SEIR◆TEC News-Wire

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THIS ISSUE: Evaluating Technology Initiatives

INSIDE...

SERVE

Improving Learning through Research & Development

Evaluating the Impact of Technology

When members of Congress passed the No Child Left Behind legislation, they called for sweeping changes in the way federal dollars are distributed for technology in schools. Gone are the Technology Literacy Challenge Fund (TLCF) and Technology Innovation Challenge Grants (TICG), which were consolidated into the Enhancing Education Through Technology (EETT) program. This new program, which is currently budgeted at $700 million a year, requires states to:

- Award half of the amount available to local education agencies (LEAs) through a formula based on Title I shares and half through a competitive process.
- Make competitive awards to high-need LEAs or partnerships that include a high-need LEA and at least one entity that can assist the high-need LEA to integrate technology effectively into classroom instruction.
- Use at least 25% of its formula allocation for high-quality professional development activities to prepare teachers to integrate technology into instruction.
- Require local applicants to describe how they would identify and promote strategies, based on relevant research, that integrate technology effectively into curricula and instruction.
- Develop accountability measures and a process for evaluating the extent to which the activities carried out with program funds are effective in supporting the integration of technology into curricula and instruction. **(www.ed.gov/offices/OESE/esea/progsum/title2b.html)**

Until now, states and districts have seldom been required to show the link between spending on technology initiatives and student achievement. The new legislation calls for educators not only to use research-based practices but also to provide evidence that teachers and students are actually using technology to improve student achievement. For example, state plans are expected to include program goals, performance indicators, performance objectives, and data sources for assessing the effectiveness of programs in terms of the teachers' and students' use of educational technology in support of academic achievement. In turn, states are requiring recipients of EETT funds to

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show that money spent on technology ultimately leads to improved student learning. As Barbara Teusink, Director of Technology for the South Carolina State Department of Education, explains:

> *The Ed Tech Grant program requires extensive accountability and evaluation procedures for use of technology funds. The No Child Left Behind Act is very timely for South Carolina as we begin to devise our 2003–2008 State Technology Plan. In correlation with Ed Tech guidelines, our plan will be performance-based and include measurable goals, objectives, indicators, and benchmarks for achievement at specific points throughout implementation. The evaluation component will add credibility to our technology programs and allow the State Department of Education to demonstrate the positive impact of professional development and technology integration in the core curriculum areas on student achievement.*

Because educators across the nation are, or soon will be, scrambling to find resources that will help them evaluate the effectiveness of their programs and the links to student achievement, this issue of *NewsWire* features articles about state and local accountability efforts, some things to think about when developing an evaluation plan, and resources for conducting useful evaluations. ◆

Tips for Writing an Evaluation Plan for a Technology Grant

by Elizabeth Byrom, Ed.D., SEIR◆TEC Principal Investigator

Ask anyone who has reviewed proposals for federal or state grants about the most important factor that determines which ones are funded and which ones are not, and they will invariably say the evaluation section. As Zucchini Dean of the Mississippi Department of Education says, "Most proposals contain very little about evaluation … what they do say usually doesn't correlate with the goals they indicated in the proposal, and the focus is usually not on student achievement and teacher competency." There are dozens of reasons for these shortcomings, but one is that many of the educators who write the grant proposals have little or no experience in developing evaluation plans. With that in mind, SEIR◆TEC offers the following tips for writing an evaluation plan that will win approval:

1. Start with your project goals and objectives and work your way backwards to determine your evaluation questions, strategies, and methods. For example, if your goal is to improve student achievement, you need to define what you mean by "student achievement," and then identify the conditions that have to be in place in order for improvement to occur. Some essential conditions are as follows:
   - ◆ Curriculum, assessment, and technology use should be aligned.
   - ◆ Teachers and students have to use technology in meaningful ways.
   - ◆ Teachers must have ongoing, high-quality professional development that is directly related to what students are supposed to learn.
2. Ask good evaluation questions. Good questions will lead to the answers you need in order to determine whether your project makes a

difference in teaching and learning. Evaluation questions might ask:

- To what extent are teachers using what they learned in professional development activities?
- Do teachers and students have ready access to modern computers and the Internet?
- How effective is the project in identifying and addressing barriers to technology integration? (See article on *Evaluation Questions—Guiding Inquiry in Schools* on page 4 for additional information.)

3. Collect baseline data at the beginning of the project and ask the same questions over time. For example, if your project focuses on professional development, begin by determining teachers' current level of technology proficiency, use of technology, attitudes, interests, and needs. If you periodically ask them the same kinds of questions, and if their proficiency and use improve, you have some evidence of the cumulative effectiveness of the program.

4. Counting boxes isn't enough. It can be useful to know the number of computers available for student use or the student-to-computer ratio, but if you want to know whether technology is making a difference in teaching and learning, you have to examine how well and how much students and teachers are using it.

5. Look beyond standardized student achievement data. Standardized tests seldom measure the areas of learning where technology has been shown to have an impact, such as research skills, communication skills, quality of student work, dropout rate, and discipline referrals.

6. Surveys are no longer adequate as the single measure for determining the quality and impact of a technology project, mainly because self-reporting data are often unreliable. Consider using a variety of qualitative and quantitative measures, such as classroom observations, school portfolios, interviews, and focus groups. (See *Thinking Beyond Surveys* on page 21 for advantages and disadvantages of various measures.)

7. You don't have to develop evaluation tools; some excellent ones already exist. The U.S. Department of Education's book *An Educator's Guide to Evaluating the Use of Technology in Schools and Classrooms* is a good place to start. (Available through the Database of the U.S. Department of Education Publications in ERIC or available at www.ed.gov/pubs/pubdb.html.) Also look at the websites of the Regional Technology in Education Consortia (RTEC), such as the High Plains RTEC's Profiler, the South Central RTEC's database of evaluation instruments, the North Central RTEC's enGauge, and SEIR◆TEC's technology integration progress gauge. (See *Tools for Evaluating Technology Projects and Programs* on page 26.)

8. Above all else, read the directions in the grant application package. If you don't meet all the funding agency's requirements for evaluation, the agency will be hard pressed to fund your project. This is especially true for the technology grants funded through the No Child Left Behind legislation because the states must provide data from the districts in order to show that the money is being well spent.

If you follow these tips and still feel uncertain about the quality of your evaluation plan, remember that it's okay to ask for help. Although there isn't an abundance of evaluators with experience in educational technology, you should be able to find an evaluator or researcher at a nearby college or university who can review your plan and offer suggestions. ◆

Evaluation Questions—Guiding Inquiry in Schools

by Ann Abeille, Director of Research and Evaluation, Learning Innovations at WestEd

Through the No Child Left Behind legislation, school and district practitioners are being asked to become more involved in the evaluation of the effectiveness of their schools' efforts and progress. Many practitioners are short on time, funding, and evaluation experience. However, educators can maximize their learning from this work by building their evaluation around clearly articulated evaluation questions.

The critical guidance for evaluation work, just as in school-based action research, is identification, use, and reflection on essential questions. These questions drive the learning, and evaluation is about learning:

- Learning how students and teachers are using technology
- Learning what kinds of professional development and support are making a difference in classroom practice
- Learning how the infusion of technology is changing student approaches to learning, characteristics of student products, and student achievement in curricular areas

As practitioners engage in evaluation work, whether involved in a formal evaluation (perhaps supporting the work of outside evaluators) or undertaking an informal examination of a school initiative, they need to consider the following aspects of evaluation questions.

Question Identification

Identify the overarching questions that you want to answer and why. First of all, what do you and the people in your school want to learn from this evaluation work? If you are working with grant funds, what do the funders want to learn? For example, if your school or district has received a grant to engage faculty, students, and community members to use a variety of technologies to enhance science and mathematics learning through a community-based environmental study, what would you want to learn from your evaluation efforts? Some of your evaluation questions might be:

- How has the funding from the grant actually been used? What training was provided to students and faculty in using the various technologies? What was the perceived quality of the training? How many students, faculty, and community members were involved in the training?
- How did students and faculty use technologies in the environmental study? What areas of mathematics did students explore? To what extent did students engage in mathematics and science inquiry? What role did technology play in this inquiry?
- What mathematical concepts or skills did students gain through this project? To what extent did

students demonstrate mathematics and science inquiry skills?

- As this program is instituted and continued, are there notable increases in the percentage of students meeting grade-level-appropriate technology standards? Is there improvement in student achievement in the areas of mathematics focused upon in the project?
- How have student, faculty, and community attitudes changed through this project (e.g., attitudes toward mathematics and science, the use of technology, or the environment)?

Identifying and prioritizing these questions is the first step toward meaningful evaluation and essential learning for your school.

Matching Methods to Questions

It is essential to remember that the identification of evaluation questions dictates the choice of evaluation methods. Practitioners need to ensure that the data-gathering methods used will result in answers to the identified questions.

Using methods such as questionnaires, interviews, and focus groups makes perfect sense when you wish to determine changes in attitudes (e.g., attitudes toward technology use). However, classroom observations become the essential method (with interviews or questionnaires providing additional information) to gain useful data about the use of technologies or the engagement of students in mathematics and science inquiry.

Although teacher interviews may give some insights into student learning and changes in student achievement of technology standards, an analysis of student products will more directly answer such an evaluation question. If the development of certain mathematics learning has been targeted within this project, an appropriate method may be the tracking of changes over time in teacher-designed assessments or selected sections of standardized tests.

It is essential to choose methods for your evaluation that will yield appropriate data for answering your top-priority questions.

Reflections on Evaluation Questions

Finally, it is critical, when the data are in and analyzed, to return to the evaluation questions and the results in order to determine the implications for your future work. For instance, perhaps you found that although the quality and reach of the technology-related professional development was excellent, too much time elapsed between that learning and the actual use of the technology in the environmental study, so time and energy had to be wasted on additional training. Or perhaps your classroom observations indicated that although use of graphing calculators was to be an essential component of the environmental project, the use was negligible. What if after three years of similar project work, the targeted areas for improvement in mathematics achievement showed no improvement? These findings would certainly lead you to strategic changes in your work. ◆

Lessons Learned from Action Research: Evaluation from the Trenches

by Zelia Frick, Supervisor of Instructional Technology, Guilford County Schools (North Carolina)

"Your grant has been funded!" These words are music to the ears of applicants who work diligently to acquire much-needed funding for technology. Recipients eagerly await the arrival of new equipment, software, and training. Then comes the process of assessment and evaluation. How do we know the technology placed in classrooms improves the way teachers teach and the way students learn? What evaluation instruments will we use, and what questions will we ask?

As Supervisor of Instructional Technology for Guilford County Schools in Greensboro, North Carolina, I faced the challenge of assessment and evaluation in 1998 upon receiving a Technology Literacy Challenge Fund (TLCF) grant entitled Project Read/Write. The project's goal was "to improve student academic achievement in reading and writing through the integration of technology." The grant provided ten underachieving third-grade classrooms with computers, an inkjet printer, a collection of reading/writing software, and on-site instructional support. Participating teachers were required to attend all staff-development sessions and allow students to use the technology a minimum of 20 minutes, three times each week.

Like most technology leaders, I had no expertise in research and evaluation even though I had been working in the "trenches" of instructional technology for many years. I thought implementation and evaluation of Project Read/Write would be quite simple: 1) participating teachers would select the software, 2) equipment would be purchased, 3) teachers would be trained, and 4) student end-of-grade reading scores would improve. Experience is a great teacher.

After four years involved in "action research," I have learned that assessment and evaluation can be challenging and time consuming. Hopefully, you can learn from my experiences.

One of the most valuable resources we used to evaluate our project was the Evaluation chapter in SEIR◆TEC's *Planning into Practice* (www.seirtec.org/publications). This practical guide assisted me in understanding important terms and in creating the crosswalk shown in the following chart that delineates the evaluation questions, methods of data collection, and data analysis. Our project evaluation focused on answering questions related to accountability, quality, impact, sustainability, and lessons learned.

As we implemented Project Read/Write, we learned the importance and value of determining how well strategies are working and making adjustments when necessary. Sometimes the adjustments were made to project activities and sometimes to evaluation strategies.

Accountability: How do we know the project is making a positive impact on student achievement?

Year 1 Question: Did a higher percentage of students receive an "on-grade-level" score than in previous years? Using North Carolina third-grade end-of-grade (EOG) reading scores, a bar graph was created charting school EOG scores for seven years. Two of the three schools achieved their highest scores in seven years, and the third school achieved its second-highest scores in seven years. The data, however, did not address other factors that may have affected these high scores and were not compared to a control group.

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Project Goal: To improve student achievement in reading and writing through the integration of technology.

Question	Instrument	Collection Period	Pluses	Deltas
Accountability: Is the project making a positive impact on student achievement?				
Did a higher percentage of students score Level III/IV than previous years?	Bar Graph: Percentage of students scored Levels III/IV compared with previous years	North Carolina third-grade EOG reading scores	Uses validated data Identifies trends Has potential for individual classroom and student analysis	Data do not show longitudinal growth for individuals Graphs show data by school—not individual or classroom growth Does not identify other factors impacting test scores
Was student achievement higher for the project group or the control group?	Bar Graph: Compare scale score growth (pre-test to End-of-Grade) to control group			
Did students in the project have higher scale score gains and greater movement to higher achievement levels?	Table: Compare End-of-Grade scores to pre-project scores Table: Comparison of growth within each reading level			
Quality: How well are we implementing program activities and strategies?				
Is student use meeting the minimal requirements?	Student logs	Every two months	Teacher accountability Uses tracking Student records	Reliability of data Time intensive Personnel demands
Is student use appropriate and accurate?	On-site visits Forms and checklist	Often as possible	Data are reliable Identifies problems Support for teacher	Time consuming Personnel needed
Are teachers having any technical problems?	Web-based tech help Tech support forms	Collected each training session	Report of technical problems	
Has professional development been effective?	Workshop evaluation form	Collected each training session	Immediate feedback Identifies areas for improvement	Reliability of self-evaluation Quality of questions
Are students effectively using the project?	Formal observation	Six observations per sample participant	Validates student logs	Time consuming Training observers Validation of instrument
Impact: Is the project making a difference for students?				
Do students think their reading and writing skills have improved?	Student survey	End of the year	Feedback on student attitude and perception	Time to collect Time to interpret
Do teachers think the project has helped improve student achievement?	Teacher survey	End of the year	Feedback on teacher attitude and perception	Time to collect Time to interpret
Is there evidence of improved writing skills?	Writing samples	Fall and spring	Evidence to validate improvement in writing	Time to develop rubric Training scorers Time to score and analyze
Sustainability: What needs to be in place for sustaining the project's goal?				
Will hardware and software remain adequate?	Inventory sheets	Beginning and ending of year	Maintains location of resources	Time and accuracy

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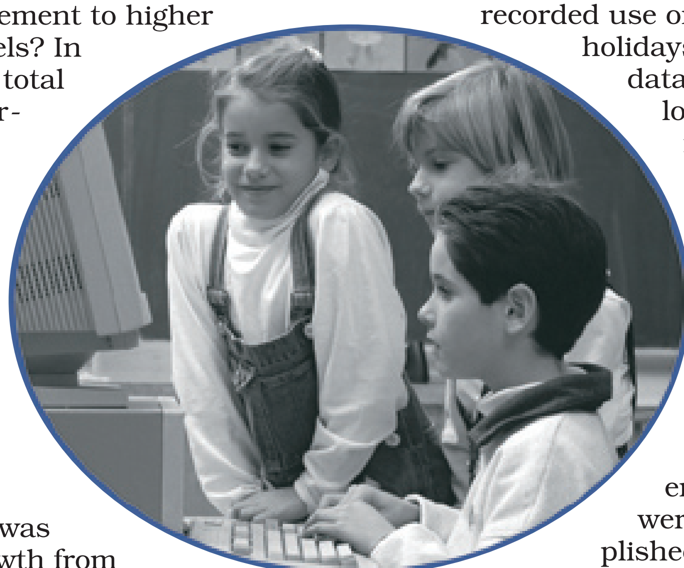
Year 2 Question: Was student achievement higher for the project group or the control group? Three additional schools participated in Project Read/Write the second year. Fifteen schools were on the waiting list to receive funding for the project, and they became the control group. During the second year, scores from the project schools were compared to scores from the control group. Project Read/Write schools displayed greater gains.

Year 3 Question: Did students in the project have higher-scale score gains and greater movement to higher achievement levels? In the third year, a total of 21 schools participated in the project. Third-grade pretest reading scores were compared to the EOG scores, and average scale score growth was charted for each school. Growth from the pre-project year was compared to growth from the first year of the project. Data indicated there was a definite trend toward higher achievement levels with Project Read/Write schools.



Quality: How well are the program activities and strategies being implemented? Is student use meeting the minimal requirement?

Student log sheets were developed to assess the quality of implementation. During Year 1, teachers had students record their names on a daily log sheet when using the computer. However, accounting for student software use in this fashion proved to be rather problematic. In Year 2, a yearlong calendar was created for each student so that he or she could record the title of the software used on the appropriate calendar day. Teachers were not required to submit their calendars until the end of school, so teachers not using the technology slipped by unnoticed until administrators examined the data and discovered there was a problem. Finally in Year 3, a valid instrument for assessing student use was developed. A two-month calendar was created for each student, and data were collected every two months. Data were entered into a database, and classroom reports were printed and sent to each school's administration. The new process made teachers accountable and provided excellent data for assessing the project's implementation. Some students were so dedicated that they recorded use on weekends and holidays. Conclusion—data from student log sheets was invaluable but not always reliable.

Workshop evaluation forms are a necessity, but self-evaluation is not always reliable. Teachers indicated they were "highly accomplished" in the working knowledge of software, but informal observations indicated otherwise. Teachers reported that they had acquired knowledge in the workshop but, upon returning to the classroom, forgot a lot of details and could not remember how to start.

Site visits are imperative to ensure proper implementation. Site visit reports proved to be especially valuable as they provided reliable data about technical and/or instructional problems within the classrooms. Formal observations validated student logs and supplied compelling evidence of student use. Trained personnel are needed to validate an observation instrument and complete the observations, but it's worth the effort to validate proper implementation. Once a problem is identified, instructional support can be readied for the teacher.

Impact: Is the project making a difference for students? Do students think their reading and writing skills have improved?

Answers to these questions were obtained by having students complete a survey at the beginning and end of the year. Data from each survey were reviewed to see if student attitudes had improved toward reading. Participating teachers from Year 1 created a student survey that included the following statements:

1. When I have free time, I choose to read
   a) never, b) sometimes, c) always
2. Reading makes me feel
   a) happy, b) no feeling, c) sad

Expectations were that students would change their attitudes toward reading in a positive direction, but when surveys were collected at the end of the year, student feelings had reversed. Student interviews revealed that they were excited about reading in the fall and spent a lot of time reading. However, after the winter months, students were ready to spend time outdoors, and their interests were redirected toward other activities. The revised survey has proven to be more effective and is completed only after end-of-grade tests. It includes the following questions:

1. Are you a better reader now than you were at the beginning of the school year? (Yes/No)
2. Do you enjoy reading more now than you did at the beginning of the school year? (Yes/No)

Asking the "right" question is critical to effective evaluation.

Sustainability: What needs to be in place for sustaining the project's goal? Are all elements in place?

Sustainability appeared to be a non-issue for Project Read/Write. All hardware with appropriate software was in place and working. Project Read/Write would help students for many years. All teachers had been trained, and student use looked great. But had all teachers really been trained?

Seventy-eight classrooms were participating in the project by Year 4, but there were 42 new teachers. Of the original ten classrooms that began in 1998, only two teachers remained. How could this happen? Teacher turnover is a major problem for underachieving schools. Turnover makes it difficult to bring about change when you consider that it takes an average of 4–5 years for most teachers to become proficient enough with technology to use computers fluidly and effectively. To sustain Project Read/Write, we must meet the challenge that teacher turnover creates every year.

Looking back, I can safely say that we learned a lot of valuable lessons about the implementation and evaluation of technology projects:

- An evaluation model needs to be defined at the beginning of the project.
- So many factors impact student achievement that change attributed to technology use is difficult to measure.
- Self-evaluation data are not always reliable.
- When possible, use electronic surveys rather than paper and pencil.
- Although creating quality surveys with appropriate questions is a challenge, it is crucial to effective evaluation.
- Software with built-in management systems provides reliable documentation of student use.
- It takes multiple years for the effective implementation of projects to impact student achievement.
- Site-visits are a necessity; they provide reliable information and support for teachers.
- Measuring the quality and impact of a technology program takes time and may require additional personnel.

If you're assessing and evaluating a technology program, the SEIR◆TEC model will provide you valuable information to measure the program's effectiveness. You will learn a lot—I guarantee it. ◆

Alabama Indicators for Measuring Progress

by Melinda Maddox, Ed.D., Coordinator, Office of Technology Initiatives, Alabama Department of Education

Alabama took a bold step when it was time to revise our state technology plan in 2000–2001. We shifted from an emphasis on guidelines and recommendations for installing hardware and networks to a framework based on a set of indicators and benchmarks for measuring outcomes. The new plan, IMPACT, which stands for Indicators for Measuring Progress in Advancing Classroom Technology, establishes essential conditions—such as funding, support, and training—necessary to use technology, but its primary focus is using technology to improve student learning in Alabama's schools.

Alabama IMPACT provides a set of progress indicators, measures, and a target timeline (2002–2005) for integrating technology across the curriculum. Examples of sources of evidence/data-collection methods are provided to help schools and school systems assess their progress toward meeting the benchmarks established in this document. The indicators address the six objective areas of learning, technology integration, professional development, environment, access, and cost of ownership. Local schools and school systems are using these indicators and benchmarks to design their technology plans for technology integration, to make decisions, and to create policies to guide the direction of technology.

Development of IMPACT

The document was written from the ground up with extensive input from stakeholders throughout the state. This process gained us buy-in from the beginning and a gradual growth in understanding of the use of indicators and benchmarks for technology planning prior to the rollout of the plan. Over the course of one-and-one-half years, we convened four different task force groups and held several state agency staff work sessions.

- Members of the first focus group wrote goals and objectives. Their task was completed over a two-day period.
- The Office of Technology Initiatives' staff further defined the process and framework for the plan and established the major categories as goal, objectives, rationale, indicators, benchmarks, sources of evidence, and strategies.
- A second focus group developed the document with indicators, benchmarks, and sources of evidence. This group was the main writing team and worked about six months to complete its tasks. The members gathered input from district technology coordinators, superintendents, and other technology leaders at the annual Alabama Educational Technology Association (AETA) Fall Symposium. The second focus group used this input to finalize the indicators, benchmarks, and sources of evidence.
- A third focus group wrote the state technology plan requirements for district and school technology plans.
- The final focus group wrote state strategies. This group represented all areas including public, private, and business and industry leaders, as well as members from all of the three previous focus groups.

IMPACT Example

The IMPACT document reflects the input from all of the focus groups and state teams. For each objective, we used the same format. The goal—to improve learning through the use of technology—is listed first, followed by a rationale for the objective, indicators, benchmarks, sources of evidence, and the data-collection methods, as shown in the following table.

Learning Objective: Encourage learning that is relevant and authentic through the use of technology.

Rationale: In classrooms where technology is used effectively as a tool, students are more autonomous, collaborative, and reflective than in classrooms where technology is used only for drill and practice. Technology engages students in real-life applications of academics and encourages them to be more independent and responsible for their own learning. In a knowledge-based society, it is important that students have the self-confidence, knowledge base, technology fluency, and cooperative skills that will enable them to continue learning throughout their lives. Technology facilitates the study of the academics within the context of meaningful and authentic applications.

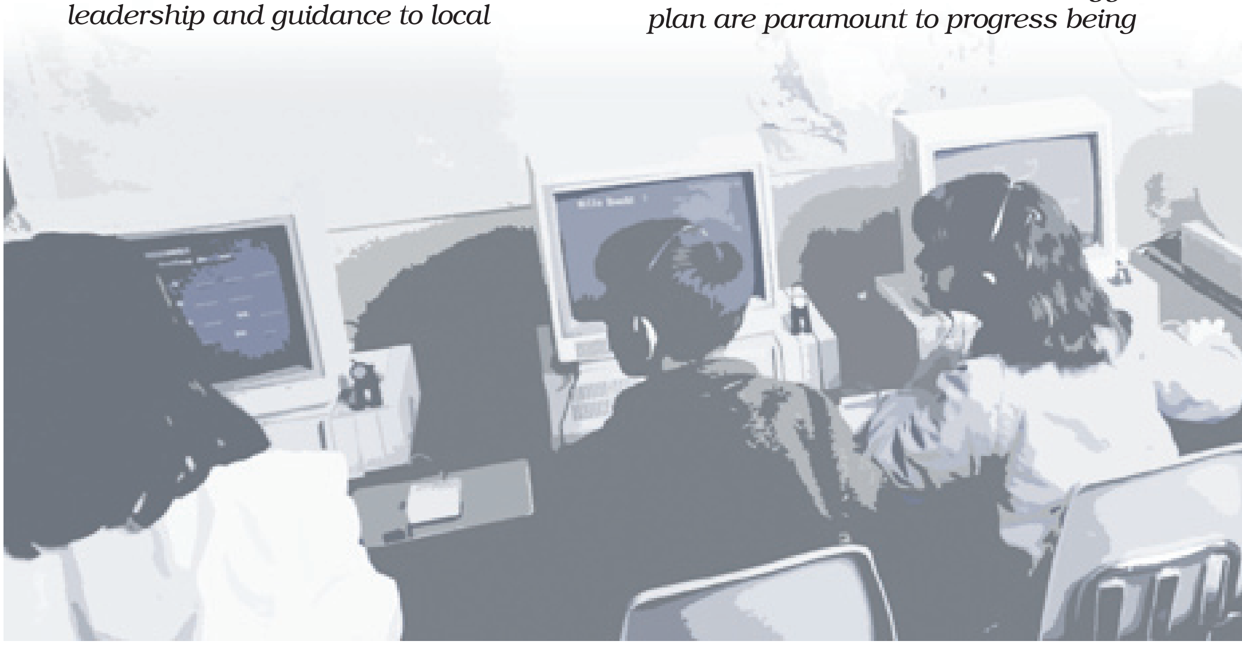
Indicators:	Benchmarks (Target year 2005):	Examples of sources of evidence/data-collection methods:
1a. Learners develop, model, and assess age-appropriate projects that are relevant and authentic.	1.1 All students use technology to complete inquiry-based learning projects that reflect personal significance and/or societal importance. 1.2 All teachers assess student-based projects using well-designed scoring guides. 1.3 All administrators assess teachers' ability to implement learner-centered classrooms.	Surveys Student products Lesson plans Observation Video samples Standards-based scoring guides Personnel Evaluation System (PEPE) Electronic usage data Online assessments
1b. Learners' work incorporates real-world applications of technology.	1.4 All students, teachers, and administrators use productivity tools such as spreadsheets, databases, presentation software, and Internet resources to solve problems and make decisions.	Surveys Student products Lesson plans Observation
1c. Learners use technology resources to gather, store, reshape, analyze, and communicate information.	1.5 Student products contain a data analysis component using productivity tools such as spreadsheets, graphing packages, and/or databases. 1.6 All teachers collect and analyze data to make adjustments to their operational curriculum (i.e., classroom). 1.7 All administrators collect and analyze data to make decisions that affect the overall operation of the school.	Surveys Student projects Lesson plans Observation Structured interviews Online assessments Electronic usage data
1d. Learners use technology resources to access quality information from numerous sources.	1.8 All students and teachers select appropriate technology-based resources such as the Internet, real-time probes, hand-held devices, and the Alabama Virtual Library (AVL) based on intended purpose.	Lesson plans Student projects Observation Personnel Evaluation System (PEPE)
1e. Learners are proficient in technology and information literacy standards.	1.9 All students and teachers use technology during the instructional day based on the local, state, and national standards.	Surveys Lesson plans Observation Student projects

Terms	Definition
Learners	Students, teachers, non-certificated staff, administrators, parents, community members, business owners, and citizens
Goal	The final outcome desired
Rationale	Reason for the objective
Objectives	Broad actions intended to fulfill the goal or outcome
Indicators	Attributes or activities that are necessary to fulfill the objective and overall goal (These are readily converted to benchmarks.)
Benchmarks	Specific, observable, measurable actions or behaviors; used to gauge progress over time
Sources of Evidence/ Data-Collection Methods	Physical items, such as plans, reports, observations, etc., that enable the researcher to document fulfillment of objectives
Strategies	Steps or actions that will be taken to accomplish the objective

Reactions from the Field

By the time we introduced the IMPACT document and the concept of using technology integration indicators and meeting benchmarks to the local educators, they were old news. Educators had heard so much about the new framework that we received very positive reactions. Two of our local technology educators expressed an understanding of the value gained from using indicators to measure progress and the acceptance of the IMPACT framework as follows:

> *The Alabama State Department of Education's Office of Technology Initiatives has provided important leadership and guidance to local school districts through the IMPACT document that was produced to assist in the development of district technology plans. IMPACT provided clearly defined benchmarks and indicators and explained scientifically-based research as applied to the use of technology in the educational process. The clearly defined goal and objectives in six domains focused limited funding toward areas that would have the greatest effect on student learning. Local district technology coordinators have been able to develop technology plans that meet the needs of students and teachers as a result of IMPACT. The use of indicators and benchmarks in developing an individual school and school district technology plan are paramount to progress being*



made toward the stated goal. School leaders and classroom teachers who understand the ultimate goal and understand the steps that have been established to achieve it are more likely to enthusiastically embrace the process and significantly contribute to its achievement. The Alabama Department of Education's Office of Technology Initiatives is to be commended for its leadership in providing guidance, direction, and support that is on the forefront of education reform.

—Steve Sumners,
District Technology Coordinator,
Cherokee County School District

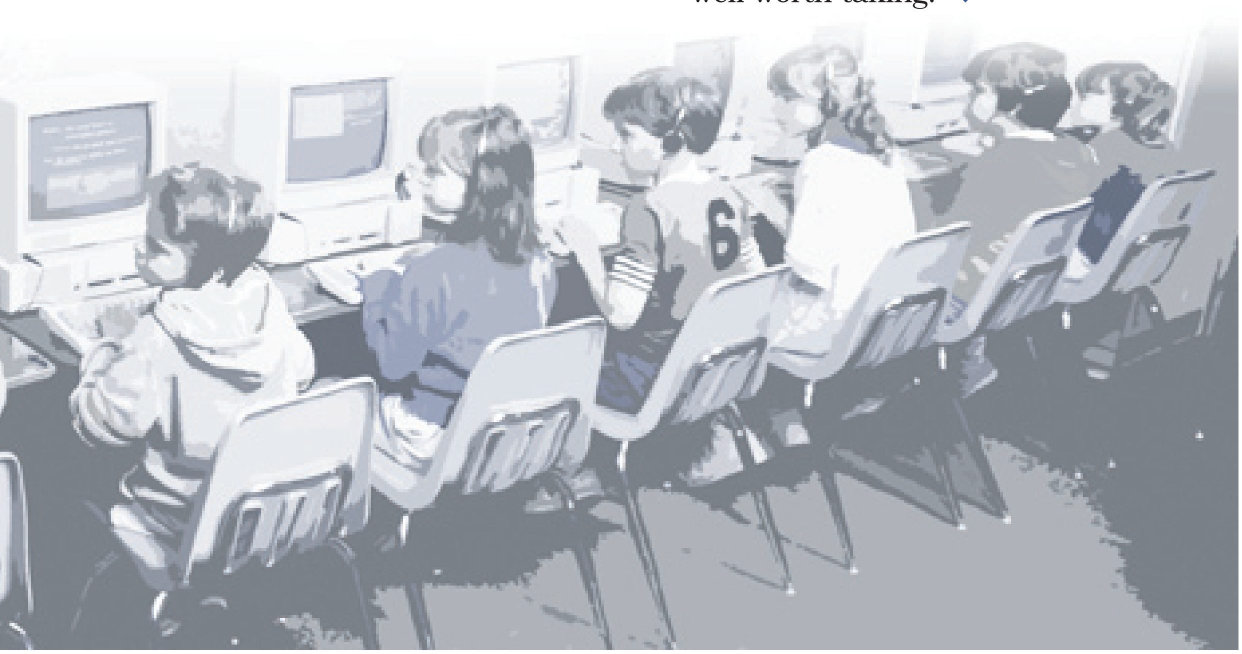
Having state-developed benchmarks and indicators for the benchmarks helped our system develop its technology plan. IMPACT covered all the areas that we wanted to address, as a system. However, the goals and objectives for the state plan were general in nature. Working with the benchmarks and the indicators made understanding what would be required under these broader goals and objectives easy to understand. They gave concrete examples to follow. That made developing our new technology plan both easy and productive.

—David Crouse, Ed.D.,
Technology Coordinator,
Roanoke City Schools

Current Status

Statewide technology assessment instruments are being developed to measure state progress in achieving the benchmarks outlined in IMPACT. Currently, local school districts are required to align local plans with IMPACT and to evaluate and report progress toward achieving benchmarks on a yearly basis. The local school districts are writing their yearly technology plans and reporting progress toward achieving their benchmarks with an online process. At the state level, the indicators from IMPACT were the basis of our state application for the Enhancing Education Through Technology application for federal funds for educational technology.

IMPACT gives us a strong focus on where we need to go in the next few years in educational technology in Alabama and will help the state better measure progress in local schools. It is a statewide, long-range, strategic educational technology plan affecting every district and every school. By having documented outcomes based on the state and local indicators and benchmarks for educational technology, we already have and will continue to receive evidence of the success in using technology to impact teaching and learning. Taking the bold step to not revise but to redesign our state technology plan was a risk, but a risk well worth taking. ◆



State Guidelines for Enhancing Education Through Technology (EETT) Projects

Over the past few months, technology leaders in state education agencies (SEAs) have been putting together grant application packages for competitive Enhancing Education Through Technology grants. Tammy Mainwaring, an Education Associate with the Professional Development and Instructional Technology Office of the South Carolina Department of Education, has graciously agreed to share the guidelines and sample evaluation matrix that she and her colleagues have developed as a resource for educators in their state as they prepare, implement, and evaluate their technology projects. The original version has been modified slightly to make it generally applicable throughout the region.

Step 1: Conduct a needs assessment and collect baseline data. The baseline data should provide information at the start of a program. The data will be used to set goals and benchmarks to determine the amount of change you desire throughout the stages of your project. Baseline data are collected before the beginning of the project. There are many sources of data that can be collected and utilized effectively when creating your goals, benchmarks, and expected outcomes. Examples of data that can be used include surveys, interviews, school records, standardized test scores, observations, technology documents, and portfolios.

Step 2: Analyze your technology needs through the baseline data and create your overall program goals. Limit your program goals to a minimum of three and a maximum of five. Your goals will be the overall statements of expectation arising from the purposes of your technology program. Each goal should be accompanied by a projected completion date.

Step 3: Dissect each goal and determine realistic strategies that will lead to the achievement of the overall goal. Some goals will require more strategies than others. This section outlines your step-by-step process for reaching your end-of-program expected outcomes. It also gives you a guide for staying on track with your project.

Step 4: Develop indicators of achievement. The indicators will be more specific than your strategies and will provide a measurement, such as a certain percentage of teachers, the number of computers, etc. Setting achievable indicators will be a key to the successful completion of your project.

Step 5: Set benchmarks and target dates that will define the progress the district expects to make at specified points in time with respect to each indicator. These benchmarks should show the process for ongoing evaluation of the technology project.

Step 6: List the data sources you will use to continuously measure progress. These data will be used in your project reports.

Step 7: Describe your expected outcomes of each goal. Student achievement and teacher technology proficiency should be integral to your expected outcomes.

Step 8: Prepare your report of results, findings, and recommendations at the completion of your project.

Project Goal *(Should be linked to student achievement, teacher proficiency, equity of access, and accountability.)*	Goal 1: Teacher Proficiency By their next recertification period beginning in 2005, teachers will be deemed technologically proficient in accordance with district standards. Teachers must renew this proficiency each recertification cycle thereafter.
Sources of Baseline Data *(These data will be used to paint a current picture of your district prior to project implementation.)*	Surveys Self-assessments Observations Portfolios District teacher proficiency assurance forms *(Data for this goal should assist you in determining the percentage of teachers who are now considered technology proficient, keep portfolios, and participate in professional development opportunities.)*
Strategies for Achieving the Goal *(List relevant strategies to help you reach your goal. These must be strategies you can measure and prove have been implemented.)*	1. Technology leaders will be assigned to each school to train colleagues and guide novices in the use of technology integration. 2. A needs assessment will be given to teachers to determine the professional development that must be offered on different levels of proficiency. Courses will be designed and offered to accommodate the faculty as they move from novice learners to expert integrators of technology into the curriculum to teach the South Carolina state standards. 3. Teachers will maintain electronic portfolios that will document proficiency using a technology skills rubric.
Indicators *(These statements must be measurable using terms such as a percentage of teachers or the number of computers, etc.)*	1.1—By September 2003, one technology leader will be operating in each school. 1.2—By September 2003, 30% of teachers will demonstrate use of technology integration lessons evidenced through materials in student and teacher portfolios. *(More than one indicator and benchmark can be given for each strategy.)*
Target Benchmarks *(These define the progress you want to make at specified points in time with respect to each indicator.)*	1.1.1—The percentage of technology proficient teachers in the district will increase from 30% in 2002 to 40% in 2003. 1.1.2—The percentage of technology proficient teachers will increase from 40% in 2003 to 50% in 2004. *(You can move through the grant month-by-month, semester-by-semester, year-by-year, etc.)*
Proposed Process for Ongoing Evaluation *(Each district must have reliable data. Districts should be ready to share the data with the technical assistance teams.)*	Annual submission of teacher technology proficiency assurance forms to the State Department of Education Random monthly documented classroom walkthroughs and evaluations Random monthly examinations for Teacher Technology portfolios to include lesson plans, professional activities, student work, etc. Record of attendance and completion levels of teacher professional development courses Teacher self-assessment instruments to be completed biannually
Data Sources to be Used for Ongoing Evaluation and End-of–Program Reports *(Examples include test scores, graduation rates, portfolios, observations, surveys, and interviews.)*	Annual teacher technology proficiency assurance forms Classroom observation walkthrough documentation Notes transcribed regarding the quality and content of teacher technology portfolios Biannual teacher self-assessments Documented records of individual teacher professional development activities
Desired Outcomes *(Should be linked to student achievement, teacher proficiency, equity of access, and accountability.)*	By the year 2009, all teachers will be technologically proficient in integrating technology as a tool to increase student achievement to teach to the South Carolina state standards.

TAGLIT: A Tool for Measuring a Project's Results

by Katherine Tankson, Director of the Mississippi TASL Grant, and Betty Lou Pigg, Information Technology Planner with the Mississippi Department of Education

Note: The Taking a Good Look at Instructional Technology (TAGLIT) assessment tool is an element of each state's Bill and Melinda Gates Technology Leadership grant. For further information on the use of TAGLIT, contact the administrator for your state's Gates Technology Leadership grant.

How can educators make informed decisions that result in successful uses of technology for teaching and learning? How can they know if their decisions are having an impact? To many administrators and school technology leaders, these questions present major challenges. However, a growing number of educators have discovered a solution. They are using TAGLIT (Taking a Good Look at Instructional Technology) to determine the perception of technology use and impact at their schools and to measure changes resulting from technology projects and initiatives. Mississippi administrators are among those using TAGLIT to evaluate technology initiatives.

TAGLIT is an online suite of self-assessment tools for school leaders, teachers, and students that provides measurements of progress over time (www.taglit.org). Dr. Sheila Cory and Jennifer Peterson developed the tools for participants in the Principals as Technology Leaders Program offered by the North Carolina Principals Executive Program. The Web version was initially supported by the BellSouth Foundation and is currently Web-enabled by SAS with support from the Bill and Melinda Gates Foundation. As a result of this support, many educators are aware of and have used the TAGLIT tools. Why? Every state has a Gates Foundation state challenge grant for technology leaders, and a requirement of the grant is that all participants—mostly principals—in the grant must complete the TAGLIT assessment for school leaders. In turn, the school leaders are to have their teachers complete the teacher tool, and they have the option to have their students complete the student tool.

The Mississippi Department of Education was one of the earliest users of TAGLIT as a component of the Gates Foundation challenge grant. The grant established the Technology Academy for School Leaders (TASL). Participants in the week-long academy and follow-up sessions have discovered that TAGLIT data help them accomplish the TASL goals:

- To facilitate the integration of technology in the total district/school environment.
- To enhance the principals' and superintendents' technology leadership skills in support of teaching, learning, and data-driven decision making.
- To facilitate the creation of learning environments that empower staff to infuse technology into teaching and learning.
- To assist school leaders in the definition of local issues and the development of solutions and strategies to address them.

In the Mississippi TASL project, the suite of assessments is explained to participants during the academy and during the Day 1 Follow-up Activity conducted three months after the academy. Participants are trained to interpret the Data Summary report and generate their Final Report. Each participating principal in TASL is responsible for monitoring the administration of TAGLIT to 100% of the instructional staff and 50% or higher of the student population in grades 3–12 and for completing the leader's assessment for his/her assigned school.

TAGLIT generates valuable data for administrators about ways technology is being used in their schools. Administrators did not previously have a means to collect and analyze this type of data, especially in the quantity that TAGLIT provides. School leaders answer 69 questions on technology planning, hardware, software, instructional and technical support, budgets, policies, and community involvement. Teachers answer questions (61 for elementary teachers and 71 for middle and high school teachers) on skills, frequency of use, how technology affects classroom activities, technology planning, hardware, software, and instructional and technical support. Students complete questions on skills, frequency of use, and how technology affects classroom activities—15 questions for elementary school students and 53 for middle and high school students. With this quantity and range of data, school administrators who administer the assessments periodically have a means of measuring progress of technology use and impact at their schools.

For our administrators, TAGLIT has played an integral part in helping them better understand the following:

- The role of technology in enhancing teaching and learning.
- The present status of teachers' and students' technology skills and use.
- School technology planning, budgeting, and professional development needs.
- The availability of emerging technologies in the schools.

The results of the TAGLIT assessments have been an eye opener for many of the TASL participants. One of the statements on the Day 2 Follow-up Activity (conducted nine months after an academy) was "The TAGLIT information provided my district/schools was valuable information that has impacted our professional development program and technology integration." On a scale of 1 to 5, with 5—Strongly Agree, 4—Agree, and 1—Strongly Disagree, 78% of the participants rated this question a 5 and 22% a 4. Comments made by some of the participants included:

- "The TAGLIT results identified technology training as our number one professional development need."
- "Significant training is needed in getting our teachers ready to effectively integrate technology into classroom instruction."
- "More time must be spent in training our teachers so that they can be successful in preparing our students for this technological age."

Many of the participating principals have used the TAGLIT assessment results to document the considerable need for training in the area of technology use and integration. As a result of their analysis of the data, they have scheduled the Phase Technology Trainings offered through the Mississippi Office of Educational Technology and the MarcoPolo Training (online classroom technology integration). Additionally, principals are also sending teachers to technology training sessions to become school-site technology trainers and placing more emphasis on technology-based professional development. Many are encouraging teachers to either take courses online or participate in interactive video (distance learning) course offerings to receive advanced degrees, licensure renewal, and/or technology professional growth.

Increased emphasis on technology professional development is not the only result of having the TAGLIT data available. At the state level, we have used it as part of our project evaluation and to help improve the activities of the TASL project. Certainly the data will be useful for future grant proposal writing and for state program policy development.

Whether at the school level or with the state project, TAGLIT, as a tool for measuring a project's results, is making a difference in the Mississippi school districts. ◆

Steps in Evaluating a School or District Technology Program

by Jeff Sun, Sun Associates

Sun Associates—an educational consulting firm and frequent SEIR◆TEC collaborator—has worked with a number of school districts to develop and facilitate formative evaluations of technology's impact on teaching and learning. Over the past several years, we have worked with districts in Kentucky, New York, Massachusetts, and Michigan to create research-based formative evaluations that are used to measure a district's progress toward meeting its own strategic goals for technology implementation and integration. In most cases, our client districts have taken the developed evaluation procedures and have applied them annually to support a formative approach to assessing their technology efforts.

The process most often employed with districts consists of three interrelated stages: evaluation framing, data collection, and reporting.

Stage 1—Evaluation framing, committee orientation, and rubric development

Just as with technology planning, technology evaluation is a committee-driven process. Therefore, the first step in this process is for the district to appoint an evaluation committee composed of district stakeholders such as teachers, administrators, parents, board members, and students. The exact composition varies and reflects the values and priorities of the district that is conducting the evaluation. Once the committee is selected, we facilitate a full day of training for the committee. During this training, the entire evaluation process is overviewed, milestones are set, and initial responsibilities are assigned.

After its initial day of training, the committee meets for another two days to develop the district's key evaluation questions and to create indicators for those questions. While the developed indicators are always tied directly to the district's own strategic vision and goals for technology, we also key the indicators to standards and frameworks such as the National Educational Technology Standards (NETS) for students and Milken's Seven Dimensions, as well as local and state curriculum frameworks.

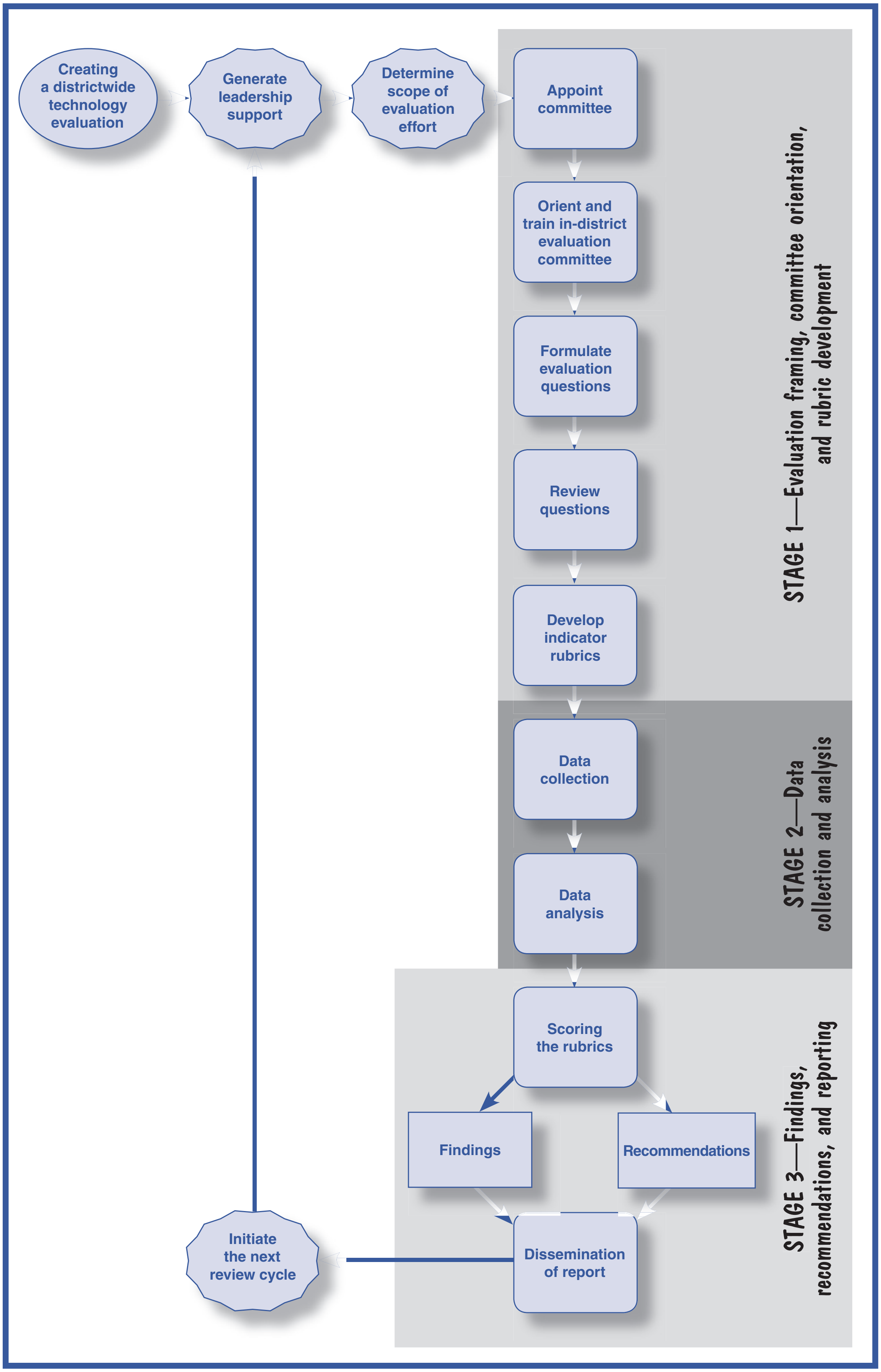
In most cases, the evaluation committee breaks into subcommittees to develop indicators for individual questions. Once these indicators have been developed and approved by the district committee, we organize all of this work into a set of indicator rubrics. These rubrics (see www.sun-associates.com/eval/sample.html for examples) form the basis for the district's evaluation work.

Stage 2—Data collection and analysis

Data collection is designed in response to the district's evaluation rubrics. Data are gathered that will enable the district to answer the evaluation questions and score its performance on its evaluation rubrics. Typically, a data-collection effort will include:

- Surveys of teachers, administrators, students, and/or community members. Unique surveys are created for each target population and are based on the data-collection needs described in the district's rubrics.
- Focus group interviews of teachers, administrators, students, technology staff, and other groups of key participants in the district's educational and technology efforts.
- Classroom observations. External evaluators will typically spend time in schools and classrooms throughout the district. The evaluators not

(continued on page 20)


Creating a districtwide technology evaluation
Generate leadership support
Determine scope of evaluation effort
Appoint committee
Orient and train in-district evaluation committee
Formulate evaluation questions
Review questions
Develop indicator rubrics
STAGE 1—Evaluation framing, committee orientation, and rubric development
Data collection
Data analysis
STAGE 2—Data collection and analysis
Scoring the rubrics
Findings
Recommendations
Dissemination of report
Initiate the next review cycle
STAGE 3—Findings, recommendations, and reporting

(continued from page 18)

only observe teachers and students using technology but also find that we can learn much about how technology is being used to impact teaching and learning just by observing classroom setups, teaching styles, and student behaviors.

It is important that the data-collection effort not rely on a single data source (e.g., surveys). The district needs to design a data-collection strategy that has the optimum chance of capturing the big picture of the use and impact of technology within the district. This will require the simultaneous use of multiple data-collection strategies.

Stage 3—Findings, recommendations, and reporting

Reporting is important to a formative evaluation in that it establishes a common base for reflection. An evaluation that is not shared with the community it evaluates never results in reflection. Reflection is necessary for positive and informed change. The first step in reporting is to take the data gathered in the previous stage to score the district's performance against its own rubrics. These scores—along with a detailed explanation of how scores were given—form the basis of the report. In addition, reports typically contain detailed findings and recommendations. The recommendations relate to how the district can adapt or change current practices to achieve higher levels of performance in succeeding years. The recommendations are always based on a research-intensive knowledge of best practices as related to teaching, learning, and technology. Recommendations are relative to findings. In other words, recommendations are in sync with a district's desired outcomes as documented in its indicator rubrics.

In most cases, evaluation projects end with a formal presentation to the district committee and other audiences as identified by the overseeing administrator. The districts then distribute the document and begin implementation. This is the point at which the next review cycle begins.

These steps for evaluating a technology plan are appropriate for most schools and districts. As the chart indicates, this is a cyclic process for continuous improvement and for greater impact on students and the educational program. ◆

Thinking Beyond Surveys

by Anna Li, Ph.D., SEIR◆TEC Evaluator

For several reasons, surveys are the most commonly used tool for evaluating technology programs. First, they can measure a variety of elements of the program and participant characteristics, such as the number of computers in a school, teachers' and students' attitudes, opinions, behaviors, and other descriptive information. Another positive feature of surveys is that, compared with other evaluation methods, they are relatively inexpensive and can be quickly administered to a large number of people. A third aspect is that survey findings usually lend themselves to quantitative analyses, and the results can be expressed in easily understood percentages and means, which in turn can be presented in easily understood charts or graphs.

However, since the primary way to collect information through surveys is to ask people written questions, the evaluator has no control over misunderstanding and misinterpretation of the questions, missing data, or inaccurate responses. If the entire technology-program evaluation design depends on surveys or self-reporting data, the findings could be biased or not reflect a complete picture of a technology program's quality and effectiveness. Therefore, it is important to think beyond surveys and to

TABLE 1: DATA-COLLECTION METHODS

Data-collection methods	Advantages	Disadvantages
Questionnaires (self-administered)	Good for finding answers to short, simple questions; relatively inexpensive; can reach a large population in a short time.	Low response rate; no control over misunderstanding or misinterpretation of the questions, missing data, or inaccurate responses; not suited for people who have difficulty reading and writing; not appropriate for complex or exploratory issues.
Interviews	Yield rich data, details, and new insights; interviewers can explain questions that the interviewee does not understand; interviewers can probe for explanations and details.	Can be expensive and time consuming; limited sample size; may present logistics problems (time, location, privacy, access, safety); need well-trained interviewer; can be difficult or time consuming to analyze qualitative data.
Focus groups	Useful for gathering ideas, different viewpoints, new insights from a group of people at the same time; facilitator can probe for more explanations or details; responses from one person provide stimulus for other people.	Some individuals may dominate the discussions while others may not like to speak in a group setting; hard to coordinate multiple schedules; takes longer to have questions answered.
Tests	Provide "hard data" that are easily accepted; relatively easy to administer.	Difficult to find appropriate instruments for treatment population; developing and validating new tests may be expensive and time consuming; tests can be biased and unfair.
Observations	Best for obtaining data about behaviors of individuals or groups; low burden for people providing data.	Time consuming; some items are not observable; participant behavior may be affected by presence of observer; needs well-trained observer.
Archival documents (student records, school plans, past program evaluations, etc.)	Low burden for people providing information; relatively inexpensive.	May be incomplete or require additional information; may need special permission to use.
Artifacts or products	Good evidence of impact; low burden for people providing data; relatively inexpensive.	May be incomplete or require additional interpretation.

look at other evaluation designs and data-collection techniques. There are seven commonly used data-collection methods in educational technology program evaluation. Table 1 (previous page) summarizes the methods and describes their advantages and disadvantages.

Depending on the needs of the programs, a sound evaluation design incorporates three or more of the above methods. Which methods to use should be determined by the evaluation questions, and complex questions often call for multiple sub-questions, each of which would have an appropriate data-collection method. For example, a frequently asked question of technology programs is: "How are teachers and students actually using technology?" This is a complex question that might be divided into several sub-questions about the extent, nature, and frequency of teacher and student technology use. Table 2 below, which is drawn from the National Science Foundation's *User Friendly Handbook for Project Evaluation* (www.ehr.nsf.gov/RED/EVAL/handbook.htm), shows a simplified version of an evaluation design matrix.

TABLE 2: DESIGN MATRIX

Sub-question	Data-collection approach	Respondents	Schedule
1a. Did teachers use technology in their teaching?	Questionnaires Observations	Teachers Supervisors N/A	Pre/post project Twice per semester
1b. Did students use technology to learn science, math, or other subject areas?	Questionnaires Interviews Observations	Students Teachers	Pre/post project Twice per semester
1c. How often did teachers use technology?	Questionnaires	Teachers Students Supervisors	Pre/post project

The National Science Foundation handbook (p.19) suggests you pose the following questions when you want to determine the most appropriate approaches to data collection:

1. Do you want to explore the experiences of a small number of participants in-depth (case studies) or get general experience for a larger population (survey)?
2. If you select a survey approach, do you want to survey all the participants, or can you select a sample?
3. Do you want to evaluate what happens to project participants or to compare the experiences of participants with those of the non-participants (quasi-experimental design)?

How these questions are answered will affect the design of the evaluation as well as the conclusions that can be drawn. ◆

Resources for Evaluation: An Annotated Bibliography

by Dan Shoemaker, Senior Educational Technology Specialist, SEIR◆TEC, and Jennifer Burke, Media Specialist, Centennial Place Elementary School, Atlanta

As educators seek research to guide the development of their evaluation plans or tools to use in evaluating their technology initiatives, they often turn to the Internet. Conducting an Internet search can result in an overwhelming list of possible sources of information. Weeding out the useful from the barely applicable is a true headache-producing task.

SEIR◆TEC staff have tackled the task for you. In the charts below, you will find an annotated bibliography of research studies and reports focused on the evaluation of technology programs. Among the items listed, you should find several that will be just what you are looking for to use in your technology initiative evaluation plan.

Books

1. Aspen Education Development Group. (2001). *Administrator's guide to technology: Planning, funding & implementation*. Frederick, MD: Aspen Publishers.

   This document provides guidelines related to instructional technology and planning for administrators. Topics covered include developing a technology plan, facility assessment, e-rate planning, formation of a technology committee, budget planning, and hardware/software replacement plan and costs. Chapter 7 covers assessment and accountability, including evaluating a technology program, technology assessment surveys, and technology standards for continuous student assessment. Appendices include a glossary and a list of resources for acceptable-use policies, assessment and accountability, assistive technology, website accessibility, curriculum integration, distance education, funding, hardware suppliers, international collaboration on the Web, legal issues, professional development, school website design, technology planning and implementation, telementoring, virtual schools, and Web safety.

2. Fink, A., & Kosecoff, J. (1998). *How to conduct surveys* (2nd *ed.*). Thousand Oaks, CA: Sage Publications.

   Popular for helping readers organize a rigorous survey and evaluate the credibility of other surveys by giving them practical, step-by-step advice, the second edition also covers computer-assisted and interactive surveys and how they contrast with telephone and face-to-face surveys.

3. Hedrick, T. E., Bickman, L. R., & Rog, D. J. (1993). *Applied research design: A practical guide*. Thousand Oaks, CA: Sage Publications.

   Aimed at helping researchers and students make the transition from the classroom and the laboratory to the "real" world, the authors reveal pitfalls to avoid and strategies to undertake in order to overcome obstacles in the design and planning of applied research. The book focuses on refining research questions when actual events force deviations from the original analysis.

4. Maruyama, G., & Deno, S. (1992). *Research in educational settings.* Thousand Oaks, CA: Sage Publications.

   This book focuses on the following issues: access and credibility in the school; traditional issues in designing research; questions that emerge as the design is imposed on the school culture and setting, particularly in regard to school staff and student assessment; the length of interventions and whether or not to schedule follow-up studies; and how to interpret and communicate findings to schools and policymakers.

5. Quiñones, S., & Kirshstein, R. (1998). *An educator's guide to evaluating the use of technology in schools and classrooms.* Washington, DC: United States Department of Education. www.ed.gov/pubs/EdTechGuide.

   This guide was developed for the U.S. Department of Education by the American Institutes for Research in conjunction with its formative evaluation of the Technology Literacy Challenge Fund. The guide represents a joint effort among the Office of Educational Research and Improvement, the Office of Educational Technology, and the Office of Elementary and Secondary Education. The guide should be viewed as a tool for individuals who have little or no formal training in research or evaluation. This publication is available online in PDF format.

6. Stevens, F., Lawrenz, F., & Sharp, L. *User friendly handbook for project evaluation: Science, mathematics, engineering and technology education.* Retrieved August 15, 2002, from www.ehr.nsf.gov/RED/EVAL/handbook/handbook.htm.

   This handbook was developed to provide Principal Investigators and Project Evaluators working with the National Science Foundation's Directorate for Education and Human Resource Development with a basic understanding of selected approaches to evaluation. It is aimed at people who need to learn more about what evaluation can do and how to do an evaluation rather than those who already have a solid base of experience in the field. This publication is available online in PDF format.

Journal articles

1. Moreland, J., & Jones, A. (2000). Emerging assessment practices in an emergent curriculum: Implications for technology. *International Journal of Technology and Design Education, 10*(3), 283–305. www.technz.org.nz/n_research.shtml.

   Reports on detailed case studies into emerging assessment practices in technology in two New Zealand primary schools. Topics include classroom assessment, formative and summative assessment, teacher knowledge, subculture influences when implementing technological activities, knowledge about technology, knowledge in technology, student self-assessment, and expectations of transfer.

2. Sanders, M. (2000). Web-based portfolios for technology education: A personal case study. *Journal of Technology Studies, 26*(1), 11–18. http://scholar.lib.vt.edu/ejournals/JTS/Winter-Spring-2000/pdf/sanders.pdf.

   Students can use Web-based portfolios in technology classes to display class and project work. Developing effective websites gives them an understanding of a range of information-age tools, motivates them to do high-quality work, requires self-assessment and reflection, and teaches design skills.

3. Wenglinsky, H. (1998). *Does it compute? The relationship between educational technology and student achievement in mathematics.* Princeton, NJ: ETS. www.icoe.k12.ca.us/pdf/technolog.pdf.

This report presents findings from a national study of the relationship between different uses of educational technology and various educational outcomes. It uses the 1996 National Assessment of Educational Progress (NAEP) in mathematics.

4. Woodrow, J. E., Mayer-Smith, J., Jolie, A., & Pedretti, E. G. (2000). Assessing technology-enhanced instruction: A case study in secondary science. *Journal of Educational Computing Research*, *23*(1), 15–39.

   Describes an evaluation program designed to assess the effectiveness of technology-enhanced instruction within the context of the Technology Enhanced Secondary Science Instruction (TESSI) project, a field-based research program of technology integration into secondary science. It includes analyses of student enrollment and achievement, ethnographic assessment, scalability, and interviews with graduates.

Papers presented at conferences and meetings

1. 2000 Conference on Educational Technology, Measuring the Impacts and Shaping the Future.

   The conference focused on the effective use of technology in schools. The site (www.ed.gov/Technology/evaluation.html) includes papers and presentations from the Education Secretary's Conference on Educational Technology as well as evaluation tools. Site is updated to 2002.

2. Heinecke, Blasi, Milman, & Washington. (1999). *New directions in the evaluation of the effectiveness of educational technology*. Paper presented at the 1999 Education Secretary's Conference on Educational Technology. www.ed.gov/Technology/TechConf/1999/whitepapers/paper8.html.

   The paper addresses the importance of looking at new ways to evaluate the effectiveness of educational technology that incorporate a variety of ways to assess programs.

3. Mize, C. D., & Gibbons, A. (2000). More than inventory: Effective integration of instructional technology to support student learning in K–12 schools. *Society for Information Technology & Teacher Education International Conference: Proceedings of SITE 2000*, San Diego, California, February 8–12, 2000.

   This paper is a report of three case studies considering the instructional uses of technology in public school classrooms. A level of technological proficiency was determined for each school that participated in the research through the use of a series of surveys, teacher interviews, and observations.

4. Peterson, L. (1999, April). *Transforming the daily life of the classroom: The District Six Laptop Project*. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Quebec, Canada.

   The paper discusses The Community School District Six Laptop Project (New York, NY) that was created in order to increase access to technology for families in a low-income area with a large immigrant population. Findings from both groups are discussed in terms of collaboration, the writing process, research skills and critical evaluation of information, and presentations. Results of the study suggest that laptops enable change in the management of the classroom and in the design of instructional activities and assignments. http://metisassoc.com/Publications/aera.htm. ◆

Tools for Evaluating Technology Projects and Programs

by Dan Shoemaker, Senior Educational Technology Specialist, SEIR◆TEC, and Jennifer Burke, Media Specialist, Centennial Place Elementary School, Atlanta

Finding an evaluation tool that has been tried and tested puts you one step ahead. The resources listed below have been used or developed by SEIR◆TEC or other RTECs and are worth considering when you are searching for a tool to use to evaluate your technology initiative.

1. **CEO Forum STaR Chart** (www.ceoforum.org/starchart.cfm)

   Developed by the CEO Forum on Education & Technology, the STaR Chart identifies and defines four school profiles ranging from the "Early Tech" school with little or no technology to the "Target Tech" school that provides a model for the integration and innovative use of education technology. The STaR Chart is not intended to be a measure of any particular school's technology and readiness, but rather to serve as a benchmark against which every school can assess and track its own progress.

2. **enGauge** (www.ncrel.org/engauge)

   Developed by NCREL with the Metiri Group, enGauge provides a comprehensive view of critical factors in an educational system that strongly influence the effectiveness of educational technology. It is a Web-based framework and tool set designed to help districts use technology effectively for learning, teaching, and managing. The enGauge framework identifies Six Essential Conditions, which are system-wide factors critical to effective uses of technology for student learning.

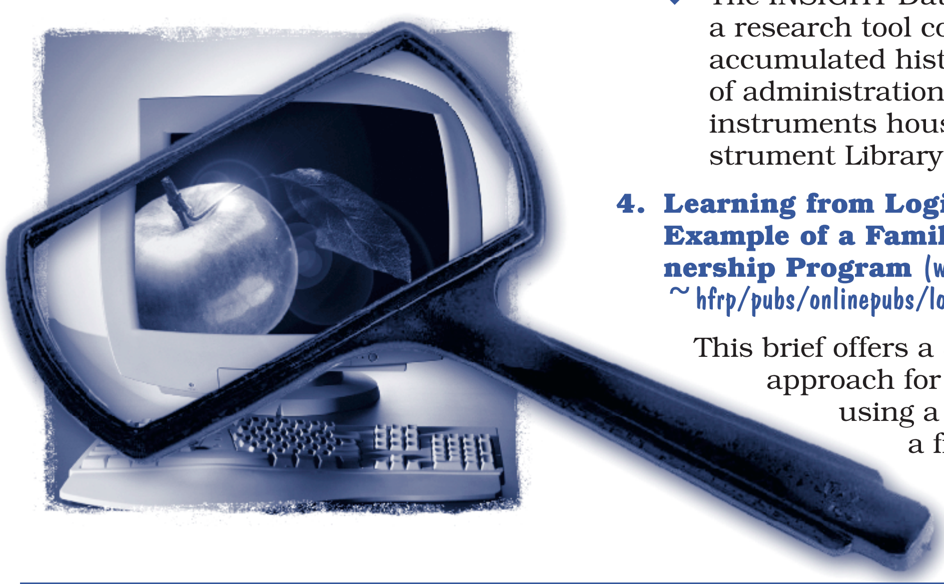
3. **INSIGHT, South Central RTEC Instrument Library and Data Recovery** (http://insight.southcentralrtec.org/welcome.html)

   INSIGHT, the South Central RTEC Instrument Library and Data Repository, is an evaluation resource that serves a broad range of educational constituents. It consists of two distinct but interrelated components:

   - The INSIGHT Instrument Library provides a centralized library of Web-enabled educational evaluation surveys and instruments and is available for program and project evaluators in K–16 education.
   - The INSIGHT Data Repository is a research tool containing the accumulated historical record of administrations of evaluation instruments housed in the Instrument Library.

4. **Learning from Logic Models: An Example of a Family/School Partnership Program** (www.gse.harvard.edu/~hfrp/pubs/onlinepubs/logic.pdf)

   This brief offers a step-by-step approach for developing and using a logic model as a framework for a program's or organization's



evaluation. Its purpose is to provide a tool to guide evaluation processes and to facilitate practitioner and evaluator partnerships.

5. North Central Regional Technology in Education Consortium (NCRTEC) (www.ncrtec.org/capacity/profile/profwww.htm)

Developed by the NCRTEC, the Learning with Technology Profile Tool will allow comparison of current instructional practices with a set of indicators for engaged learning and high-performance technology. For each category, there is a description of the indicators and examples that fall along a continuum.

6. Planning into Practice (www.seirtec.org/plan/Ch%207.pdf)

As a result of SEIR◆TEC's work in various schools, several valuable tools have been identified that are particularly useful in helping districts and schools create strategic educational technology plans. Chapter 7 of this publication addresses evaluation and provides several tools that may be useful for program evaluation. This publication is available online in PDF format.

7. Profiler (http://profiler.hprtec.org)

Developed by the High Plains Regional Technology in Education Consortium (HPR✶TEC), the Profiler tool and ready-to-use surveys offer a means to improve people's skills around a general topic, strengthen their understanding of a topic, or increase their ability to share expertise. Surveys can be customized for a group and stored on and accessed from the HPR✶TEC server.

8. SEIR◆TEC Progress Gauge (www.seirtec.org/eval/gauge.doc)

Developed by SEIR◆TEC, the Progress Gauge is used to help school leaders reflect on activities to date in technology integration, think about what needs to be done in order to impact teaching and learning through the use of technology resources, and consider strategies for maximizing the impact of technology. The SEIR◆TEC Progress Gauge is also available in an online format in conjunction with HPR✶TEC using the Profiler tool.

9. TAGLIT (www.taglit.org/taglit/login.asp)

Taking A Good Look at Instructional Technology (TAGLIT) is a suite of assessment tools designed to help principals and other school leaders gather, analyze, and report information about how technology is used for teaching and learning in their schools. ◆

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SEIR◆TEC Welcomes Kevin Oliver

Kevin Oliver is the new Project Director for SEIR◆TEC as of October 1st. He comes to Durham from Virginia Tech where he worked as an Instructional Design and Evaluation Specialist since 1999. Kevin also formerly worked as an Instructor for the Department of Curriculum and Instruction at Southern Illinois University, teaching graduate-level instructional technology courses to pre-service and in-service teachers, and as an Educational Media Specialist for the UNC-Chapel Hill School of Nursing.

Kevin received his Ph.D. in Instructional Technology from the University of Georgia where he participated in teacher training and the integration of science Web tools in a rural school system. He also holds a M.Ed. in Educational Media and Instructional Design from UNC-Chapel Hill and a B.S. in Communications from the University of Tennessee. Kevin has consulted with computer software companies in North Carolina and Georgia, and he interned with educational media agencies at the U.S. Air Force Academy and Xerox. Since 1992, he has given more than 30 presentations at regional, national, and international conferences; authored or co-authored 13 technology-related publications in journals; and authored or co-authored funded educational technology grants from the Mellon Foundation, Apple Computer, the U.S. Department of Education (Challenge Funds), FIPSE, and the National Science Foundation.

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