Teaching and Learning for the 21st Century

REPORT AND RECOMMENDATIONS OF THE ARIZONA SUMMIT ON 21ST CENTURY SKILLS

Arizona Summit on 21st Century Skills

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P-20 ARIZONA

ARIZONA'S FIRST College of Education THE UNIVERSITY OF ARIZONA

PARTNERSHIP FOR 21ST CENTURY SKILLS

Special thanks to Superintendent Tom Horne and the Arizona Department of Education for their help in planning and implementing the Arizona Summit on 21st Century Skills.

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Arizona's Commitment to 21st Century Skills

Preparing Arizona's students to succeed in a dynamic, internationally competitive economy is a shared goal among the state's leaders, policymakers, educators, community organizations, foundations and business community.

In a changing world, it is incumbent upon all of us to understand the skills and knowledge that students need to become effective citizens and workers in the 21st century. To that end, 250 of the state's leading citizens participated enthusiastically in the first Arizona Summit on 21st Century Skills, held on October 25, 2007.

The summit was convened by Governor Janet Napolitano's P–20 Council, a group that works to improve and align preschool through postsecondary education; the University of Arizona College of Education; and the Tucson-based Partnership for 21st Century Skills, the nation's leading advocacy organization for infusing 21st century skills into education.

Participants agreed that Arizona students need to master more than the basic subjects to compete with their peers in the state, the nation and throughout the world. Core subjects such as English, mathematics, science, history, and the arts are still vitally important. But new kinds of knowledge and skills are equally and increasingly valued in communities, higher education and businesses. Our students need to become critical thinkers, problem solvers, effective communicators and collaborators, creators and innovators. They need to learn to be self-directed and motivated individuals, capable of learning on their own once they leave school. And they need to acquire new literacies, such as health, financial and media literacy, and develop global awareness about the world beyond our nation.

Core subjects and 21st century skills are not competing goals. Students can learn 21st century skills in the course of learning core subjects—and if they do, education will be far more relevant, meaningful and engaging for both students and teachers.

This report is a call to action for infusing 21st century skills into P–20 education in Arizona. In addition, this report highlights four key elements of an effective, 21st century education system, with statewide recommendations to the Governor's P–20 Council to produce graduates with the right kinds of skills to be productive in the economy and society:

- **Embedding 21st century skills into professional development**
- **Integrating 21st century skills into assessments**
- **Aligning teacher preparation with 21st century skills**
- **Infusing 21st century skills into youth development**

We urge the P–20 Council to support these recommendations by developing an action agenda focused on 21st century skills for the governor. This report can serve as a starting point—and a framework—for incorporating 21st century skills and content into Arizona's education system.

A Vision of a 21st Century Education System

The Partnership for 21st Century Skills has developed a vision for 21st century learning and education support systems that can be used to strengthen education. Arizona is one of a growing number of states that is engaged in a major dialogue about the future of education.

The vision and framework for 21st century learning resonates with citizens who believe that students must acquire a different set of skills to succeed.

Summit participants recommended that Arizona embrace this framework as a fundamental point of reference for future work on educational, economic and workforce development strategies.

For Arizona students, proficiency in 21st century skills—the skills, knowledge and expertise students should master to succeed in college, work and life—should be the outcome of a 21st century education. To be "educated" today, students must master core subjects, 21st century themes and 21st century skills.

To help students achieve proficiency in 21st century skills, teachers and administrators need education support systems that strengthen their instructional, leadership and management capacity. And both students and educators need learning environments that are conducive to results.

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21ST CENTURY STUDENT OUTCOMES

Core Subjects
- English, reading or language arts
- World languages
- Arts
- Mathematics
- Economics
- Science
- Geography
- History
- Government and civics

21st Century Themes
- Global awareness
- Financial, economic, business and entrepreneurial literacy
- Civic literacy
- Health literacy

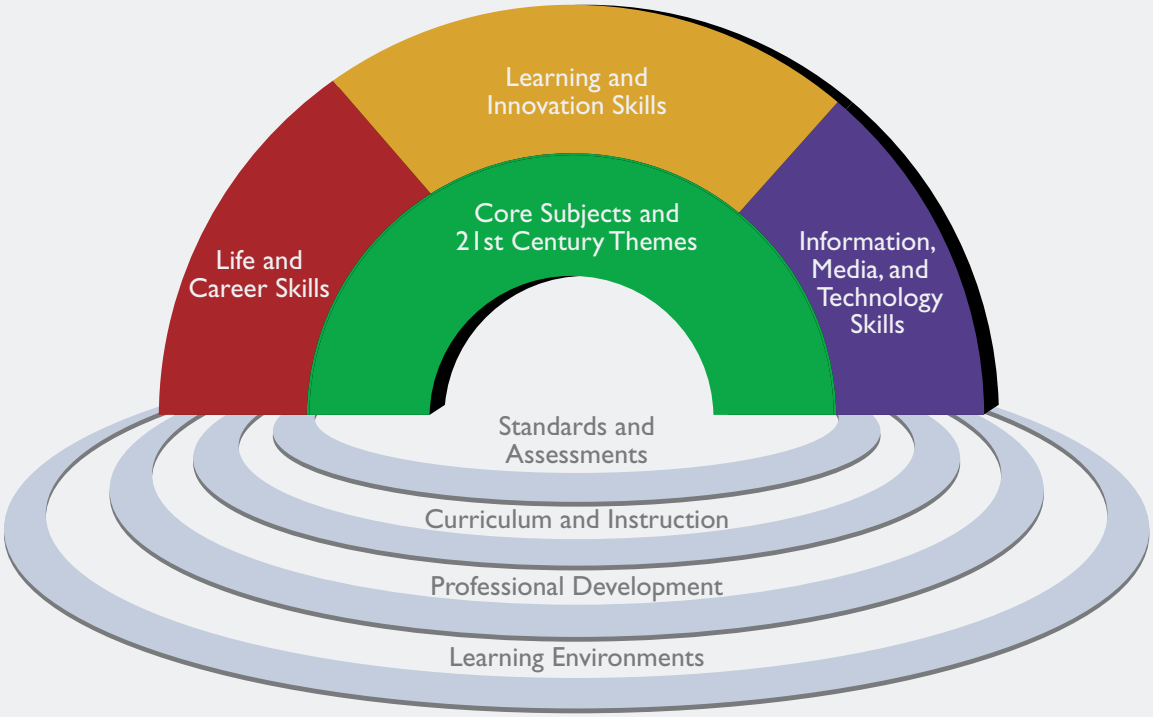
Learning and Innovation Skills
- Creativity and innovation skills
- Critical thinking and problem solving skills
- Communication and collaboration skills

Information, Media and Technology Skills
- Information literacy
- Media literacy
- ICT (information and communications technology) literacy

Life and Career Skills
- Flexibility and adaptability
- Initiative and self-direction
- Social and cross-cultural skills
- Productivity and accountability
- Leadership and responsibility

21st Century Education Support Systems
- 21st century standards and assessments
- 21st century curriculum and instruction
- 21st century professional development
- 21st century learning environments

To learn more about the Framework for 21st Century Learning, visit www.21stcenturyskills.org.



Embedding 21st Century Skills into Professional Development

Equipping Arizona students with 21st century skills requires preparing educators with new kinds of knowledge and skills. Like many states, Arizona is at a critical point in providing effective professional development to educators, who can make the most difference in improving results that matter for our students in the 21st century.

PROFESSIONAL DEVELOPMENT SHOULD BE:

Strategic. To maximize their impact on teaching and learning, teachers and administrators need to be proficient in 21st century skills themselves *and* in instructional strategies that foster these skills. Professional development should be defined strategically to promote these two outcomes, using the best available research, best practices and data, and delivered strategically, using 21st century technology.

Systematic. All educators, including teachers and administrators, need consistent, high-quality professional development in 21st century skills to support student achievement. State leadership is essential for providing professional development that builds teaching capacity and competencies statewide.

Sustained. Teachers and administrators need ongoing professional development to integrate 21st century skills into content and instruction. A lasting, flexible professional development system embedded into everyday practices should enable educators to become more effective over the long term.

Learning communities in districts and schools and communities of practice in regions or statewide can enhance and improve the quality and effectiveness of professional development. Learning communities are "ongoing teams that meet on a regular basis, preferably several times a week, for the purposes of learning, joint lesson planning, and problem solving,"[1] according to the National Staff Development Council. Communities of practice are broader groups that create knowledge and learn in a variety of networks and configurations, using technology, media and face-to-face discussions.[2]

Like all systems, professional development should be evaluated routinely for its effectiveness in improving educational practices and student achievement in 21st century skills. Teachers, schools, districts, and the state should collect and analyze evaluation data—and use it for continuous improvement of content and delivery.

Like all systems, professional development should be evaluated routinely for its effectiveness in improving educational practices and student achievement in 21st century skills.

RECOMMENDATIONS FOR PROFESSIONAL DEVELOPMENT

1. Create a statewide and regional infrastructure for professional development in 21st skills. West Virginia can serve as a model for this work. West Virginia has convened Teacher Leadership Institutes, webinars, regional meetings and extended learning sessions to help educators explore 21st century skills. To provide ongoing support, the state launched Teach 21, an interactive Web site that makes instructional resources and facilitated guidance readily available.

   Arizona's K–12 Center and County Superintendents' Offices could be the delivery system for mobilizing face-to-face and online professional development in 21st century skills.

   To make professional development most effective, Arizona should consider a statewide initiative to create 21st century skills coaches for schools. North Carolina, which has created middle school literacy centers that provide coaching in 21st century skills, can serve as a model for this work. Arizona should continue to develop monitoring, induction and coaching programs for content-area teachers and other educators—and infuse these programs with a 21st century skills perspective.

2. Provide professional development in 21st century skills to state, district and school leaders. Educational leaders need to understand 21st century skills so that they can provide visionary leadership, make informed decisions for students—and serve as effective advocates and role models for 21st century education.

3. Give teachers opportunities to develop 21st century skills during the school year and the work day. Educators need and deserve time in the course of their everyday work to learn and collaborate—and focus on the knowledge and skills they need to deliver a 21st century education. The National Staff Development Council's Standards for Staff Development should guide professional development for all educators.

Prepared by Penny Kotterman, Penny Kotterman LLC, and past president of the Arizona Education Association, and Kathy Wiebke, Arizona K–12 Center

Integrating 21st Century Skills into Assessments

Monitoring how well students are learning 21st century skills requires a balanced assessment system—one in which assessments are used not only to measure discreet knowledge at the end of instruction, but also to improve learning *during* instruction.

SUMMIT PARTICIPANTS SUPPORT THE PHILOSOPHY OF A BALANCED ASSESSMENT SYSTEM, WHICH SHOULD INCLUDE:

Summative assessments. Summative assessments provide valuable information about student understanding of expected outcomes. These assessments should measure more than recall of information and should include assessment of 21st century skills needed in the workplace and college. ACT and SAT illustrate what students have mastered at the end of their K–12 experiences. Similarly, the National Assessment of Educational Progress (NAEP) and Arizona's Instrument to Measure Standards (AIMS) measure student knowledge at specified times and of specific content. While critical-thinking and problem–solving skills are embedded in Arizona's current, large-scale summative assessment, these and other skills are not assessed independently.

Summative assessments must produce valid and reliable scores that the state, districts and schools can rely on when making decisions about the standards, curriculum, effectiveness of instructional programs, and selection of materials. These assessments allow for a statewide accountability system in which students, educators, and schools are held to the same expectations. A student's score reflects the mastery of specific learning outcomes, which must include 21st century skills.

Formative assessments. Formative, interim and benchmark assessments and classroom evaluation tools must be incorporated into Arizona's assessment system as a balance to summative assessments. These assessments help gauge how well a student is progressing toward specific outcomes, which may be assessed on a summative assessment, and demonstrate students' current knowledge and skills.

Formative assessments can be incorporated, for instance, into classroom discussions, teacher–student conferences, exit tickets, bell work and rubrics of student work, such as writing or projects. These assessments can help teachers assess critical thinking and problem solving skills, work ethic, and communication and collaboration skills, as well as content knowledge. Used appropriately, these assessments can have an immediate impact on daily instruction and learning.

Professional development. Arizona must continue to offer professional development for educators on using information gained from all the assessments to make informed decisions to improve 21st century learning at all levels—from the classroom teacher making decisions for a single student to the district curriculum specialist making decisions about changes in curriculum and materials.

In a 21st century education system, Arizona needs assessments *for* learning, not just assessments *of* learning.

RECOMMENDATIONS FOR ASSESSMENTS

1. Benchmark Arizona's assessments and student achievement globally. State-to-state comparisons no longer suffice for taking the measure of student performance. The state should consider participating in the Programme for International Student Assessment (PISA), which places more emphasis on critical thinking, problem solving and 21st century skills than most assessments do. PISA or similar international assessments would give Arizona an earlier indication than is currently available on how students are faring—and it would develop state expertise in international assessments and global comparisons.

2. Support research and evaluation of innovative assessment practices that are consistent with the vision of a 21st century education. The state should take on a leadership role in determining the most effective assessment practices for measuring 21st century skills, including problem solving, critical thinking, global awareness, innovation and creativity, work ethic, communication and collaboration skills. Already, there is wisdom in Arizona for measuring some of these skills.

3. Fund pilot projects with districts or schools, in partnership with higher education, to jumpstart innovative assessment practices that measure 21st century skills. Pilot projects could quickly build the state's expertise and create compelling models to leverage change in assessment policies and practices statewide.

4. Build a shared, coherent and aligned vision of assessments among all stakeholders. The state should continue to strengthen collaborations with schools, districts, higher education and community groups to create and implement 21st century assessments.

5. Educate district and school administrators and teachers—and students—throughout the state on balanced assessment systems that also measure 21st century skills and content. In the end, assessment policies and practices should have an impact on teaching and learning. The state should provide professional development, resources and information—in a variety of formats—for educators to create, evaluate, interpret and act on assessments to improve instruction. And the state should help students use assessment results to make self-directed, informed decisions about their preparation for life in the 21st century.

Prepared by Roberta Alley, Deputy Associate Superintendent, Assessment Division, Arizona Department of Education

Aligning Teacher Preparation with 21st Century Skills

Equipping Arizona students with 21st century skills requires a closer collaboration with the institutions of higher learning that prepare tomorrow's teachers. The vision of 21st century learning supported by the state's leading citizens is one around which our colleges and universities can and must rally. To become effective teachers, pre-service teachers should experience the same kinds of teaching and learning they will be expected to deliver to Arizona students.

TEACHER PREPARATION PROGRAMS SHOULD FOCUS ON:

Proficiency. A P–20 education system should prepare postsecondary educators and future teachers alike with proficiency in 21st century skills, including critical thinking and problem solving, global awareness, innovation and creativity, communication and collaboration, self-direction and personal productivity. Mastery of their core content areas is critical for future teachers as well. Interdisciplinary courses should be an innovative approach for developing this knowledge and skills. Pre-service education also should provide future teachers with a solid grounding in the proficiency expectations in Arizona's Academic Standards for Students.

Practice. Future teachers should use state-of-the-art technology as a matter of course to learn the habits of mind and practice the 21st century skills they will be expected to teach in Arizona's classrooms. They also should learn and practice using data to monitor student progress, adjust their instructional strategies and personalize teaching for all students, especially English language learners.

Professionalism. Future teachers should have ample opportunities to work side-by-side with master teachers and mentors to learn to teach 21st century skills effectively. They also should learn to collaborate, reflect on their practice, and develop a mindset of continuous growth and improvement for themselves and for their students.

Aligning teacher preparation with 21st century skills requires stronger connections among P–20 education stakeholders—and more explicit articulation of the knowledge and skills the state expects from future teachers.

Prepared by Mari Koerner, Dean of the College of Teacher Education and Leadership at Arizona State University's West Campus

RECOMMENDATIONS FOR TEACHER PREPARATION

1. Improve teacher preparation by aligning higher education with the state's vision for 21st century. Colleges of education—and indeed, all postsecondary educators—must be on board to develop 21st century skills in future educators, which will require a closer collaboration between higher education and the state. In West Virginia, colleges of education representatives attended the same nine days of training in 21st century skills as state leaders did, which has created an alignment between them.

2. Revise Arizona's Professional Teacher Standards to incorporate 21st century skills and to reflect learning outcomes as well as teaching practices. Teachers must demonstrate proficiency in 21st century skills and mastery of their content areas to be highly qualified educators. Along with pedagogical competency, these are the outcomes that will produce results in classrooms today.

3. Focus pre-service education on critical thinking and problem solving, global awareness, innovation and creativity, communication and collaboration, self-direction and personal productivity. Colleges of education must help pre-service educators develop the professional habits of mind and master the skills that will serve them well in instructional settings. Teachers must be able to effectively model the skills that students are expected to learn.

4. Create interdisciplinary courses that emphasize 21st century skills. Pre-service teachers cannot possibly acquire all of the knowledge and skills they need in education classes or even in single-subject classes alone. Global awareness, for example, is a multidisciplinary theme that encompasses history, geography, political science, economics, culture, foreign languages, and the arts. In this sense, the whole university is responsible for teacher preparation. Colleges of education should tap into the expertise on their campuses to create new kinds of courses that reflect the interdisciplinary nature of real-world topics and challenges.

5. Use state-of-the-art technology for teaching and learning. One of the greatest barriers to developing 21st century skills in classrooms is that teachers tend to lag behind students in their use of technology. Pre-service teachers need to use technology as intensively as business majors or science, technology, engineering and mathematics (STEM) majors do. And they need to use state-of-art technology routinely as a tool for learning, creating and working productively.

6. Teach pre-service educators to use data effectively and require them to participate in a data collection system on teacher preparation programs. Data-driven decision making and instruction is possible only if teachers can make sense of assessment data and other indicators of student progress. Colleges of education must teach pre-service teachers how to collect and analyze student performance data—and use it effectively to inform their instructional practices. Once they move on to teaching positions, feedback should be provided, through a statewide data system, to their colleges of education.

7. Provide opportunities for pre-service teachers to work with master teachers and mentors to learn how to teach 21st century skills. Guidance from experts is one of the best ways to learn. Pre-service teachers should work side-by-side with master teachers to develop strategies for teaching 21st century skills. Highly qualified mentors can support young teachers as well as they try out new approaches to teaching and learning.

8. Prepare teachers to teach 21st century skills to all students, including English language learners. Pre-service teachers must learn to meet the needs of the diverse populations in Arizona classrooms. Differentiated instruction is critical for effectively teaching 21st century skills to all students, who typically possess a wide range of knowledge, skills and abilities. Learning to personalize learning to meet individual needs is one of the most effective strategies for reaching all students, including English language learners.

Infusing 21st Century Skills into Youth Development

Preparing Arizona's young people to succeed with 21st century skills requires more time, talent and resources than educators alone can provide during the school day. Youth development programs should be a critical component to the state's commitment to developing 21st century skills and helping students transition successfully to healthy and productive adult lives.

There is strong evidence that high-quality youth development programs provide young people of all ages with engaging, challenging and interesting experiences that promote a range competencies and skills for the 21st century.[3] Formal in-school and after-school activities (such as clubs, competitions, arts and sports), community-based groups (such as Boys and Girls clubs, Scouts, 4-H Youth Development and the YMCA) and government programs (such as 21st Century Community Learning Communities) provide valuable learning experiences.

Through active participation, young people discover their skills, talents and interests as they work with adults and peers to solve problems, make decisions, manage creative or civic projects, take on leadership responsibilities, and acquire life skills. Participation in youth development programs also is associated with improved school performance, increased aspirations to attend college, and reduced risk behaviors.[4]

Recently, Governor Napolitano released *Five Keys to Youth Success: Unlocking the Door to Arizona's Future*, which cites five areas in which youth development programs make a difference: caring adults, youth engagement, activities outside of school, high school completion and work readiness skills.

Clearly, youth development programs already foster many 21st century skills. Now, there is a unique opportunity for these programs to promote 21st century skills more deliberately, comprehensively and effectively, which will require:

Funding. Organizations and systems across the state should collaborate to develop cooperative funding streams for youth development programs from the public and private sectors.

Training. Program directors, staff members and volunteers need training in 21st century skills to prepare young people for success.

Access. Given the positive, 21st century outcomes of youth development programs, every Arizona student should have the opportunity to participate in them.

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RECOMMENDATIONS FOR YOUTH DEVELOPMENT

1. Create, support and sustain a statewide infrastructure for high-quality youth development programs that foster 21st century skills. Some youth development programs actually do a better job of instilling 21st century skills than schools do. Youth development leaders should promote the systematic alignment of the same 21st century skills objectives in youth development programs and in education.

2. Encourage a dialogue between K–12 and youth development leaders that results in a joint pursuit of 21st century outcomes. Educators and youth development workers share a common mission of supporting and preparing young people to succeed. The state should play a leadership role in bringing educators and youth development leaders together to create an integrated and coherent system for developing 21st century skills.

3. Leverage the Governor's STEM agenda into a joint 21st century skills initiative between K–12 education and youth development. Arizona has strong capacity in community resources, such as museums, science and cultural centers, that could provide expanded opportunities in math, science, engineering and technology competencies—and 21st century skills development—to students.

4. Increase, support and sustain high-quality professional development in 21st century skills for staff members of youth development programs. A comprehensive training program should be created, which could include conferences, online tools and learning communities, to build the capacity of youth development programs and staff members to foster 21st century skills.

5. Provide equal opportunities for all young people to participate in youth development programs that build 21st century skills. Every student should have access to high-quality youth development programs that focus on 21st century skills outcomes. The state should conduct a needs analysis and support new youth development initiatives in under-served areas. Young people should be actively involved in designing youth development programs that build 21st century skills.

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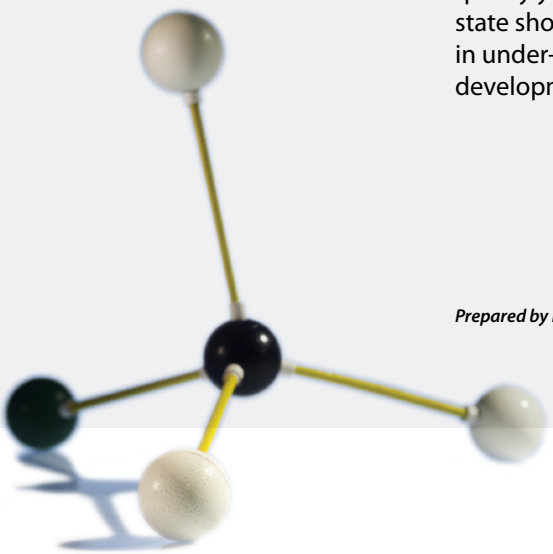

Conclusion

The Arizona Summit on 21st Century Skills signals a new awareness and dedication to working together on a refreshing new vision for 21st century teaching and learning.

Summit participants believe that the Governor's P–20 Council is leading the effort to raise the bar for student expectations and achievement in Arizona and is rallying key stakeholders around a meaningful, shared and explicit agenda.

We believe the Framework for 21st Century Learning is a compelling piece of this effort. It articulates a vision for a 21st century education that honors core academic subjects and new, 21st century knowledge and skills that parents, educators, business leaders and community organizations believe are important for Arizona students today and in the future.

We encourage the Governor's P–20 Council to bring its stewardship and expertise to our shared efforts to improve education for Arizona students. The four major elements in this report provide substantive issues and specific priorities for Arizona to consider. However, our recommendations are not an exhaustive or definitive list. Indeed, the Arizona State Board of Education may want to consider embedding 21st century skills into Arizona's Academic Standards for Students.

In this sense, we offer these recommendations with a spirit of collaboration and in anticipation of a continued statewide dialogue on the future of education in Arizona.

We encourage the Governor's P–20 Council to bring its stewardship and expertise to our shared efforts to improve education for Arizona students.

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Kristine Wilcox, CRESMET Arizona State University

Vangie Wilkinson, Kayenta Unified School District

Nan Williams, Arizona Department of Education

Christine Willig, Thinkronize

Frank Zizza, UA South

ENDNOTES

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