

# **Developing a State Technology Plan to Promote State-Wide Technology Integration in K-12 Education: Preparing Arizona Students for Future Success**

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## **Purpose**

Constructing a framework for technology integration in Arizona K-12 will establish a “roadmap” enabling the state to consistently and coherently promote a coordinated state-wide infusion of educational technology in the K-12 education system. It will bring direction to and support for all activities that impact the integration of educational technology across Arizona elementary and secondary education.

A comprehensive state technology plan seeks to ensure that an educational technology vision is reached for every student, every teacher, and every school in the state of Arizona. It is intended to support and to align the growing movement of teachers, administrators, parents, industry and business leaders, and government officials that recognize the need in Arizona for a new comprehensive state educational technology framework. By integrating Arizona’s many educational initiatives, a statewide educational technology framework has the potential to maximize resources, coordinate efforts, and guide all education partners to move in the same direction with minimal duplication or conflicting goals.

This paper will provide an overview of the Arizona K-12 technology plan, and describe the processes involved in developing the plan. These processes involved determining key stakeholders in the state, acquiring input from stakeholders to develop a framework for the plan, disseminating a draft framework to teachers, administrators, and business leaders in the state, and using feedback from these individuals to refine and enhance the plan. After the plan has been refined, key stakeholders will take the plan to the Arizona Department of Education for review and adoption. Each component of this process will be discussed, and the resulting technology plan will be described in detail.

## **Educational Technology is Important for Student Success**

The use of educational technology is no longer the path to future success for Arizona children. It is the path to current success. If used appropriately, research shows that it enriches the learning environment leading to better student performance. Educational technology can:

- Allow learning to occur in ways not possible otherwise;
- Be a means for improving learning in all subjects;
- Expand students’ creative abilities;
- Promote students’ taking responsibility for their own learning;
- Impact at-risk student populations positively;
- Promote students’ interaction with a larger community (e.g., discussions directly with experts, with other students working on the same or similar projects, etc.).
- Give students experience with modern workplace tools.

In short, technology, when implemented appropriately, has great potential to give Arizona K-12 students an enhanced learning environment. As an additional benefit, Arizona children will be exposed to and utilize technology that will better prepare them to enter today’s society and economy as an active participant.

## **Providing Access to Technology**

Educational activities that integrate technology in meaningful ways are useless if students do not actually have access to that technology. The significant enhancement to teaching and learning afforded by resources available on the Internet is lost if schools do not have the infrastructure necessary to deliver

broadband voice, video, text and graphic data to adequate multimedia computers available in the classrooms. Thus, meeting professional development and student achievement goals relies upon the creation of a networking infrastructure and provision of adequate numbers of multimedia computers in every classroom throughout Arizona. This goal is even more crucial in the remote areas of Arizona where community resources are insufficient to provide students the opportunities that more affluent students in the more dense population centers may enjoy in their homes.

Since 1999, Arizona has made groundbreaking strides in this area. Initially, each of Arizona's 228 public school districts were provided enough computers to ensure a 1:8 computer:student ratio. The second phase of the statewide educational technology initiative will connect every network-able computer to a local area network (LAN). Also in phase two, every school in every district will be connected via a wide area network (WAN) with a district aggregation point that is then connected to the Internet with a broadband connection that allows transmission and reception of voice, video, text and graphic data.

This initiative is making an Application Service Provider (ASP) available to every public school at no charge to the schools until June 2005. The ASP will host school and teacher websites, e-mail services for staff and students, student information management systems, student assessment tracking systems, and teacher resource management systems. The ASP will enable schools to access productivity software, over 250 educational titles, (i.e., content, courseware, reference materials), and communications software. These resources will be available over the Internet, making them accessible to students, staff, parents, and teachers whether working from school or home. Students will be able to access their own work and the school district's software from any location that has access to the Internet.

As cutting edge as these initiatives are, they are only the beginning of a continuing challenge. Given the speed with which technology information systems are changing, this State Framework, covering all aspects of educational technology including provisions for assessment and updating, is necessary.

### **Components of the K-12 Technology Plan**

Focus groups consisting of K-12 administrators, teachers, parents, industry stakeholders and university faculty determined twelve key issues that should be included in a comprehensive state framework. Review of other state educational technology plans and interviews with state technology directors helped determine the corresponding benchmarks of these components. These components were combined into the following eight categories following a stakeholders meeting:

1. Integrating educational technology into the curriculum
2. Professional development for teachers and staff
3. Pre-service training for teachers
4. Capacity, infrastructure, staffing, and equipment
5. Collaboration and partnerships
6. Equity of use
7. Review, evaluation, and accountability
8. Current and future funding requirements

Addressing these issues requires a framework of vision and implementation strategies. All of these categories may be considered interdependent, often with considerable overlap of concept and, where possible, shared use of resources. Each component is described in more detail below:

*1. Integrating educational technology into the curriculum.* The purpose of education is to help students think, learn, and achieve in new ways in and across disciplines. Educational technology is a necessity in fulfilling this purpose. Educational technology (ET) will help students in all subject areas develop and nurture the ability to access, to analyze and to communicate information. In every school there must exist a positive and supportive attitude toward ET. Six critical objectives for educational technology integration are:

- Build the foundation for the integration of educational technology within schools

- Address technology and content/curriculum standards complementarily by teachers and administrators
- Structure the reward system to strongly provide the incentive for teachers and administrators to integrate educational technology
- Provide training for teachers and administration of all schools
- Align school educational technology plans with State Framework
- Assess student and teacher competency using state educational technology performance standards

2. *Professional development for teachers and staff.* Teachers must be comfortable using educational technology if it is to be integrated effectively into the classroom. Providing access to resources along with time and support to develop educational technology competency represents the most logical means by which to ensure effective curriculum integration. To develop teachers and administrators into confident professionals with the educational technology skills to use educational technology resources appropriately three issues must be addressed:

- Build an infrastructure to support the design and delivery of professional development for teachers and administrators
- Provide incentives and encouragement for teachers to engage in educational technology professional development
- Assume ownership of teacher and administrator roles as educational technology leaders and integrators

3. *Preservice teacher training.* Future teachers must enter their respective fields equipped with educational technology skills and experience. Teacher education programs are responsible for preparing future teachers to integrate educational technology. Teacher education programs must also work collaboratively with the school systems to ensure that student teaching experiences occur in learning environments that support the integration of educational technology.

4. *Capacity, infrastructure, staffing, and equipment.* Technical standards will provide a foundation for collaborative planning and support efforts among local, regional, and state-level groups, including the worthiness of the individual school educational technology plans and the ultimate success of the technical infrastructure at the local school buildings. Comprehensive plans regarding the required capacity and infrastructure issues include the following steps:

- Establish policies and procedures whereby the infrastructure for broadband Internet connectivity delivered to public school classrooms is regularly upgraded to provide capacity commensurate with state-of-the-art information systems delivery;
- Ensure that numbers and technological configuration standards of multimedia computers available in the public schools stays abreast of the increase in student enrollment and the increase in technological configuration standards as the industry standards advance,
- Provide affordable ET resources (people, professional development, technical support, etc.) to every school district;
- Create plan for equity of access to technology for all students, schools and districts, ensuring that resources are provided in an equitable manner throughout the state regardless of the socio-economic status or ethnicity of the students
- Provide for continued cost-effective delivery of curriculum software that is correlated with state education standards... not just technology standards (Objective 1.2)

5. *Collaborations and partnerships.* Educational technology plans are better poised to succeed if they include support and partnerships from state and community resources. These include universities, community colleges, libraries, museums, community resources, industry, and state and municipal governments. Successful partnerships and collaboration require a commitment to:

- Provide access to and aid in applying information that promotes collaboration and partnering, and;
- Build and highlight models of exemplary partnerships and collaboration

6. *Equity of use.* A comprehensive educational technology framework will ensure that all of Arizona's children will have equitable use to educational technology regardless of socio-economic status, race, gender, language, or special needs. The success of statewide equity of use relies upon the commitment to:

- Disseminate data widely regarding issues posed by ethnicity, minority, gender, and physical and mental ability, and
- Address equity of use issues in educational technology widely

7. *Review, evaluation, and accountability of the framework.* Educational technology is not stagnant; better and better hardware, software, and networks appear each day. Although this Framework is written in a rather generic way, any effective plan for educational technology usage must address the need to periodically update its elements. Regular review of progress in implementing a plan will ensure a timely pursuit of the goal of ubiquitous educational technology infusion in the K-12 system as well as an effective and efficient investment of public and private funds and resources. Of course, the ultimate goal of K-12 educational technology plans is to provide the resources and processes necessary for enabling students to meet the technology education standards. Thus, the ultimate accountability is that students make reasonable progress in meeting these standards. Three specific areas must be directly addressed:

- Maintain currency of the Framework
- Monitor progress in implementation
- Monitor student progress in educational technology use

8. *Current and future funding requirements and sources.* Providing the technical infrastructure, equipment, human resources, and professional development needed to implement educational technology into K-12 schools requires significant Funding Requirements and planning. Critical steps would include:

- Determine funding requirements
- Determine funding sources
- Acquire and allocate funding to meet requirements