student learning in computer-based projects? How does this new way of learning fit with national exams?”)

CHARACTERISTICS OF EFFECTIVE TPD

Any proposal that starts out by “teaching people to use computers” is a dead end. What can it do for me now? How can it reduce my costs for doing things that I do already? How does that free up resources for other activities? How does this technology enable those activities?

Earl Mardle
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Successful Approaches to Computers in TPD

To increase the likelihood of successful TPD when computers are being introduced, the TPD should be:

- **Timely**
Teachers should learn to use computers at the point in a project when they will have access to them, not before and not after
- **Job-related**
All TPD, including computer-enabled TPD, should connect to teachers' responsibilities, to their skills and knowledge, or to desired classroom learning outcomes
- **Welcoming**
Many adults have anxiety about learning, or about computers; initial sessions should aim to build “computer comfort,” not high-level skills
- **Hands-on**
Teachers should be asked to learn by doing, not to learn by listening

■ Technically appropriate

Teachers should learn using hardware, systems, and applications that are the same as those they will use in schools

TPD should also be appropriate to the conditions in teachers' schools. If teachers will be using ten computers with 60 students (or one computer with 60 students), TPD sessions should reflect this reality.

These strategies—far more than technology training in a computer lab—will result in greater teacher use of technology at the school level. Even when they feel minimally proficient with ICTs, teachers will use computers if they feel some degree of comfort and confidence, when they know how computers can improve what they do, and when they have access to functioning equipment and support.

At the point that computers are introduced into schools, head teachers should also receive TPD that builds their confidence and skills. Head teachers should feel comfortable with their understanding of what teachers are being asked to do, how students can use computers to enhance their learning, and how they too can use computers to accomplish meaningful tasks.

Head teachers should also understand that computers are not inherently valuable. Their worth derives from their contribution to the attainment of measurable educational goals..

Learner-centered TPD

Whether it is intended to bring teachers to basic, intermediate or advanced levels of skill—and whether ICTs are used or not—TPD should be *learner-centered*, enabling teachers to experience the types of instruction that they are asked to provide to their students. Activities model instructional approaches that teachers can apply in their own settings, and may range from facilitated discussions to working in small groups to project-based instruction.

Within learner-centered TPD, the voices and actions of teachers themselves, not of the TPD provider, should be the focus, and teachers should engage interactively and collaboratively in activities that reflect their curricula. Like their students, teachers learn by doing—by collaborating with peers, reflecting, planning classroom activities—not by sitting and listening to a facilitator or following along in directed technology instruction.

WHAT IS TECHNOLOGY INTEGRATION?

"Technology integration" refers to the use of computers and the Internet to support teaching and learning across the curriculum. Integrated use of technology may involve students working with computer productivity tools to complete science projects or searching the Internet to find poetry—but it is always tied directly to student mastery of their school subjects.

Properly implemented, technology integration is the best means of building computer skills: Research in South African and Egyptian schools indicates that students learn computer skills better when computers are used to address their own interests rather than in formal skills training.

Technology integration *is not*: A separate subject, a stand-alone project, a focus of study in and of itself.

Example: Students in a Computer Studies course use a word-processing program to create a newsletter. The purpose of the activity is to build skills using the software. Students' use of the computer is separate from their study of school subjects. They are learning about computers.

Technology integration *is*: Using computers on a regular basis, for a purpose connected to math, science, social studies or language arts. Computer use becomes a means of learning, and learning takes place through computer use.

Example: During social studies, a teacher presents students with a task—to research and communicate to the village council five strategies for keeping local water bodies clean. Students use the computer as needed to do research (perhaps with Encarta, a CD-based encyclopedia) and to prepare final reports. They are learning *with* computers.

Learner-centered TPD recognizes and addresses the constraints teachers face in their own schools. If teachers have no access to books, TPD should help them devise strategies to develop learning materials. If teachers have 80 students and one computer, TPD must model—not simply talk about—how teachers integrate technology given such a constraint.

PROFESSIONAL DEVELOPMENT MODELS

The range of models of professional development is far more diverse than standard technology-training workshops. TPD models can be placed in three broad categories, each with its own strengths and weaknesses.

■ **Standardized TPD programs**

Focus on rapid dissemination of specific skills and content, often via a “cascade” or “train-the-trainer” approach

■ **School-centered TPD**

Focus on longer-term change processes, usually via locally facilitated activities that build on-site communities of practice

■ **Individual or self-directed TPD**

Focus on individualized, self-guided TPD with little formal structure or support

All of these TPD models can be used in very low-resource environments. All can be supported by ICT—whether this involves using radio or television to broadcast lessons, providing on-site videotaping of teachers and classrooms, or expanding a local community of practice through e-mail and the Internet.

WHAT ARE CHARACTERISTICS OF GOOD TPD?

Realism. What is taught should be implemented, preferably immediately. Conditions and resources needed for implementation should be achievable, e.g., student literacy, infrastructural support. If technology support (e.g. computers) is expected to lag training, then the program should differentiate pedagogy from technology, message from media, ends from means, so that teachers can start implementing the pedagogy with less sophisticated technology or media.

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STANDARDIZED TPD

Standardized TPD typically represents a centralized approach, involving workshops, training sessions, and in many cases the Cascade model of scaled delivery.

Standardized models tend to rely on training-based approaches, in which presenters share skills and knowledge with large groups of educators via face-to-face, broadcast, or online means. Training-based models are frequently employed to develop ICT skills such as those covered by the International Computer Drivers License (ICDL), and sometimes to introduce the integration of computers into the curriculum—as in the Intel Teach to the Future program.

Standardized, training-based approaches should focus on the exploration of an idea and the demonstration and modeling of skills. When employed in accordance with best practices discussed in this handbook, standardized approaches can effectively:

- Expose teachers to new ideas, new ways of doing things, and new colleagues
- Disseminate knowledge and instructional methods to teachers throughout a country or region
- Visibly demonstrate the commitment of a nation or vendor or project to a particular course of action

Often, however, workshops take place at one time and in one location without follow-up, and without helping teachers build the range of skills and capacities needed to use new techniques when they return to their schools. These one-time sessions can certainly help introduce and build awareness about computers, learner-centered instruction, or new curricula. But trainings without support rarely result in effective changes in teaching and learning—or in adoption of computers at the school level.

RELIEF INTERNATIONAL – SCHOOLS ONLINE STRENGTHENING THE CASCADE APPROACH IN TAJIKISTAN

The Cascade approach is used repeatedly in developing countries, often with little success. However, Relief International - Schools Online's (RI-SOL) School Connectivity Project in Tajikistan successfully used the Cascade approach to reach teachers in over 20 secondary schools spread throughout the mountainous country.

First, in-country teacher trainers were identified and received instruction in using technology for teaching through student-centered techniques. They were assigned to one or two school-based Internet Learning Centers near their homes to provide on-site teacher support throughout the multi-year program.

Following the initial one-week intensive workshop, RI-SOL staff traveled monthly to the schools to meet with trainees and communicated daily via online chat to help them develop a TPD plan and practice communication, technology, and lesson planning skills. Trainers were given autonomy to develop training programs and educational projects that provided individualized solutions relevant to their schools and teachers, while also participating in monthly online collaborative projects between schools within Tajikistan and internationally. At the end of the first academic year, the teacher trainers conducted the subsequent training workshop for a new cadre of trainers as the program expanded to more schools.

Teacher trainers were paid by RI-SOL according to outcomes. To receive pay, trainers had to document their work with teachers as well as provide project results showing teacher and student achievement. These supports (ongoing TPD, monthly face-to-face meetings, constant technology-based communication, and outcome-based pay) helped in-country trainers successfully integrate new technology into classrooms and curricula across the country.

The Cascade Model

In the Cascade model, one or two teachers from a school receive standardized TPD via a training-based model and return to their schools to replicate the training that they have received—serving as “champion teachers” or a “vanguard team.” Cascade approaches are often used to help teachers learn basic computer skills and to integrate computers into teaching and learning.

The World Links program typically relies on a face-to-face Cascade model: Champion teachers participate in professional development. They then return to their schools’ computer labs to provide basic computing TPD to their colleagues and serve as coordinators or managers of their schools’ computers labs.

Although the scale of Cascade-based TPD is potentially tremendous, weaknesses in the approach may limit its effectiveness. Factors that impede changes in teachers’ instructional practices include:

- Workshops that typically focus on helping champion teachers learn new techniques as *users*, without helping them build the skills they need as *professional-development providers*
- Strong challenges for champion teachers due to a lack of both TPD for school leaders, and programs that motivate teachers to participate in TPD

Champion teachers who may lack the leadership, facilitation skills and mastery of the new techniques they need to guide their colleagues effectively—even when time and resources are part of the overall TPD program

Consider Using Standardized TPD When...

The goal is to:

- Disseminate information to the largest number of teachers possible
- Introduce teachers to computers, the Internet, and strategies for using these tools
- Build awareness of best practices
- Expose teachers to new knowledge, skills, strategies and individuals

STANDARDIZED TPD AT A GLANCE

Strengths

- One-to-many format facilitates large-scale project
- Introduces a common knowledge base and skills to many participants
- Broadens teachers' knowledge by providing access to new ideas and strategies
- "Pyramid" training structure facilitates large-scale projects and rapid diffusion across systems
- Can engender new alliances and relationships among participating teachers
- Cost-effective means of distributing discrete sets of knowledge and skills intended to be implemented by all teachers—HIV/AIDS awareness in schools, gender-equity initiatives in classrooms

Limitations

- Excludes site-based issues
- "One size fits all" approach excludes contextual issues that may pose barriers to implementation in schools
- Unless it is a series of workshops over a long period of time, the one-shot approach of workshops does not address the long-term, developmental nature of learning
- Significant diminishment of skills and knowledge in the transfer from champion teacher to colleagues
- Format doesn't provide follow up or support—essential components for success that require additional cost and capacity
- Evaluation and accountability are difficult—classroom-based results only emerge over time, and are outside the workshop structure
- Training facilities may not match school conditions—champion teachers and teachers may not be able to apply TPD

Cost considerations

- Lower unit costs: cost per teacher trained, and cost per hour of training
- Costs include travel-related expenses for trainer and participants
- Cost-effectiveness should be measured in relation to outcomes
- Budgeting should address follow up and support
- Electronic follow up (via the Internet) cannot work unless all areas of infrastructure are sound
- Allocations must include teacher incentives—especially when champion teachers benefit financially from additional income or per diem reimbursements

And when conditions are such that:

- Expert knowledge is scarce or concentrated in urban areas
- Additional follow-up can be provided on-site in schools

SITE-BASED TPD

Site-based TPD often takes place in schools, resource centers or teacher training colleges.

Teachers work with local ("in house") facilitators

or master teachers to engage in more gradual processes of learning, and building mastery of pedagogy, content and technology skills. Site-based TPD often focuses on the specific, situational problems that individual teachers encounter as they try to implement new techniques.

Successful examples of site-based TPD include Guinea's FQEL project, which combines recorded versions of the *Pas à Pas*, or "Step by Step," educational radio broadcasts for teachers with face-to-face local TPD for district inspectors. District inspectors then work with *Pas à Pas* teachers in schools. Namibia's Basic Education Support 2 (BES II) program employs a school cluster-based approach that uses observation, assessment and video examples to help teachers improve instruction and assessment. The Implementation Briefs provide a fuller description of the many types of site-based professional development models, as well as strategies for finding the time to provide site-based TPD.

Site-based TPD models tend to:

- Bring people together to address local issues and needs over a period of time
- Encourage individual initiative and collaborative approaches to problems
- Allow more flexible, sustained and intensive TPD
- Provide ongoing opportunities for professional learning among a single set of teachers

ADDRESSING WOMEN IN TPD

Just as *Education for All* mandates educational access for all students, opportunities for TPD should be provided to all teachers, regardless of ethnic group, geographic location or religious affiliation. Because educating girls is critical to a nation's development, and because access to qualified female teachers is critical to girls' development, female teachers should be provided with every opportunity to continue their professional education.

However, site-based approaches are time- and labor-intensive, which also give rise to challenges.

Site-based approaches require locally-based TPD providers skilled in facilitation, instruction, content, curriculum, assessment, and technology. Facilitators also should be adept at helping teachers succeed in low-resource environments. Establishing and maintaining a network of such facilitators to meet the needs of large-scale TPD programs is challenging in any environment. In the teacher-poor education systems of some developing countries, this challenge is magnified.

In addition, because site-based TPD extends over a longer period and takes place in many locations, initiatives in specific regions may be disrupted by civil conflict, disease (HIV/AIDS, cholera, etc), or changes in school leadership.

Despite these challenges, site-based TPD should be part of any country's long-term professional-development planning for educational improvement. Such programs may be expensive while local TPD providers are being developed. However, once site-based programs are in place, new curricula, pedagogies, tools, and administrative practices can be introduced in a cost-effective manner.

Consider Using Site-based TPD When...

- Changing instructional practices is critical
- Plans call for a significant enhancement of teachers' subject knowledge or of classroom teaching and learning
- Objectives include ongoing growth toward overall excellence in teaching and learning
- There is a core group of teachers from each school able to participate in professional development
- Technology—television, radio, the Internet—can be used to supplement professional development
- Facilitators or master teachers can be developed regionally at teacher training colleges or at schools

Site-based methods can augment and provide follow-up for standardized methods. New science units or assessment methods, for example, can be introduced at nationwide workshops to facilitators and teachers. These facilitators will then return to their schools and work onsite with their colleagues to implement the new techniques effectively.

Many TPD programs cannot be neatly categorized as either standardized or site-based. In the United States, the Applying Technology to Restructuring Learning (ATRL) project of Southwest Educational Development

CHARACTERISTICS OF EFFECTIVE TPD

Relevance and appropriateness: The individual teacher must find the content and delivery of professional development relevant to his/her needs, and appropriate for the culture of the community, as well as in sync with the goals of the school.

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SITE-BASED TPD AT A GLANCE

Strengths

- More conducive to building a community of practice
- Locally based, focused on local needs and builds and cultivates local expertise
- Supports sustained TPD efforts that cultivate expertise in schools

Limitations

- Time intensive
- Difficult to provide expertise to low-resource areas, especially those impacted by conflict or that are geographically remote

Cost considerations

- Ongoing training involves recurrent expenditure
- Costs include creating training materials, and purchasing audio-tapes, cassette players, batteries
- Must budget for transportation so facilitators can reach schools

SELF-DIRECTED TPD AT A GLANCE

Strengths

- Flexibility
- Opportunities for choice and individualization
- Teacher can participate in online communities and access resources that would be otherwise unavailable.

Limitations

- Teachers must have access to technology or to other resources
- Assumes that the teacher has already developed a high level of expertise
- Only works with teachers who are highly motivated and autonomous
- Since the teacher works alone, the attrition rate may be higher
- When technology is not working, the learning opportunity is lost

Cost considerations

- None to little (to school or government). Individual assumes the cost of his/her own professional formation
- If teachers access the Internet at school, learning may involve dial-up costs and printing
- If teachers use telecenters or Internet cafes, access costs may pose a barrier

Laboratory combined six annual workshops with monthly, school-based TPD, such as Lesson Study, peer classroom observations, and Open Lessons. This combined approach of standardized workshops and site-based approaches helped teachers create learner-centered, technology-enriched activities. Self-directed TPD

SELF-DIRECTED TPD

In self-directed TPD, teachers are asked to determine their own professional development goals and select activities that will help them attain these goals. Self-directed TPD can involve watching video examples of classrooms, reading books on education or a field of study, keeping journals, performing case studies, taking online courses, or observing classes taught by colleagues. Many teachers already participate in informal, self-directed TPD, by seeking out an experienced colleague for advice, for example, or searching for lesson plans on the Internet.

Self-directed TPD places all responsibility on the teacher and requires little of the school. In many cases, school leadership directs a teacher to develop expertise in a certain area without providing resources or guidance. Teachers may be challenged to make use of the resources that they find on their own: If a lesson plan on plant biology uses Canadian trees as examples, a teacher needs to be able to substitute local trees in ways that support the lesson accurately. If a project description involves “cooperative learning,” and bases assessment on interactions within small groups, a teacher without advanced skills may make poor use of the project. Self-directed activities are most effective with teachers who are motivated self-starters, and who have already developed teaching skills and subject mastery.

For these reasons, self-directed TPD does little to promote *basic* or *intermediate* skills, and so is of less benefit to low-skilled teachers. Computers and the Internet can make self-directed TPD more worthwhile, but even with ample access and connectivity, self-directed TPD works best with *advanced* teachers wishing to enhance their knowledge and skills.

While teachers should certainly be encouraged to participate in ongoing, self-motivated learning, self-directed activities should *not* be used as the *primary* means of providing TPD. Instead, they should be used to complement and extend standardized and/or site-based TPD.

Consider Using Self-directed TPD When...

- There are no other organized professional development options
- Self-motivated and innovative individual teachers need opportunities for learning that are not otherwise available

- Self-directed activities are part of an overall professional development program that includes standardized or site-based TPD
- Supports, incentives and structures are in place to ensure that self-directed TPD is the most effective way to meet teacher needs

WEB RESOURCES

- *International Society for Technology in Education (ISTE) Educational Technology Standards*
The International Society for Technology in Education (ISTE) has created the most comprehensive set of ICT standards for teachers, students, and administrators. The standards are the product of collaboration of more than 2,000 educators who wrote, tested, and revised learning activities and multidisciplinary units to support classroom teachers preparing students to become technology-capable learners. The hands-on activities focus on subject matter and show how appropriate technology can be employed as part of the learning experience.
<http://www.iste.org> (select “NETS” to go the standards section)
- *National Staff Development Council Standards for Professional Development*
The National Staff Development Council’s Standards for Professional Development reflect the most current best practices in professional learning. The standards examine what students are expected to know and be able to do, what teachers must do in order to ensure student success, and the ways in which professional development must meet both goals.
<http://www.nsd.c.org>
- *South African Curriculum (Wiki Book)*
This is an example of a Wiki—a Website that allows users to update and edit content collaboratively—that contains South Africa’s national curriculum. All information may be accessed for free, commented upon, and modified as necessary.
http://en.wikibooks.org/wiki/South_African_Curriculum