Evaluation

Chapter 7

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How Do We Know It's Working?

As we look at schools in the SEIR◆TEC region, as well as around the country, we find that increasingly parents, board members, teachers, and the general public are asking "How do we know it's working?" Is educational technology providing the benefit and impacts at the classroom level that live up to the promise it holds in so many people's minds? Everywhere we go, the logic is the same. Districts have spent millions on technology infrastructure, materials, and professional development, but all too often, these investments have been made without any clearly framed way of assessing the impact that technology has on student achievement.

There are some who will say that information technology is simply another educational fad, and that, just as so many things before it, technology will end up gathering dust while schools continue to grapple with the real business of teaching and learning. Ultimately, schools will stop spending money on computers and start buying something else. Well, if history can be a predictor, the pundits might just be correct. But this does not have to be the case. If educators can establish clear goals for technology's use as a tool for teaching and learning, and measure the performance towards meeting those goals, technology will not be funded solely on faith. The challenge is to create realistic evaluations of instructional technology's impact on students and their academic achievements.

In Chapter 1, we shared some of the lessons we have learned from working with the SEIR◆TEC intensive site schools over the past few years. Perhaps the most significant insight we have gained is that when we see improvements in student achievement, it is the result of a combination of factors, not merely the availability of technology. These factors include, but are not limited to: the vision and support of school and district leaders; the usefulness of the technology plan; teachers' attitudes, beliefs, and behaviors; the amount, availability, and quality of professional development and technical assistance; the teaching and learning environment; and the extent to which technology use is linked to the curriculum, standards, and student assessment.

Another important observation is that evaluation is usually the weakest component of technology plans. Not surprisingly, technology leaders at the US Department of Education say that evaluation is often the weakest part of grant proposals, too. We don't know exactly why this happens, but we think there are several factors involved:

- There are not many school and district-level professionals who have the expertise in both evaluation and instructional technology needed to design and implement high-quality evaluations. This seems to be particularly true in

rural districts where there are no universities with graduate programs in technology and evaluation.

- Traditional measures of student learning, such as standardized tests, seldom measure the benefits students gain through the use of technology, such as critical thinking, cooperation, research skills, independent learning, product design, and task commitment.

- Policymakers and funding agencies often have unrealistic expectations about the improvements in learning that will result from technology initiatives. One legislature in our region, for example, wanted to see gains in student achievement-test scores six months after funding was appropriated. When you consider that it takes an average of four to five years for most teachers to reach the state of technology proficiency where they use computers fluidly and effectively, and that an impact on students will not occur any sooner, it's no wonder that administrators can be more concerned about potential political fallout from a negative evaluation than in learning how to improve their programs.

On the other hand, we have seen stellar examples of how technology leaders have used evaluation data and progress reports to garner increased support from policymakers and the community at large. When school boards have data indicating that the money that has been spent for the technology program is leading to improvements in teaching and learning, they are usually willing to allocate more money. In other words, success begets success. We have also observed that schools and districts that monitor their progress toward technology integration see evaluation results as input into planning their technology program, e.g., identifying needs, problems, and opportunities. The point is that evaluation is neither easy nor inexpensive, but when it is an integral part of the ongoing technology planning and infusion process, it is well worth the effort.

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Tools in this Chapter

THE Tools

Some Important Terms. A list of evaluation-related terms and definitions is included to ensure that everyone in the evaluation process is using the same terms in the same ways.

Evaluation Committee Composition Matrix. The matrix is designed to enable you to select members for your evaluation committee who will be effective in carrying out the evaluation process.

Technology Evaluation Organizing Questions. The list of questions serves as a starting point for the evaluation process.

Developing Indicators Worksheet. The worksheet helps evaluators organize information that will be useful in developing performance indicators.

Online Teacher Technology Survey. We have reproduced an online survey that can be used to gather teacher input for the technology program evaluation process.

Classroom Observation Template. The form can be used by administrators or other teachers who are observing classroom use of technology as part of the evaluation process.

Sample Teacher Focus Group Questions. Conducting focus groups of teachers who are using technology to teach can be a valuable part of the technology program evaluation process. An extensive list of *Sample Teacher Focus Group Questions* is included to help you conduct your own focus groups.

Using the Evaluation Results. *Using the Evaluation Results* suggests the most productive uses of the results of your technology program evaluation.

Evaluation Resources. A list of online and print resources is included at the end of the chapter.

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Putting the Tools to Work
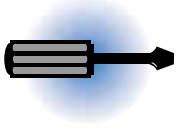
Some Important Terms

When we conduct workshops on evaluation, we sometimes notice that not everyone uses the same terms in the same ways. We thought this would be a good place to stop and talk about some important evaluation terms and concepts—just to be sure everyone is on the same wavelength.

Assessment and Evaluation

In general parlance, *assessment* and *evaluation* are often used interchangeably. In this chapter, however, each term has a specific meaning. When we talk about *assessment,* we're referring to the measurement of knowledge, skills, and performance—usually in terms of learning. For example, we talk about the assessment of student learning in terms of portfolios of their work or scores on end-of-grade tests. We might also refer to self-assessment measures that teachers can use as a tool to reflect on their technology competencies. When we talk about *evaluation,* we mean ways of examining the performance of the overall technology program as well as specific aspects of the program, such as professional development, technical assistance, and resources. Program evaluation usually addresses questions of accountability, quality, impact, sustainability, and lessons learned:

- **Accountability.** Is the program doing what it is supposed to do, i.e., what was laid out in the technology plan? Is the money being well-spent?

- **Quality.** How well are we implementing program activities and strategies? How good (useful, effective, well-received) are the program's services and products, such as professional development, technical assistance, resources, and infrastructure?

- **Impact.** Is the program making a difference? What effects are services and products having on teachers? students? administrators? the school climate? the community?

- **Sustainability.** What elements are, or need to be, in place for sustained levels of improvement in teaching and learning with technology to occur?

- **Lessons learned.** What lessons are we learning about the processes and factors that support or inhibit the accomplishment of objectives?

Answers to these questions should lead to an understanding of the extent to which the program is meeting its goals and objectives.

Proximal and Distal Effects

Evaluators sometimes use the terms *proximal* (near) and *distal* (distant) to talk about the relative strength of effects or outcomes. Let's say, for example, that a district wants to evaluate the impact of a series of workshops on ways to use

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technology to enhance writing. (See the following chart.) The *proximal* effects of the workshops would be that teachers learn new skills and acquire new knowledge about how to use technology effectively as they help students learn to write. Typically this kind of effect is measured by a questionnaire administered at the end of each workshop. That's fine, because you need to know how well the workshops went, but wouldn't it be much more important to find out whether teachers are actually applying what they learned in the workshops (the *intermediate effect*)? Until you determine whether teachers are using technology as intended, you cannot say for certain that any changes in students' writing are the result (*distal* effect) of the teachers' professional development. If you look at proximal, intermediate, and distal effects, you should be able to identify breakdowns in the system as well as unexpected benefits. Then you can use the information to decide whether to continue or revise program activities.

Strategy	Proximal Effects	Intermediate Effects	Distal Effects
Teachers participate in workshops on using technology to support students' writing.	Teachers learn new skills and acquire new knowledge.	Teachers apply new knowledge and skills as they teach. Students use technology for learning.	Student performance improves.

Formative and Summative Evaluation

Let's say your district is conducting a series of six workshops on integrating technology into the curriculum. At the end of each day, or at the end of each workshop, participants complete a questionnaire where they indicate their level of satisfaction with the workshop content, format, presenter, materials, and so forth. The workshop leaders review the questionnaires and use the data to make decisions about which aspects of the workshop they should retain, revise, or eliminate in delivering subsequent workshops. This is *formative evaluation,* or taking a look at what is or isn't working and making adjustments while the activities are still fluid. After the final workshop, the workshop leaders compile the data and review the results of the questionnaires from all the workshops in order to make decisions about the value of the entire initiative. This is *summative evaluation.* Many people think that summative evaluation is what happens at the end of each year, but it is important to realize that it the nature and duration of the activity, not the calendar, that should determine when summative evaluation occurs. The point is that your evaluation component should include both formative and summative strategies.

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Quantitative and Qualitative Data

Evaluation is a data-driven process. The basic evaluative process is to collect and analyze data that will help you make decisions about which elements of your program are working and which need to be improved. Evaluation also helps schools and districts tell their story (Bingham, 1999) in order to garner support from the community. The framework—or plot—of this story is determined by the evaluation questions created, but the story itself comes from data. Therefore, in educational-technology evaluation, the evaluator's task is to gather data that tell the stories of how technology has impacted teaching and learning. Data can be *quantitative* (counts of things) or *qualitative* (narration of things). We tend to think of quantitative data as coming from surveys, questionnaires, and standardized tests. Qualitative data usually come from interviews, classroom observations, focus groups, and archival documents, such as minutes of meetings and newspaper articles. A well-rounded evaluation will make use of both types of data by including broad-based indicators that are measured using quantitative and qualitative data (Sun, 2000). It is no more possible to tell the story of technology's impact solely through reporting test scores and computer counts than it is by simply laying out a string of anecdotal stories. Rather, data should be deeply descriptive and logically supportive of the questions to which it responds.

Key Elements of a Technology Program Evaluation Plan

There are several good evaluation models that you can adopt or adapt for your technology program. If you've had a graduate course in the subject, you might go back through your textbooks to look at some of the classic models developed by experts in the field, such as Robert E. Stake, Daniel Stufflebeam, or W. James Popham. Or, you could search the ERIC database, which you can access through www.serve.org/disc, to find technology plans that include comprehensive evaluation components.

For the SEIR◆TEC project, we use a model that was originally developed at Western Michigan University by Brinkerhoff, Brethower, Hluchyj, and Nowakoski (1983). While the complete model would probably be overkill for most district technology plans (the SEIR◆TEC evaluation plan is about an inch thick), there are key elements that can serve as a framework for any program. These elements are evaluation questions, indicators of success, information sources, and criteria and benchmarks. The following chart is an excerpt from a district technology evaluation plan that is based on this model.

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Objective: Help teachers and administrators acquire the knowledge and develop the skills necessary for effective technology integration by providing ongoing professional development

Evaluation Questions	Indicators of Success	Information Sources	Criteria and Benchmarks
How effective are professional development services?	Teachers and administrators consider the district's professional development services to be effective, useful, and worthwhile. Teachers effectively use technology in teaching and for professional productivity. Administrators support, promote, and effectively use technology for teaching and learning.	Questionnaires Classroom observations Self-assessments based on ISTE standards	All teachers and administrators demonstrate mastery of ISTE standards. Teachers are satisfied with administrators' support for technology integration. Technology is infused into the majority of the schools' courses.
What lessons have been learned from professional development?	Promising practices and materials for professional development are identified, documented, and disseminated. Barriers and solutions to professional development are described in terms useful to program planners.	Formative and summative questionnaires for each professional development event Formal and informal interviews with teacher teams and mentors Journals	The technology committee is in agreement about the positive and negative aspects of the lessons learned.

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Evaluation Questions

As a rule of thumb, we suggest that there be at least one evaluation question per program objective. And, depending on the nature of the objective, you might want to ask different kinds of questions to get at accountability, quality, impact, sustainability, and lessons learned. You probably do not need to ask questions about each of these for every objective, however.

Indicators of Success

Indicators provide the contexts for each question and describe the desired conditions against which success is measured. Typically, indicators focus our attention on issues of quality, effectiveness, efficacy, usefulness, client satisfaction, and impact. Using the above example, indicators of success might be: professional development services are meeting the needs of target audiences; teachers and administrators consider the district's professional development services to be effective, useful, and worthwhile; educators are effectively using technology in their teaching; or barriers and solutions to professional development are described in terms useful to other projects and programs. For more information, check out The National Study of School Evaluation's compendium of quality indicators for technology programs in K–12 schools (see the *Resources* list at the end of this chapter).

Information Sources

Information sources are methods or strategies for collecting data related to evaluation questions. Recognizing the importance of understanding not only the *who, what,* and *when* of your work, but also the *why* and *how,* we suggest that your evaluation plan encompass a variety of quantitative and qualitative methods, such as surveys, questionnaires, interviews, and observations. For example, if you want to know whether teachers are applying what they learned through professional development, you might learn more from going into classrooms and observing what teachers do, what students do, and the general classroom environment, rather than (or in addition to) conducting a survey.

You might also consider less traditional ways of collecting data. Focus groups and advisory committees can be very effective ways of finding out how the program is perceived across the district and the community. Archives, such as minutes of meetings and newspaper articles, are fairly easy ways of documenting events. They might tell you much about quality or effectiveness—and they do give evidence of accountability.

Criteria and Benchmarks

As you collect and analyze evaluation data about the various components of your technology program, you'll want a way of determining just how well things are going and how much progress has been made. Criteria and benchmarks will help you do this.

Earlier in the chapter, we talked about criteria for making decisions about the effectiveness of a workshop or judging the impact of technology on student

achievement. You can also develop criteria and benchmarks for instruments that use Likkert-type scales or rubrics, e.g., the CEO Forum STaR chart or the SEIR♦TEC Progress Gauge. As you implement these instruments over time—at the beginning and again at the end of the school year—you'll be looking for movement forward, i.e., moving from 1s to 2s or from 2s to 3s on rubrics. In determining just how much movement is desirable or required, it would be helpful to have criteria or benchmarks. There are no set rules about how strong the criteria or how rigid the benchmarks should be; just keep in mind that they need to be realistic, and they need to support the integrity of the evaluation. If you have 40 sets of rubrics, on how many could you realistically and reliably expect to see improvement? Half? 30? This would be a good topic for discussion for the planning committee.

As we saw in the evaluation plan sample earlier in the chapter, you can use criteria and benchmarks that involve notions of consensus or majority. For example, if your district is providing professional development designed to help teachers create technology-enhanced lesson plans, it is not unrealistic to expect that all of the teachers will implement the lessons and/or develop additional lessons. It would also be perfectly reasonable to have a criterion saying something like, "After reviewing the results of the workshop questionnaires, all members of the technology committee agree that the professional development program is meeting teachers' needs."

As our colleague Margaret Bingham says, "You need to stick a stake in the ground and say 'Today we are here.' Then later, you can stick another stake in the ground and say 'Now we are here.' The distance between the stakes shows you how much progress has been made."
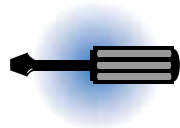
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An Evaluation Process

Evaluating technology initiatives is an ongoing process that involves eight basic steps:

- Create an evaluation committee.

- Identify evaluation priorities and develop related evaluation questions.

- Create performance indicators for each evaluation question.

- Identify or develop data collection methods and instruments.

- Collect data.

- Study the results.

- Create an evaluation report on the results of the evaluation, findings, lessons learned, and directions for future efforts.

- Use the evaluation results to update your technology plan.

Committee Composition

A district-wide evaluation committee is the organizing structure of the technology evaluations we have facilitated in most districts. As an initial step, districts create a technology evaluation committee composed of stakeholders from throughout the district and local community. This committee closely parallels the structure of the district's technology *planning* committee in that in order for the committee to be effective, it must be representative of the interests and concerns of the broad district community. It is also important that the committee *not* be composed entirely of individuals who are considered the technology power users in the district. Remember, the evaluation is designed to answer basic questions about technology's impact on teaching and learning. Therefore, experience in teaching and learning is considerably more important than being well-versed in technology itself. In general, the committees we work with number about 12 to 15 members and include district-level staff, a board member, and principals, as well as classroom teachers and technology specialists from all grade levels.

Evaluation Committee Composition Matrix

A worksheet similar to the following can be useful in assigning and delineating committee membership. A reproducible copy of the worksheet may be found in the Appendix.

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Evaluation Committee Composition Matrix

To create and conduct your technology evaluation, you need a committee composed of educational stakeholders *who will actively work* to help create the evaluation. Remember:

- You will need committee members who represent *all* aspects of your school community. This means teachers (from a variety of grades and/or subject areas), administrators, parents, community members (e.g., businesspeople), and perhaps students.

- Do not load your committee with figureheads who are not willing to actually work on the plan.

- The evaluation process contains many different tasks. You need writers, curriculum people, infrastructure people, people who are good with budgets, and policy people.

- The commitment to be a part of the technology-evaluation committee is not a short-term commitment. A formative evaluation by definition is ongoing and iterative. The committee members should be willing to assist in your school's technology-evaluation efforts long after the data are collected and reports are written.

	Teachers	Administrators	Parents	Others
Curriculum				
Professional Development				
Infrastructure				
Process Tasks (editing, calling meetings, etc.)				

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Technology Evaluation Organizing Questions

Once assembled, the evaluation committee should meet for the first time to review its task and to receive a general introduction to the district's goals and objectives for instructional technology. At this meeting, it is also useful for the committee members to receive an orientation to the technology evaluation process and to begin the work of identifying evaluation questions and indicators

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Technology Evaluation Organizing Questions

When thinking about program evaluation, it is useful to consider some organizing questions. Working in groups, please answer the following questions. Be prepared to report out your answers at the conclusion of the group work.

1. This evaluation will evaluate various aspects of how well technology has been integrated in your schools and district. What does *integration* mean to you? Provide some examples.

   _____
   _____
   _____

2. All programs must have a driving purpose. What is the best reason your district has implemented and integrated technology as a part of its teaching and learning environment?

   _____
   _____
   _____

3. Evaluation is about measuring change. When evaluating how well your schools and district have integrated technology, what sort of changes do you expect to see as a result of this integration?

   _____
   _____

   Changes related to teachers?

   _____

   Changes related to students?

   _____

   Other changes?

   _____

4. Change produces results. Evaluation measures those results against expectations. Identify three aspects of technology integration that can be measured in order to evaluate the change that has occurred in your schools and district as a result of technology integration.

   a. _____
   b. _____
   c. _____

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of achievement that are specific to those questions.

Before you begin working on the evaluation plan, you might find it useful for the committee to consider a set of organizing questions. These are summarized in the following worksheet. A reproducible copy is provided in the Appendix.

Questions and Indicators

Most often, we have found that a committee may base evaluation questions on the goals and objectives laid out in the technology plan. This method of developing questions rooted in planning goals addresses the district's basic need to know if it is meeting goals for instructional technology and the various implementation process steps. The process is also likely to yield information that can be used for a strategic-plan update.

Example Questions

The following are some sample evaluation questions developed by districts with which we have worked:

- To what extent are our teachers utilizing technology to increase the depth of student understanding and learning engagement?

- How have students been impacted by technology integration? Has technology improved student achievement, had no impact, or perhaps negatively impacted achievement?

- Are our teachers using technology in ways that match both our district goals for technology use and the potential that exists for technology as an instructional aid?

- Have we adequately allocated district technology resources so that students and teachers can realize the resources' potential?

- How effective has our professional development model been in helping teachers attain basic technology proficiency?

- How effective have basic technology skills been in helping teachers do things that they could not have done otherwise?

Developing Indicators

After developing evaluation questions, the committee's work should turn toward creating performance indicators for each question. This work is often accomplished by dividing the full committee into subcommittees—one for each evaluation question. Each subcommittee can then work to develop indicators. Ultimately, the subcommittees will use the indicators to identify sources of information (data collection methods and instruments) and criteria for making decisions, such as rubrics. Each subcommittee will review the work of each of the other two subcommittees. The product of this review is subsequently fed back into each group's development process. In this way every committee member is

able to review each of the questions/indicators/methods/criteria, and this review benefits the work of the whole committee.

Developing Indicators Worksheet

The following worksheet can help subcommittees develop their indicators. The categories we have used on the worksheet represent the most common types of evaluation questions. A reproducible copy may be found in the Appendix.

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Developing Indicators Worksheet

Working with a small group of stakeholders, identify 3 (or more) indicators for each of the following categories.

An indicator is a simple statement of *what you would expect to find or see* that demonstrates a particular attribute. For example, one indicator of the season known as summer might be: "Warm temperatures inspire people to wear lighter clothing." Inversely, if we see people wearing light clothing, one possible conclusion (applying our indicator) is that the season is summer.

Effective Use of Technology

1. _____
   _____
2. _____
   _____
3. _____
   _____

Technology's Impact on Students

1. _____
   _____
2. _____
   _____
3. _____
   _____

Technology's Impact on Teachers

1. _____
   _____
2. _____
   _____
3. _____
   _____

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Information Sources

A variety of tools and techniques can provide useful information for your evaluation, including surveys, observations, interviews, focus groups, reviews of teacher/student work, and public meetings. The point is to collect data that are directly related to the evaluation questions and indicators.

For example, if an indicator of high achievement in teacher use of technology is that teachers will use e-mail to communicate with peers outside the district, then data should show the number as well as substance of teacher e-mail communications. This might include technical logs (e.g., how often do teachers access their e-mail accounts); teacher surveys to determine how often e-mail is used and for what; and teacher interviews to determine the value placed upon e-mail communication.

It is worth mentioning that while data collection might take place at the individual level of performance, individual data should never be reported. The mission of a district-wide evaluation is to determine the progress of the district *as a group of individuals* in meeting its goals and objectives. Nothing will undermine an evaluation project faster than the perception that it is measuring or ranking individuals. If individual assessments are important, these should be developed and administered separately from your district technology evaluation.

There are a variety of tools useful for data collection. The following pages contain a variety of sample data collection tools such as:

- *Online Teacher Technology Survey*

- *Classroom Observation Template*

- *Sample Teacher Focus Group Questions*

Other good sources of evaluation tools and instruments are available from the High Plains & North Central Regional Technology in Education Consortia: www.hprtec.org or www.ncrtec.org

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Online Teacher Technology Survey

Note—an online version of this survey, as well as a link to a site with code for producing your own online survey, can be found at www.sun-associates.com/eval/sample.

Teacher Technology Survey

The following brief survey is part of our effort to evaluate the effectiveness of instructional technology and its implementation across the district.

| Choose a school ⬍ | Choose your school's name.

Each teacher has been assigned a *unique* identification number for completing this survey. You *should not* use someone else's identification number. Survey responses with duplicate numbers will be considered invalid.

How has technology impacted your students' achievement?

Please check all of the following statements with which you agree.

Technology increases my students' motivation	☐
My students use technology to acquire basic skills	☐
My students use technology to become more critical thinkers	☐
My students use technology to help them construct new knowledge	☐
My students use technology to solve relevant, real-life, problems	☐
My students use technology to discover concepts and prove relationships	☐
My students use technology to communicate knowledge and information	☐

Please check all of the technologies which you employ **with your students.**

Word Processors	☐
Integrated Learning System (e.g., Jostens, Writing to Read, etc.)	☐
Spreadsheets	☐
Tutorial and basic skills development programs	☐
Special Applications for Reading, Math, etc. (e.g., Accelerated Reader)	☐
E-mail	☐
World Wide Web/Internet	☐
Presentation Software (e.g., PowerPoint)	☐
Hyperstudio	☐
CD-ROM Encyclopedias	☐
Graphing Calculators	☐
Probes for data acquisition (temperature, mass, etc.)	☐

My students use technology *primarily* in | singular ⬍ | settings. Choose one.

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The following questions deal with **your own** use of technology.

Please check all of the statements with which you agree.

I use technology applications such as word processors and spreadsheets to produce materials for use with my students	☐
I use online (WWW) resources to find materials relevant to my curriculum	☐
I use presentation software and hardware within my classroom	☐
I use e-mail to contact peers and experts both inside and outside of the district	☐
I use e-mail to communicate with parents and students	☐
I use technology to maintain student records (e.g., electronic grade book, etc.)	☐
I use technology to monitor student performance (e.g., electronic portfolios)	☐
I believe that I can recognize the ethical use of technology	☐
I model the ethical use of technology with my students	☐
My building technology coordinator has helped me implement the district technology standards	☐
My building technology coordinator has assisted me in finding ways to integrate technology within my curriculum	☐
District-level technology resource teachers have assisted me in implementing standards and integrating technology	☐

I use a variety of teaching strategies that incorporate technology use (choose one):

[several times a day ⬍]

The learning activities I develop (choose one) [seldom ⬍] require students to use technology.

Please estimate the percentage of your written communication (to all individuals in the course of your professional work) that takes place electronically [100% ⬍]

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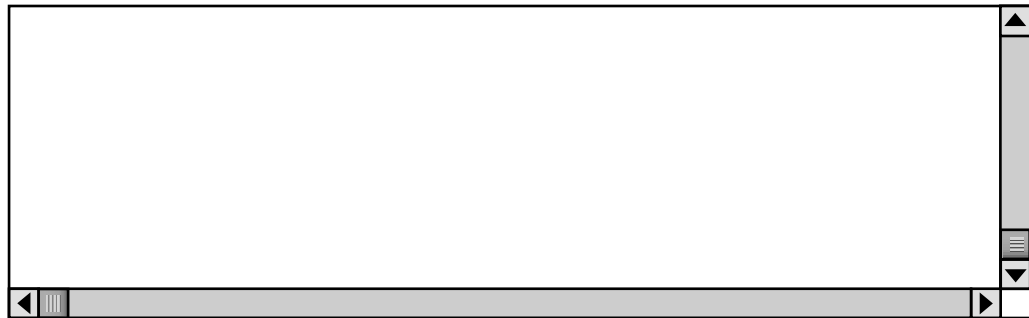Finally, we are interested in your opinion on the following:

The technology plan for my school is frequently monitored

Yes ◉

No   ◯

The administrator in my school is involved in technology professional development

Yes ◯

No   ◉

If you have additional comments you would like to add, you can use the following area to enter them.

When you are finished with this survey, click on this button to [Submit] the survey for processing.

If you want to delete all of your answers and start again, click here [Reset]

Survey Form Updated 9/9/99

Classroom Observation Template

In the effort to find out what is happening in classrooms, direct observations can be revealing. A template such as this one may be used by administrators or by other teachers to observe classroom use of technology. A reproducible copy of this template may be found in the Appendix.

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Classroom Observation Template

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School
West Side High

Teacher	Grade/Subject
Ms. Burns	Latin

Class Size (est.)
25

Observer	Date
Ms. Dimock	

Teaching—Learning Methods (e.g., direct instruction, project-based learning)
Project-based learning, cooperative groups

Brief Description of Classroom Activity/Lesson
The students are preparing for a trial of Julius Caesar. They are writing briefs and rehearsing as witnesses.

Student Groupings (single, small, large, etc.) and Interactions
Some students are working in small groups while others are working alone.

Technology (hardware and software) and/or Instructional Materials In Use
Students are using a variety of resources including the textbook, electronic encyclopedia, and the Internet to find information that will help them prepare for the trial.

Number of Computers in this Classroom
four computers

Other Notes
I need to ask Ms. Burns if I can come back when the trial happens—I wonder who she has in mind for the judge.

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Sample Teacher Focus Group Questions

You may find the following sample questions helpful in conducting your own focus groups of teachers.

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Sample Teacher Focus Group Questions (page 1 of 5)

Student Access and Use Questions

1. Describe how your students typically use lab or classroom computers.

   writing, drawing, reading, presenting
   e-mail/communication
   skill reinforcement
   programs related to curriculum (simulations, topical adventures)
   research (CD-ROM, Internet, other)

2. What kind of software is available for student use in the classroom or lab?

   word processors
   graphics packages
   databases, spreadsheets
   simulations
   e-mail
   reference (CD-ROMs, dictionaries)
   Internet/World Wide Web
   science probes
   drill & practice
   electronic books
   presentation tools (timeline maker, multimedia-maker)

3. How do students typically use the computers…and why? (i.e., probe for the reasons why they favor a particular pattern of use…e.g., "You can't do anything with one computer; each student needs to work individually;" class management issues; etc.)

   individually
   in pairs or small groups
   as a whole class

4. Could you give me an estimate of the percentage of students who have access to a computer at home?

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Sample Teacher Focus Group Questions (page 2 of 5)

5. We're interested in your impressions of how the information technology you have just described has impacted your students' learning. Overall, how have students been impacted by the use of technology in your school? (probe for examples, evidence)
Special or specific assessments?
Nothing in addition to nontechnology-specific assessments.
Other?

Most students are more motivated, more engaged, and better cooperative learners
Computers are a more effective reward for completing work
Some students are more distracted

6. How do you evaluate your students in terms of their technology use?

7. What does technology allow your students to do now—either physically or intellectually—that would have been impossible (or at least more difficult) before technology was widely available in your school? (allow for the fact that they may not think that technology is *currently* widely available)

8. What changes could be made to technology in your school that would allow *your students* to benefit more from technology?
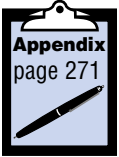
more hardware
placement of computers in the classrooms instead of labs
more software titles
additional technical support
policies

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Sample Teacher Focus Group Questions (page 3 of 5)

Teacher Fluency Questions

9. Please describe how you *most frequently* make use of school computers. We don't want to know all of what you do…just what you most often do. (probe for uses directly related to instruction, administrative uses/record keeping, personal productivity, etc.)

10. OK, that's what you most frequently do. Now tell us some of the other things…regardless of how often you might do them.

11. If not on your desk or in your classroom, where do you use computers most often?

   teacher's lounge
   home
   school computer lab
   library/media center

12. Do you have access to a computer at home? (yes or no answer)

13. How accessible are the classroom or lab computers to teachers throughout the day?

   available all day
   available only during off-hours
   available with sign up

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Sample Teacher Focus Group Questions (page 4 of 5)

14. What, if any, impact has the use of information technology had on your teaching? (probe for the following list without reading it)

    more efficient
    easier record keeping
    more collaboration with peers/reduced isolation
    more fun teaching
    changed role from expert to facilitator
    more creative/adventuresome with curriculum
    more individualized instruction
    access to better resources
    more
    better parent contact

15. In what ways has your professional practice (i.e., teaching) improved through the use of technology? (designed to be pretty open-ended. Allow for the fact that the improvement may have been mostly negative)

16. What barriers have you encountered in trying to use technology in the classroom?

    too little time to learn
    inadequate professional development
    periods too short
    finding software
    Other _____

Teacher Vision/Strategy Questions

17. How do you get your ideas for integrating technology in the classroom?

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Sample Teacher Focus Group Questions (page 5 of 5)

18. What is the most interesting or intriguing use of technology in education that you have ever heard about? It doesn't matter to us whether you can actually DO this yet…we just want to know what you find interesting.

Teacher Access and Professional Development Questions

19. What changes would you like to see made in your school with regard to how technology is allocated or structured? (note that they may comment on both physical infrastructure as well as support issues)

20. How often is technology staff development offered at your school and/or in the district…and who is responsible for conducting this training?

21. What barriers have you encountered in terms of getting the technology training you want and/or need?

22. What has been the most useful use technology workshop you have attended, and why?

23. Is there anything else you would like to share with us?

Thank You for Your Time!!

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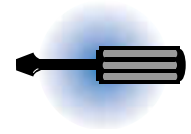
Using the Evaluation Results

What are you going to do with the evaluation results? Typically, evaluation results are summarized in end-of-year or end-of-project reports that help technology leaders determine how successful the district has been in meeting program goals and objectives. Specifically, the data should help them make data-informed decisions about whether to continue, terminate, refocus, or modify activities and strategies included in the technology plan.

While reports are useful, think how much more impact a PowerPoint presentation or school portfolio would be when you're trying to convince the school board to increase funding for technology. In addition to telling stories and presenting data, you could include products of learning and other kinds of evidence that make the program more real to those who have not been actively involved.

The Link Between Technology and Student Achievement

When considering the findings from an evaluation of a technology integration initiative, it is reasonable to ask if there isn't another bottom line issue; that is, what is the connection—if any—between student and teacher technology use and traditional student assessments such as standardized test scores? Given the amount of attention provided to traditional assessments, it is certainly expected that one should attempt to tie all important educational initiatives, such as technology, to performance gains or losses on these scores.

We believe that there is a link between technology and student performance as measured by traditional assessments; but this link is not direct. In other words, technology alone is not responsible for increases in student achievement. Rather, improvements in learning result from a *combination* of factors, including the way the teacher teaches, ready access to technology, administrative support, and the classroom environment. More and more, we are realizing that another crucial factor is the linkage among technology use, the curriculum, standards, and assessments.

Educational research tells us that student achievement increases when learning activities are engaging and student-centered. Learning needs to be standards based, relevant, attuned to the individual student's style of learning, and holistic—that is, tied to a student's prior knowledge, experience, and interests. Another way of saying all of this is to shorthand these descriptions and state that high-performing student learning is engaged and constructivist in nature and guided by strong and meaningful curriculum frameworks. Students who are able to work in environments that encourage this type of learning *will* achieve. While existing standardized tests do at best only an adequate job of measuring student achievement and knowledge, students who are engaged in supportive learning environments and reformed teaching practices will generally score higher than students who are not.

It all comes back to the same basic point, that technology is only a useful—and in this case, we can say, impactful—tool when used in the hands of a skilled teacher. The issue is pedagogy, not computer skills. Schools where teachers are

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employing student-focused instructional practices, where administrators support and expect such practices, where students are actively and excitedly involved in the process of learning—these will be high-performing schools. The role of evaluation is to provide a systematic way of examining the systems, structures, and practices that support good teaching with technology, and ultimately, the practices that promote effective learning.

Evaluation

Resources

Evaluation Resources

Online Resources

www.hprtec.org
Profiler–a collection of on-line tools & instruments for collecting and analyzing data that can be helpful for planning evaluation.

http://www.apple.com/education/k12/leadership/acot/library.html
Changing the Conversation about Teaching, Learning & Technology—A Report on 10 Years of ACOT Research. 1996. Apple Computer Corporation.

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Putting It All Together

A conversation about evaluating technology programs

What do you think about external evaluators for technology projects?

There is a growing trend toward involving evaluation experts outside the district in designing and implementing the evaluation plan. The US Department of Education, in particular, tends to favor grant proposals that include external evaluators instead of relying solely on internal expertise. The thinking is that someone from outside the system can provide a more objective point of view than those who are immersed in the situation. An external evaluator can also provide additional expertise in evaluation design and methods. The down side of having an external evaluator is that it can be expensive. If you're writing a grant proposal where the whole evaluation will be conducted externally, you should set aside about ten percent of the budget for that purpose. An alternative might be to have someone from outside the district help design the evaluation component of the technology plan, but have educators within the district collect and analyze the data. The external evaluator could review the results from time to time to make sure you're on track.

Evaluation can be somewhat intimidating, especially if you're worried that the results might be used to reduce the district's level of commitment to technology integration. What tips would you offer that might ease teachers and administrators' worries?

The main thing is to think positively. If you're conducting formative evaluation as you implement the technology plan, and you make adjustments in activities and strategies according to the results, it's difficult to imagine that the overall evaluation will turn out badly. Even if you do have some negative findings, there will be plenty of things to be happy about. And, no matter what, you will undoubtedly learn a few valuable lessons about what works, what doesn't work, and the factors that affect success.

Another tip is to brag on your successes. If you focus on negative findings from the evaluation, you can just bet that everyone else will, too. But if you focus on the positive, while being objective about the negative, you'll build support for technology integration in your district.

What should we do if test scores don't go up?

As we said before, improvements in learning result from a combination of factors, including the way teachers teach, access to technology, the classroom environment, and administrative support. Another big factor is the extent to which technology use supports the curriculum and assessments measure what's included in the curriculum. If test scores don't improve as you (and the school board) hope, you might start by taking a look at these factors. Are teachers using technology in meaningful ways? Are they using it to support traditional instruction, or are students engaged in constructivist learning? How easy or difficult is it for teachers

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and students to access technology? Do administrators support teachers by finding ways for them to participate in professional development, finding funding for technology, and providing an environment conducive to experimentation? Take a good look at the curriculum and state standards. Have teachers developed or adopted technology-enhanced lessons that help students master the concepts and skills covered in the curriculum and standards? Do the assessments measure what students have learned?

Don't forget that traditional methods of assessment seldom measure the things that technology supports best, such as critical thinking, problem solving, creativity, design, productivity, and communication. We have found that one of the best ways to measure different kinds of achievement is through authentic assessments, such as products of learning and portfolios of students' work. In addition to providing real examples of what students are capable of doing, portfolios help students learn how to judge their own work and identify potential areas for growth. We realize that in this era of high-stakes testing, test scores are often the bottom line, but we have found that many policymakers and funding agencies are willing to take a broader view of achievement as long as there is solid evidence that students are learning what they're supposed to learn.

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