Cisco’s Global Education group is actively engaged in the work of transforming education systems to meet the needs of 21st century learners, educators, and organizations. This transformation will require a shift in the way teachers teach, leaders lead, and students learn.

Systemwide pedagogy transformation helps districts achieve the following goals:

- Ensure consistency of education approach across schools, grade levels, and subjects
- Accommodate varying levels of student competency and individual learning styles
- Provide equitable access to resources and learning
- Motivate students to take ownership of their learning
- Teach students how to learn, creating lifelong learners
- Integrate technology to enhance teaching and learning
- Reduce time spent on classroom management
- Measure results that matter

To meet 21st century education objectives, districts must introduce new ways of teaching that fully engage students and support active learning, collaboration, problem-based work, and other 21st century skills. These new teaching approaches must extend throughout the entire district.
Success Factors

- **Stakeholder involvement**
  Decisions about pedagogy involve all key stakeholders and are made collectively.

- **Professional development**
  Teachers and other leaders receive training on the new pedagogies and how to apply them, as well as training on technology-based learning tools and how to effectively integrate them into the learning environment.

- **Continual reinforcement**
  Ongoing training, mentoring, professional learning communities, assessment tools, and other mechanisms continually reinforce the 21st century pedagogy and use of technology.

- **Alignment with curricula**
  Districts choose curricula that give teachers the opportunity to apply, and become proficient in, the new pedagogy and the technology that supports it. Collaboration, project-based learning, and new pedagogical approaches are built into the curriculum.

- **Ongoing assessment**
  Teachers use timely assessment results to design relevant work and to differentiate learning (for example, for remediation or to provide more-challenging tasks). Districts use assessment results to refine initiatives as needed and to report progress to parents, community members, the school board, and others.
A Systematic Approach to Transforming Pedagogy

The following discussion provides an overview of processes and best practices for transforming pedagogy for the 21st century. Some of these processes are interdependent or occur in parallel. In many cases, districts will work with education partners to create and execute a comprehensive approach to pedagogy transformation.

- Articulate vision and goals
- Select a range of pedagogical approaches
- Adjust policies as needed
- Design a collaborative learning environment
- Assess current teaching methods and provide ongoing professional development
- Phase in new approaches
- Develop curriculum and content that reinforce the pedagogy
- Create metrics and assessments that measure 21st century skills
- Stay the course
- Hire well

Pedagogical Approaches

- Inquiry-based learning
  Students participate in a process of asking questions to learn about a problem or topic. Structured problem-solving and the Socratic method are forms of inquiry-based learning.

- Cooperative learning
  Students work in collaborative groups to study content and complete projects. Self and peer assessment is a critical part of the process. The individual succeeds only when the group succeeds.

- Project-based learning
  Students work on complex, real-world projects that require interdisciplinary work and result in a product that is relevant for an authentic audience.

- Reciprocal learning
  Students individually master a concept or topic and then teach each other, with each “lesson” building on the preceding presentation and discussion.
Articulate Vision and Goals

Begin by clearly articulating the district’s vision for 21st century pedagogy—what it is, what it looks like in action, how teachers and students will experience it, as well as expected outcomes. Clarify assumptions about learners and the role of educators, particularly teachers and their relationship with students. Think about students’ interests and the types of technology they use. Consider the entire system, including learning objectives, curricula, assessment strategies, technology infrastructure, and district policies. Educate stakeholders, parents, and the community about the shift to a new teaching and learning approach, what 21st century learning looks like, and the role technology will play. Reassure them that the new approach will enable deeper learning and that the district is still committed to meeting or exceeding state standards.

Select a Range of Pedagogical Approaches

Work backward from the district’s vision and goals to identify teaching methods and learning environments that align with the district’s plans. Many districts select a toolbox of approaches that account for learners’ resources, needs, and expertise, as well as curricula, high-stakes tests, and learning objectives. These approaches—which are not mutually exclusive—are based on a constructivist view of learning, in which learners engage in activities, provided by the teacher, that help them “construct” their own understanding of concepts, principles, and complex solutions to problems. In most approaches, the teacher’s role is to create relevant and interesting activities that will result in students mastering the expected outcomes. In a constructivist classroom, the teacher is a designer of quality work, a resource-provider, and a facilitator, rather than a lecturer and test-giver.

Adjust Policies As Needed

Work with the school board to adjust scheduling to accommodate project work, deep inquiry, remedial programs, and other approaches that will require longer class periods. Examine security policies regarding students’ online sharing of projects on YouTube and other public sites that provide an authentic audience for student work. Reevaluate policies about students’ in-class use of cell phones and other devices. Such devices may enable students to record data, create video and audio notes, browse the Internet, and use text messages to “vote” for the correct answer or ask questions of off-campus lecturers. They also help bridge the digital divide in homes where students do not have access to computers, but frequently have access to MP3 players, game consoles, and DVD players.

Design a Collaborative Learning Environment

Work with students and teachers to create a physical environment that supports 21st century learning, collaboration, and student engagement in authentic projects. Use a flexible classroom configuration that includes computer workstations, work tables, and comfortable areas for collaboration. Allow students to adjust chairs and tables to accommodate multiple learning scenarios where students work alone, in teams, or individually with a teacher. Use technology to support collaboration; individual learning needs; and anytime, anywhere learning. Collaborative learning tools include wikis, blogs, the Internet, interactive whiteboards, multimedia equipment, cell phones, iPods, MP3 players, and hand-held devices.

Assess Current Teaching Methods and Provide Ongoing Professional Development

Use classroom observation, surveys, focus groups, and interviews to document current teaching practices, technology use, curricula, programs, and the learning environment. Look at students’ work and teachers’ work (such as lesson plans) to help gauge how much, and how well, teachers use 21st century pedagogy. Use these assessments to establish realistic short- and long-term goals, develop a baseline for comparison as the transformation initiative moves forward, and determine the type and extent of professional development that is needed. Provide professional development so that teachers understand how to implement 21st century pedagogy, facilitate and assess student projects and interdisciplinary work, and become proficient at integrating 21st century tools into the learning environment.

“When we talk about 21st century pedagogy, we have to consider many things—the objectives of education, the curriculum, how assessment strategies work, the kind of technology infrastructure involved, and how leadership and policy facilitate attaining education goals.”

Chris Dede
Harvard University
Phase in New Approaches

Acquaint the entire district with new teaching approaches all at once, but phase in the adoption over time, and in coordination with plans for curricular alignment, professional development, and technology adoption. Begin by selecting a subject area or grade level for a pilot. Acquire, adapt, or develop lesson designs that support the pedagogy and curriculum, and build in collaboration and technology-enabled learning activities. Concentrate early efforts on teacher-leaders who are eager to innovate, willing to solve problems and share results, and can model the approach for others. Help students transition to new pedagogy by providing prompting and guidance. Teach them how to conduct research, plan and complete projects, and evaluate each others’ work. Develop metrics for evaluating the program implementation and refining processes before replicating the pedagogy throughout the district.

Develop Curriculum and Content That Reinforce the Pedagogy

Have teachers review required standards to determine how they can adapt lessons to the new pedagogy. Use in-class coaches, videos, online collaboration, and classroom observation to model effective teaching strategies. Provide planning time for teachers to work collaboratively to create interdisciplinary projects and align subjects across grade levels. To develop 21st century skills, devote the majority of class time to concepts and ideas that encourage critical thinking, collaboration, and creative problem-solving, while incorporating the facts that students need to know for high-stakes tests. Use online programs and other technology to allow students to progress at their own pace—especially for content that requires memorization of facts or rote learning.

Create Metrics and Assessments That Measure 21st Century Skills

To measure and improve the impact of new curricula, programs, teaching skills, and pedagogy, develop clear metrics on what constitutes achievement and share them with students, teachers, parents, and others in the community. Regularly assess student performance against those metrics. Take into account not only 21st century skills, but also external requirements such as state testing. While assessment of technology use, collaboration, innovation, information literacy, and other 21st century skills is critical, test specific competencies in core subjects as well. Test students in a way that reflects the complexity of the expected learning outcomes; that is, move from testing rote memorization to assessing students’ ability to apply, analyze, synthesize, and evaluate information. To do so, use progress tests, project assessments, self and peer evaluation, expert analysis, and rating scales that match the curriculum and pedagogy. Use online tools such as Moodle to track and assess individual contributions to collaborative projects. Use hand-held wireless voting devices to evaluate student comprehension in real time, and then reteach concepts as needed or target remediation to select students.

Stay the Course

Sweeping change—and the learning curve associated with it—may create temporary dips in student performance scores, teacher satisfaction, and student engagement. Prepare staff and the community for this possibility, and do not waver when challenges arise. Communicate and celebrate wins—no matter how small—especially in the early stages.

Hire Well

Clarify expectations and screen potential hires for alignment with the district’s teaching strategy. Ask questions such as, “How do you know students are learning? How do you measure that? How do you individualize instruction for each child?” Before hiring candidates, observe them teaching in an actual classroom. Distinguish between learning gaps, which can be addressed through professional development; and attitudinal barriers, which may be more difficult to change. Look for technology skills, but do not equate technology proficiency with expertise in integrating technology into pedagogy and curriculum.

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

‘There is no single best way to teach because there is no single best way to learn.”

Chris Dede
Harvard University
Cisco Recommended Ecosystem Partners for Transforming Pedagogy for the 21st Century

The following resources provide training and information on 21st century pedagogies and assessment.

- **America’s Choice**
  (www.americaschoice.org)
  America’s Choice develops student-centered pedagogy that emphasizes relevant, authentic student work, while using a highly structured learning process that aligns instruction to state standards.

- **enGauge 21st Century Skills**
  (www.metiri.com/features.html)
  This model provides a framework for understanding 21st century skills and the integral role of technology in 21st century pedagogy.

- **Marzano & Associates**
  (www.marzanoandassociates.com)
  This education consultant specializes in school reform and is noted for thought leadership in pedagogy.

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

- **November Learning**
  (www.novemberlearning.com)
  This organization provides a wealth of information and resources about establishing technology-enabled, collaborative learning.

- **Partnership for 21st Century Schools (P21)**
  (www.21stcenturyskills.org)
  The P21 framework describes 21st century content and pedagogy. For additional insight into 21st century pedagogy and learning environments, visit the Route 21, Assess 21, and MILE Guide sections of the website under Resources > Online Tools.

- **Project Zero**
  (www.pz.harvard.edu)
  Project Zero is a research group at the Harvard Graduate School of Education that aims to understand and enhance learning, thinking, and creativity.

- **The River City Project**
  (http://muve.gse.harvard.edu/rivercityproject/)
  This Harvard project provides a multiuser virtual environment for learning scientific inquiry and developing 21st century skills.

- **Schlechty Center for Leadership in School Reform**
  (www.schlechtycenter.org)
  The Schlechty Center provides resources and support to educators who are involved in school reform efforts.

- **A Vision of K–12 Students Today**
  (www.youtube.com/watch?v=-_A-ZVCjfWf8&NR=1)
  This short video provides illuminating statistics about 21st century students.