Technology in the classroom does not just improve the way children learn, it allows teachers and students to do things they have never done before. It enables a level of personalization, engagement, and student-centered learning that was virtually impossible to achieve before. Technology also helps level the playing field by giving all students an opportunity to become proficient in the use of tools they will need to succeed in the 21st century.

When used effectively, technology is an essential enabler of the following education goals:

- Critical thinking and problem solving
- Project-based learning
- Information technology and communications (ICT) literacy
- Communication and collaboration
- Physical, emotional, and intellectual engagement
- Quality student products
- Authentic audiences
Getting Started with Technology

Here are some easy ways to start integrating technology into teaching and learning:

• Focus on providing access to basic tools, such as word processing, spreadsheets, and slideware applications.

• Use software packages that encourage individualized learning and remediation.

• Provide access to the Internet for primary source content and research.

• Take advantage of free Web-based tools for collaborative projects.

• Conduct student assessments online.
A Systematic Approach for Integrating Technology

To extract the full value of technology investments and create optimum conditions for technology-accelerated change, 21st century school districts must be systematic in their approach to planning, implementing, and managing technology use. Following are the steps to systematically integrate technology into teaching and learning, curriculum development, professional development, administrative services, and communication.

- Align technology plans with district vision and goals.
- Develop curriculum and plan the learning environment with technology as an integral component.
- Pilot the implementation.
- Phase in technology.
- Provide professional development.
- Provide adequate support for using technology meaningfully.
- Provide adequate support for maintenance and troubleshooting.
- Prepare for increasingly sophisticated use.
- Continually improve the effectiveness of technology use.
- Measure and document success.

Tips for Success

- Invite input from all stakeholders.
- Begin with teachers who are eager to use the technology.
- Use technology as an essential component of the educational process.
- Clearly communicate and enforce expectations.
- Solicit input from students.
- Consider allowing use of handheld devices when appropriate.
- Ensure accountability for achieving goals.
- Allow teachers to proceed at their own pace.
- Celebrate all successes, no matter how small.
Align Technology Plans with District Vision and Goals

Review the district challenges and goals that the technology integration is intended to address and remind all stakeholders of these goals as you plan and prioritize work. Also use these goals to set policies around the use of technology both in the classroom and for administrative and business services.

Develop Curriculum and Plan the Learning Environment with Technology as an Integral Component

Technology use should be integral to pedagogy and curriculum, as well as a key consideration in all education decisions. Establish curriculum teams that develop lesson plans and assessments that incorporate technology as an essential component of the learning process. Work with curriculum companies that have consultants who know how to incorporate technology. Adjust class scheduling, where needed, to allow students to follow recommended schedules for the online tutorials and remediation programs you have purchased. Also consider the learning environment itself. Determine what may need to be adjusted to maximize the effective use of technology. Potential areas of adjustment include seating configurations, room lighting and glare, and distribution of computers or other technology throughout the classroom or school.

Pilot the Implementation

Successful technology integration requires a well-planned, phased approach that starts with piloting the technology in a small group before deploying it to a larger group. Identify a pilot group of teachers to test the technology. Make sure these teacher-leaders have the support of their principals, specialists, and program supervisors. Include students in evaluating the pilot study as well. Document what works and what does not work, and refine strategies and techniques before expanding the project. Designate the pilot group as “local experts” when the adoption proceeds. Then solicit their recommendations regarding the timing and sequencing of the technology deployment as well as their support in training the next phase of adopters.

Phase In Technology

Once you have resolved issues identified in the pilot phase, develop a plan to phase in technology. The phase-in might require three months or a few years. It might begin with one subject area, one cross-disciplinary area, one grade level, or one school at a time. It might be designed so that large, complex deployments do not occur simultaneously. The purpose of a phased approach is to minimize the burden on IT resources, school administrators, curriculum specialists, teachers, and others; ensure that adequate resources are available to support the technology integration; and promote a positive user experience.

Provide Professional Development

Synchronize professional development with the technology phase-in. This approach helps ensure that teachers are not overwhelmed by too much training within a short period, and helps narrow the gap between the time when training occurs and the arrival of classroom technology. Conduct orientations for the different technologies and hire “integration specialists” to show teachers how they can effectively incorporate technology into the teaching day. Develop and disseminate best practices, tips, and ready-made lessons that incorporate technology. Include specialists such as librarians and music, art, reading, and special education instructors in professional development so that everyone on staff is moving toward the changes.

“School is not about transmitting information. Kids can get any information they want. The trick is to motivate them to want to get the right information and then give them a choice about how to get that information.”

Phil Schlechty
Founder, Schlechty Center
Provide Adequate Support for Using Technology Meaningfully
Support is essential to encourage adoption. If teachers and students experience downtime or failure without appropriate support, they will abandon the technology. Encourage school leaders to continually clarify expectations about technology use, monitor teacher progress, and model support by using technology in their own work. Ensure that instructional technologists, integration specialists, and technology interns are proficient in the technology and curriculum, and that they are available to provide coaching and individualized support as needed. Ensure professional development is available from technology vendors and that their hotlines are working. Create professional learning communities for users to share tips and solve problems. Provide regular opportunities for teachers to report challenges and successes.

Provide Adequate Support for Maintenance and Troubleshooting
Ensure that the district’s technology support team is adequately trained and prepared to support the technology, and arrange ongoing proactive maintenance to prevent problems from occurring. Provide “help desk” services and a “frequently asked questions” (FAQ) Website so that teachers and administrators have ready access to solutions when technology is not working.

Prepare for Increasingly Sophisticated Use
As the district adopts more-complex and -expensive technology, such as interactive whiteboards and student response systems, devise a comprehensive plan for using these technologies as an integral part of teaching and learning. Initially focus on a few curriculum areas that will benefit the most from the use of these tools.

Any new technology must be accompanied by professional development and qualified support personnel. Once teachers have attained a basic level of proficiency with technology, though, professional learning communities and online collaboration are increasingly important as methods to encourage innovation and lesson sharing, and to help ensure that teachers continually raise the bar.

Continually Improve the Effectiveness of Technology Use
A technology investment is worthwhile only when it is used to its maximum potential and results in improved student performance. Create technology-use logs or other mechanisms to track how technology is used. Hold teachers accountable for using technology and entering data in the logs. Visit classrooms and observe lessons to see whether teachers are using the technology appropriately and effectively. Ask students about their teachers’ effectiveness and their own experience of using technology in the classroom. Conduct online surveys to collect anonymous input. Be willing to accept honest feedback from teachers and students.

Measure and Document Success
Whether you use surveys, data, or interim assessments to gather information, make sure you develop and implement steps for measuring the effectiveness of the technology integration. As early as possible, identify measurable indicators of success. In other words, is technology integration improving district performance? Is the district getting value from its investment? These indicators may include student engagement, test scores, number of discipline referrals, teacher attraction and retention, changes in school enrollment, and so on. Create a baseline against which to measure changes by documenting these indicators before technology’s integration into teaching and learning. Continually document these indicators—as well as challenges and how they are addressed—over time. Use this information to determine what works best and refine practices, as well as to inform stakeholders such as administrators, parents, the community, and the school board about technology’s impact.

For more information about Cisco Global Education, please visit our website at www.transformglobaleducation.org.

“The full integration of technology into teaching and learning will require a systematic and balanced approach that goes beyond just acquiring computer hardware and using limited technology skills.”

Access, Adequacy, and Equity in Education Technology
A publication of the National Education Association in collaboration with the American Federation of Teachers, May 2008.
Resources for Integrating Technology into 21st Century Teaching and Learning

Information on Integrating Technology

- **Metiri Group**
  (www.metiri.com)
  Education consultant that provides a broad range of services that empower educators to advance effective teaching and learning, use technology in powerful and meaningful ways, and foster 21st century skills.

- **November Learning**
  (www.novemberlearning.com)
  An organization that promotes the effective use of information and communication technologies to support and enhance learning for children and communities.

Online Content and Tools

- **Discovery Education Streaming**
  (http://streaming.discoveryeducation.com)
  A digital video-on-demand and online teaching service to help improve students’ retention and test scores.

- **ePals Global Community**
  (www.epals.com)
  A community of collaborative classrooms engaged in cross-cultural exchanges, project sharing, and language learning.

- **History Channel**
  (www.history.com)
  Television station that offers free programming related to history and culture.

- **Jing Project**
  (www.jingproject.com)
  An online resource that offers free software that allows teachers and students to capture and share videos and other content.

- **NASA Education Program**
  (education.nasa.gov)
  Program that provides activities and information related to science, technology, engineering, and mathematics.

- **Partnership for 21st Century Skills**
  (www.21stcenturyskills.org)
  An advocacy organization that is focused on infusing 21st century skills into education; Cisco is a founding member.

- **National Geographic**
  (www.nationalgeographic.com/education/)
  Online resource for lesson plans, activities, and information related to geography, history, culture, animals, and other topics.

- **Ning**
  (www.ning.com)
  An online platform that allows individuals and groups to create their own collaborative networks.

- **Promethean Planet**
  (www.prometheanplanet.com)
  An online resource that includes lessons and professional development materials related to interactive whiteboards.

- **Smithsonian American Art Museum**
  (http://americanart.si.edu/index3.cfm)
  Provider of education resources such as state standards-based, multidisciplinary lesson plans that span the fields of art, design, science, technology, history, culture, and language arts.