In this presentation I would like to take a look at how educational technology is being integrated in Texas classrooms. I want to set a bit of a context for talking about technology and the underlying organizational systems and relationships that are driving education in Texas.

**Texas Essential Knowledge and Skills**

The centerpiece of our organizational system is the Texas Essential Knowledge and Skills (TEKS), the state-mandated student curriculum. Figure 1 shows the two sides of TEKS. One side focuses on the public schools with their testing program, accountability system, and teacher evaluations, while the other side is concerned with educator preparation. TEKS develops educator standards that are closely aligned with the schools’ instructional materials and student testing; certification tests for educators; and an accountability system for educational preparation programs (which is separate from Title II, although they are merging a little closer together—we are running two sets of data at this point).

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A Three-Part Structure for Integrating Technology

The integration of educational technology in Texas is being accomplished in three parts. The first is the mandated Technology Applications K–12 student curriculum that was adopted in 1998. It focuses on technology skills as a means to an end, improving student learning and inquiry. The curriculum is arranged around four broad strands: foundations, information acquisition, problem solving, and communication. These make up a conceptual framework that allows a certain amount of flexibility with curriculum as the technology itself changes. The second part is the Telecommunications Infrastructure Fund Board. They work behind the scenes to provide money to help public schools and higher education institutions create an infrastructure of technology. Then there is the third part, the State Board for Educator Certification, my agency. Our job is to ensure a well-prepared human infrastructure to support that hardware infrastructure and the student curriculum.

Three Initiatives for Preparing Teachers

Technology Application Standards

The first initiative was the approval in 2000 of our Technology Application Standards for all beginning teachers. Committees of Texas educators used the ISTE standards as well as the student curriculum as they developed these standards, which are loosely based on the four broad conceptual strands I mentioned with an added piece of pedagogy, that of being able to effectively integrate technology skills into the classroom. The standards have been around and programs have been aligning with those standards, but we needed the assessment piece. The technology application standards are now being assessed on our new Pedagogy and Professional Responsibilities (PPR) exam. This exam, which is currently a multiple-choice test only, was first administered on October 5, 2002 as part of the Texas Examinations of Educator Standards (TExES) program; standard setting meetings for this exam are now underway. Content area exams will also assess candidates’ knowledge of effective technology integration, and teacher preparation programs will be held accountable for their candidates’ performance on examinations. Last year we issued 16,000 initial certificates; if that trend continues, with everyone taking the new test by next year, there will be around 15,000 or more teachers who will have been prepared and assessed on those standards.
Technology Applications Certification

Our second initiative is developing Technology Applications Certification for grades 8–12. This program is aligned with the high school curriculum and includes desktop publishing, digital graphics/animation, multimedia video technology, and Web mastering. We began approving preparation programs in 2001 for grades 8–12. Right now we are issuing the certificates without an assessment, partly because there is a technology applications requirement in the student curriculum and an intense need for qualified teachers in that area. We plan on implementing exams in 2004. We have also recently approved certification in technology applications for early childhood through twelfth grade. That was really at the insistence of teachers in the field who pointed out that we have fourth graders who are already doing Web mastering and that we do not need to wait until students are in high school to teach these skills in a way that is age and developmentally appropriate. We will begin approving programs late this fall for those certificates.

Master Technology Certification

The third initiative was at the legislature’s urging. A Master Technology Teacher program was established in 2001. It is the third of our Master Teacher certificates, following Master Reading (1999) and Master Mathematics, which was also brought forth in legislation in 2001. Among the requirements, candidates must have three years of teaching experience or hold a technology applications or educational technology application certificate before they can be considered for entry into the program. Candidates must also complete one approved preparation course of instruction on interdisciplinary technology application. The legislation is specific about what is required to effectively integrate technology and includes technology applications designed to meet the educational needs of students with disabilities. Knowledge of assistive technology is therefore very much a part of the requirements for this certification. Digital learning competencies are again loosely based on the student curriculum models. Candidates will also be required to demonstrate knowledge of effective professional peer mentoring techniques. They will then be required to pass an exam.

Annual stipends of $5,000 will be provided for Master Technology Teachers who serve on a high-need campus, just as they are for Master Reading Teachers and Master Mathematics Teachers. Appropriations for the stipends will likely be approved when the legislature comes into session this spring. A high-need campus is going to be interesting to define. For reading and math,
you can look at student test scores. How do you do it for technology? It has been proposed that we use the School Technology and Readiness (STaR) chart, which is loosely based on the CEO Forum chart that covers everything from hardware and software to what is happening in the schools. It also integrates our standards so that eventually every teacher should be able to meet those technology application standards.

When the legislature does something in Texas, they tend not to give us a lot of time, so the timeline for Master Technology Teacher seems brief, at least to those in our office. The standards were approved in 2002, we were reviewing the test framework in February, and we have already begun to approve programs. The legislature has been submitting their matrix of how they want to meet the standards and what kind of benchmarks to use. Item development is ongoing—items are sitting in my file cabinet in the office now. The first examination is planned for early July of 2003. The exam will be part of our Texas Examinations for Master Teachers Program (TExMaT). It will be computer based and it will be offered initially at selected sites. The test will include multiple-choice items, some performance tasks, and a case study assignment, which will focus on mentoring and on using effective integration technology.

The interesting thing about Master Technology Teachers that makes them unlike Master Mathematics Teachers or Master Reading Teachers is that these are teachers who are walking in to help teachers in different content areas; they must strike a balance between integrating technology and mentoring adult learners in an effective way. This is a challenge for the Master Technology Teacher and for those of us who are developing an examination for teachers who will be mentoring outside of what is probably their own content area.

**Computerized Testing—Our Next Goal**

The next step in Texas is to pursue funding to allow all certification exams to be administered via computer at all of our current test sites. We continue to pursue this goal and we will be going to the legislature again to ask for additional funding. There are a number of reasons for this, one of which is that we may be able to have performance-based assessments for all beginning teachers instead of only multiple-choice assessments. Although we have had a lot of input from technology specialists and teachers in the state about how to effectively integrate multiple-choice items into an assessment, computerized testing may give us a way to administer performance-based assessments. From a logistics standpoint, computerized testing would also enable us to
offer testing much more frequently than we do now. Test administrations are currently offered only five times a year, and more frequent administrations will help address the constant clamoring that we do not have tests available often enough. As we move into the future, Texas will continue to look ahead, applying technology both in the classroom and at certification test sites to provide better services to our prospective teachers as well as to our children.