Lessons Learned for Effective Technology Implementation

Re-published with permission from American Institutes for Research
Lessons Learned for Effective Technology Implementation

Originally produced by: Center for Implementing Technology in Education (CITEd)

In 2006, CITEd announced the Technology Implementation Partnership (TIP) initiative to provide technical assistance (TA) to a small group of districts interested in integrating technology into their curriculum as a way to offer differentiated instruction. The initiative gave CITEd the opportunity to connect research to practice and work one-on-one with individual schools and districts as they implemented technology plans to address the needs of all learners, particularly those with disabilities.

Partnering with selected districts, CITEd provided targeted TA to benefit schools as they worked on technology goals. The TIP collaboration also gave CITEd the opportunity to view firsthand how schools go about integrating technology tools, what types of resources are most helpful in this process, and what factors help or hinder full-scale implementation of technology in the classroom. Online communities, webinars, and research briefs encouraged sharing across sites to benefit other TIP partners.

Some planned CITEd TA activities were structured in ways to benefit each site and speak to the needs of a particular school or district. Other activities were tailored to address specific issues or goals within partner districts, such as site visits and resource sharing on a particular topic. Other TA activities addressed the needs of the entire group of TIP participants, such as webinars on important topics scheduled throughout the school year.

The idea of using a variety of methods and means to provide TA is reinforced by the literature. Research has shown that multifaceted approaches to TA appear to be most successful in changing behavior and practice; a single approach may not result in changes in teaching or professional practice. In a literature review conducted by Bero et al. (as cited in Sudsawad, 2007), a combination of methods involving two or more interventions were more effective in producing change than single interventions.
As CITEd staff and TIP partners learned, even with the bumps of reality in school schedules and personnel shifts, a number of elements can help ensure that technology integration moves forward:

- A deliberate implementation team is critical to success.
- Think big, but establish a series of smaller interim goals.
- Technology tools and training need to be linked to teaching practice.
- Teachers need a variety of opportunities for professional learning.
- An outside partner can help schools see the big picture.

This Research in Brief ties our findings with the literature on TA and technology implementation.

A Deliberate Implementation Team Is Critical to Success

More than almost any other factor, school and district staff are critical to the success or failure of an intervention. The initial intervention champions lay the groundwork by identifying tools, securing relevant professional development, and ensuring that teachers have the time needed to learn. As the intervention continues and moves toward full-scale implementation, these champions help maintain momentum and act as cheerleaders for new teachers entering the intervention. Administrators and teacher leaders can help ensure that ongoing professional development for all staff is a high priority by emphasizing school improvement and student academic achievement (Payne, 2000).

These champions, however, must be coordinated into a team that is established by policies and procedures—rather than ad hoc—within the school system (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). They should be supported and expected to function as implementation specialists, be given the responsibility to advance the initiative, and be held accountable for its effective implementation. This use of a coordinated team instead of isolated champions is absolutely key to having schools and districts show the resolve to "make it happen" rather than simply "let it happen" (Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004) by trusting in the enthusiasm of champions.
In each TIP site, the keys to success greatly depended on the staff involved. Teams were made up of professionals at all levels, from administrators to technology coordinators. The diversity of expertise on these teams was an important piece of the puzzle. Having regular access to technology specialists during the planning process meant that teachers could feel more confident and supported when integrating technology. It also ensured that all relevant staff members were aware of decisions about technology. Strong teams, strong leaders, and tireless champions led to each TIP site making real progress toward expressed goals. Working together as part of a team of change leaders, these individuals helped ensure that technology implementation was carried out in a thoughtful manner that meshed with district visions for technology and learning (Dede, Honan, & Peters, 2005). This team-based approach can also help ensure consistency and fidelity to reforms in cases of administrator turnover (Dede et al., 2005).

Think Big, but Establish a Series of Smaller Interim Goals

Before beginning any school change effort, schools need to set a series of goals for both professional and student learning. What areas of need have been identified? What gaps should the intervention address? Which classroom practices will be implemented? What are the intended outcomes? To answer these questions and begin formulating goals for professional learning, schools must collect data and complete a needs assessment about students and staff, capacity, and available resources (Guskey, 2000; Hassel, 1999).

Goals for a successful intervention begin with the end in mind—what do schools hope to see in terms of both teacher and student learning? In this process, schools look at both educational goals (learning goals for students) and professional learning goals (learning goals for teachers) (Hassel, 1999). As goals are implemented, frequent evaluation allows schools to readily address issues that may be affecting the efficacy of the intervention and then to refine goals and activities accordingly. It is far easier for a school to adjust an intervention slightly than to abandon an entire program at the end of the year if goals are not met. Regular evaluations of goals and professional learning activities ensure that the intervention is flexible and tailored to the school’s needs and resources.
During the application process for the TIP project, each district identified key goals for integrating technology and differentiating instruction. These goals helped CITEd determine the feasibility of projects and select the group of districts for the initiative. Once partners were selected, CITEd helped districts refine their goals, particularly when goals were too ambitious for a year-long intervention. For example, several partners wanted to integrate technology tools in several grades or content areas at once. To ensure a successful intervention, CITEd recommended focusing energies on smaller groups of students and teachers and then using the second year to begin scaling-up the intervention.

Throughout the goal-setting and refining process, CITEd team members were on hand to provide assistance in determining what could realistically be achieved in a limited time. Both partners and CITEd staff learned that it was important to think big but also to work toward a series of small, manageable, and specific goals and recognize successes, even if they were incremental. Sites may have contextual constraints that help or hinder an intervention and must implement at their own pace, but change does happen.

**Technology Tools and Training Need to Be Linked to Teaching Practice**

With the increasing emphasis on the use of technology in education, many schools have been making significant technology purchases. Often these purchases are driven because of community pressure or because new technology has received positive attention or because of the “cool” factor. These types of technology purchases may then languish on shelves, never to be used by more than a handful of teachers because they were not made with the curriculum in mind. Even when purchases are made with the best of intentions, the shift from the shelf to the classroom can be difficult. Many of the schools and districts selected as TIP sites had purchased software, often accompanied by extensive technology training for teachers. However, they were still struggling with getting the software into teaching practice.

One reason for the lack of technology integration into classrooms is that training on software and hardware is not sufficient to yield changes in teacher practice. Teachers may learn how to use a tool during a summer workshop, but unless the tool is directly
linked to the curriculum and teachers are given ample time for experimentation, they will be unlikely to adopt it into their practice. Even high-quality training, if used in isolation, is not sufficient to lead to full-scale technology implementation; for technology integration to occur, teachers need to do more than simply learn about a new tool (Glazer, Hannafin, & Song, 2005). They need significant time to learn, practice, implement, and evaluate the new skill (Abdal-Haqq, 1996; Burns & Dimock, 2007; Hudson, 2002). Additionally, technology implementation is more successful when it is rooted in curriculum and student learning (Burns & Dimock, 2007; Carrigg, Honey, & Thorpe, 2005).

TIP schools that increased teachers’ use of technology tools did so by making sure the tools and the training were relevant and directly linked to the curriculum and that teachers were given time to practice with the technology. Teachers are more likely to use a technology tool when it is something they can use tomorrow. Once teachers use the tool and are successful with it in the context of a lesson, they become more likely to think about how to integrate technology into other learning activities.

Teachers Need a Variety of Opportunities for Professional Learning

Professional development is an integral part of any school intervention, and one of the most illuminating aspects of the partnership for CITEd. Working with a variety of school districts with different needs, both CITEd staff and TIP districts were able to see firsthand a variety of methods for providing professional development opportunities for staff.

When designing professional development activities for technology implementation, it is critical that efforts be twofold: teachers need basic technical knowledge about how to use a tool and knowledge about how to integrate the tool into their existing curriculum (CEO Forum, 2000). To achieve full-scale change, schools need to ensure that strong professional development programs are in place and that teachers have a variety of opportunities for learning and growth (Burns & Dimock, 2007; CEO Forum, 2000; Price, Hannafin, & Song, 2002; Royer, 2002; Staples, Pugach, & Himes, 2005).

CITEd’s role in supporting participating teachers as professional learners was to provide varying levels of TA depending on the needs of individual districts. This support included providing tailored resources (i.e., technology resources in specific content areas), engaging in frequent planning and inquiry meetings by phone or in person,
conducting site visits to help evaluate needs, establishing means for sharing information among partners, and providing webinars on topics of interest.

In a confirmation of the professional development literature (Garcia, 2005; Ichiho, Aitaoto, Kuhaulua, & Tsark, 2005; Salisbury, Roach, Strieker, & McGregor, 2002; Stoney, 2004; Wildau & Khalsa, 2002), there was no “one size fits all” professional development model appropriate for every site. The methods used by TIP sites were examples of teacher-centered professional development—workshops and learning opportunities were structured to fit the needs, goals, and learning objectives of the teachers involved and grew and changed according to teacher needs. According to Burns and Dimock (2007), teacher-centered professional development is more effective at changing practice than the more traditional professional development models. This type of professional development “focuses squarely on the needs of teachers as learners, as practitioners, and as individuals coping with change...objectives and content of the professional development are grounded in teachers’ classroom needs and goals” (Burns & Dimock, 2007, p. 10).

An Outside Partner Can Help Schools See the Big Picture

An emerging pattern in the many lessons learned by CITEd in the first year of the TIP initiative is the important role that outside partners can play in the implementation plans of a school or district. An outside partner can sometimes help schools see the larger picture and then connect separate initiatives to create a more cohesive school change effort. The literature shows that any new initiative will be more successful if it meshes well with existing programs (Hamilton et al., 2002; Pizzo, 1993; Salisbury et al., 2002; Stoney, 2004). Especially in technology initiatives, which require purchases, maintenance, and expansions over time, it is critical to involve multiple partners such as businesses, foundations, and technology vendors (Dede & Honan, 2005). Outside partners and TA providers can watch for parallel initiatives that can be leveraged and joined together to help schools and districts form a comprehensive plan for school improvement.

Schools and districts often have multiple initiatives and grant possibilities available in any given year, but school leaders may not always connect all the available resources. An outside TA provider can view the big picture and help identify additional sources of funding, resources available, or opportunities for partnerships.
Acknowledging the push-pull of multiple (and sometimes competing) initiatives while highlighting natural connections among existing projects and resources is an important function of a TA provider.

Implications for Technology Implementation Providers

In our five years of offering TA to schools and districts using a variety of approaches and levels of intensity, CITED has learned some implications that we can share to help you ensure that your technology implementation efforts are effective:

- **Train with the classroom in mind.** Integrate the curriculum and daily activities into the professional development designed to help teachers gain expertise with the technology tools.
- **Do your homework.** Make sure that the district or school is ready to take on a new initiative with administrative buy-in and well-defined conditions identified for improvement.
- **Make it happen.** Assemble a team of sufficient breadth and cross-disciplinary expertise, supported by the district, to take on the responsibility to implement the initiative fully.
- **Set realistic goals.** Understand that change takes time and that infrastructure needs to be built during implementation to get to scaling-up and sustainability.
- **Differentiate the professional development.** Recognize that best practice indicates that teachers have different needs and levels of expertise, and design multilayered, multimodal professional development.
- **Find partners.** Look for simultaneous initiatives running in the district or community and identify areas of convergence and synergy.

References


