

21st Century Approach: Preparing Students for the Global Workplace

A Vision for Innovative Assessment and Reporting in the 21st Century

Education today is undergoing a new cycle of profound change worldwide as students prepare to participate in the global economy. This transformation, supported by accountability measures, education technology, and the availability of comprehensive resources for students, parents, and educators, is creating new ways of teaching and learning. These changes in teaching and learning are leading to a more efficient delivery of educational resources, targeted to individual progress and learning science and the goal of attaining the benefits of true data-driven instruction.

Assessment Is a Critical Teaching and Learning Tool

In the knowledge economy of the 21st Century, a wholesale shift is taking place in the skill sets required for people to participate and succeed. This has tremendous implications for both individuals and nations.

Because of its valuable role, educational assessment is a foundation activity in every school, every school district, and every state – a vital component in innovation, raising standards and achieving educational excellence.

The new face of educational assessment and reporting doesn't resemble the static testing model that's familiar to us from our own experience. In classrooms across the country, test scores aren't simply recorded and used as a grading or advancement tool. Test scores are no longer viewed as outputs; they are inputs. Deconstructed scores provide dynamic, revealing information about a student's study habits, abilities, potential for growth, and subject mastery, as well as guideposts for effective classroom instruction and professional development of teachers. The same assessments also provide systems information: Are the standards well calibrated? Is instruction succeeding in upholding the performance standards? Are students well prepared? Is the funding well spent? As such, assessment generates information upon which policy decisions can be made. Because of its valuable role, educational assessment is a foundation activity in every school, every school district, and every state—a vital component in innovation, raising standards and achieving educational excellence.

The value of assessment lies in the information it provides:

- Actionable data to drive student progress
- Student results tightly coupled with instruction
- The use of summative combined with formative assessment to create a continuous learning picture and help students perform to their best. It is vital that we change the current rear-view mirror focus to give teachers and students real-time feedback that bridges learning gaps and informs instruction.

Foundations of a Balanced 21st Century Assessment Program

Though assessment is often perceived as a technical field, the basic foundations of assessment are not difficult to understand. A successful assessment program:

- Monitors educational systems for public accountability
- Helps provide information to enhance instructional practices
- Enables evaluations of the effectiveness of instructional practices
- Measures student achievement and mastery of skills
- Provides the data and tools to improve student progress
- Engages parents in student learning
- Helps prepare students to effectively compete in the global economy

These additional principles support a balanced 21st Century assessment program:

The Effective Use of Education Technology

The future of assessment and reporting lies in digital delivery, particularly as testing agencies begin to develop tests that report on 21st Century skills, such as problem solving, visual literacy, real world literacy, and measures of critical thinking. States are increasingly requesting online solutions to bring the benefits of technology into classrooms: to provide

prompt feedback, reduce the turnaround time for student reports, save valuable instruction time, and ultimately save costs related to assessment and reporting programs. Most of the technology already exists to make a truly efficient, universal and yet highly customized digital-based system a reality. Just as importantly, the use of technology replicates students' environments outside the classroom and serves as a motivating factor in the classroom. Tech-savvy students want on-demand information, and will not be satisfied with static materials. Today's "digital natives" are at ease using the latest hardware and software, and are eager to incorporate technology into their lives.

The impact of education technology should not be underestimated. It is the key component that will motivate students to take control of their own learning and keep them engaged in classroom activities. In addition, the right use of technology will ultimately lower costs of assessment construction, administration, scoring, and reporting, while providing valuable resources for intervention, instruction, professional development for teachers, and parent engagement in student learning.

As technology continues to become more readily available in classrooms across the country, there are several factors to keep in mind to ensure more access to education technology for greater numbers of students:

- Technology should be reasonably priced and reliable.
- Assessment systems must work with the level of technology in the classroom.
- Access to hardware and PCs is less of an issue than is funding for maintenance and operational costs.

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By implementing a comprehensive computer and online system of assessment and reporting, educators can:

- Identify and eliminate gaps in individual student learning as they are developing
- Allow students to carry their assessment records with them from district to district
- Implement much faster turnaround of student results
- Be accurate, timely, and nuanced enough to account for the numerous variables that can have an impact on how a student learns and retains knowledge

The effective use of education technology in classrooms will take the combined and coordinated efforts of everyone who has a stake in the education infrastructure, including teachers, parents, and students; business leaders in both the education publishing and technology industries; and legislators at all levels of government.

Classrooms need access to a truly robust, wireless, high-bandwidth system of Internet access. This will occur as the price of storage and bandwidth continues to decrease. In addition, a smart software agent can guide knowledge navigation and create a more intuitive and highly customized learning experience. Most critical, the end-user device that students will employ to interface with the assessment and tutoring Internet universe must be identified and developed.

Will it be a laptop, a PDA-like device, or something completely different? It is not yet known. One possibility is a hand-held, notebook-sized device designed specifically for education with wireless Internet connectivity, intelligent software working in the background, the ability to display text and images and play music, and which can be interfaced via voice, stylus, or keyboard.

The Use of Multiple Data Sources to Inform Instruction

No single assessment can determine whether or not all educational goals are being met. More than one type of assessment is necessary to tell educators what students know and can do. Similarly, no one assessment provides complete information regarding one student's progress. The consideration of multiple data sources in educational assessment is the keystone to valid, fair, and reliable information about student achievement. Assessments provide a partial insight into, and reflection of, a student's abilities and progress. A test score is a proxy for gauging academic knowledge, and provides an estimate of measure for a complex underlying construct. Ultimately, the scores must be interpreted and then used to support achievement.

In the assessment process, no important aspect of educational attainment should be neglected, particularly with respect to the 21st Century focus on global awareness, systems thinking, ethics, visual literacy, and communication skills.

Components of a 21st Century Assessment Program

Students show mastery of key standards through high-quality, valid, and reliable assessments that provide personalized diagnostic feedback to address their individual learning needs. Assessment programs must include multiple assessment measures so that educators have the greatest amount of information upon which to make instructional decisions. In the assessment process, no important aspect of educational attainment should be neglected, particularly with respect to the 21st Century focus on global awareness, systems thinking, ethics, visual literacy, and communication skills. *Assessments must utilize available technology to enhance curricula and instruction and engage students in their own learning.*

Key components of an ideal 21st Century assessment program include:

Summative Assessment

These tests “sum up” or describe what has been learned over time.

- Measure student achievement, and include reports ranging from individual or aggregated performance on what students know and are able to do on specific content standards, skills, and expectations for accountability purposes
- Show academic progress over time
- Compare student performance and growth over time and across jurisdictions
- Monitor educational systems for public accountability
- Help provide information to enhance instructional practices
- Enable evaluations of the effectiveness of instructional practices

Standardized Achievement Tests

These assessments can be used alone or embedded into state summative assessments to give educators, students, and parents a more complete view of achievement. Embedding a standardized test into a state test has multiple benefits:

- Lets teachers and parents know how students are performing on state standards, as well as how they are performing in comparison to national peers
- Saves states money by reducing test development costs
- Provides a stable vertical measurement scale across grades which aligns with the growth model concept some states are adopting

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Successful formative assessment:

- Is aligned to current state content standards
- Provides information to guide teaching and learning and identify appropriate interventions as part of a continuous learning cycle
- Provides research-based predictions of student performance on state summative tests
- Guides curriculum needs and professional development of teachers

21st Century Skills Assessment

Assessments must not only measure current learning goals but should anticipate new learning goals. Educators here and abroad are focusing on the best ways to teach and assess 21st Century skills to help students develop the knowledge and expertise to succeed in school and life. These assessments can include:

- Assessments of real-life skills such as collaboration, sophisticated problem-solving, decision making, and use of new technologies
- Core subjects and 21st Century themes
- Learning and innovation skills
- Information, media, and technology skills
- Life and career skills¹

Effective reports and tools:

- Enable real-time data-driven decisions that lead to school improvement, enhanced student performance
- Allow comparisons of results over time and across individuals and groups
- Forge a connected community of educational leaders sharing ideas and best practices

Assessments for Special Needs Student Populations

These assessments should effectively measure the progress of special needs student populations and ensure they receive the instruction and remediation required to support learning. The interconnection of assessment and instruction for these populations is critical to ensure their ongoing progress and ability to succeed in today's accountability environment. These assessments include:

- Assessments designed for students with cognitive disabilities that prevent them from participating in general classroom assessments, (e.g.) performance task assessments, or portfolios of work which are collected throughout the school year and assessed at year's end
- English language proficiency assessments and resources that enable more learners to reach their education goals
- The incorporation of universal design principles to the extent practicable

Individualized Reporting and Instructional Tools/Resources

Individualized reports and instructional tools based on assessment data help each student achieve his or her personal best, provide teachers with the information needed to address student strengths and areas requiring improvement, and help parents stay engaged in their students' learning. Effective reports and tools:

- Are offered online to provide immediate access to student results and information about state assessment programs
- Go beyond static data displays and are provided in easy-to-read, actionable print formats
- Provide clear explanations of scores, state standards, and curriculum goals
- Maximize Internet tutoring and interactive capabilities and include links to instruction and remediation
- Are individualized for each student
- Enable teachers to differentiate instruction
- Target the most effective instructional strategies and best practices

- Combine Web-based reports from multiple data sources into easily digestible formats
- Enable real-time data-driven decisions that lead to school improvement, enhanced student performance
- Allow comparisons of results over time and across individuals and groups
- Forge a connected community of educational leaders sharing ideas and best practices

Professional Development

Effective professional development for teachers is a critical component of a successful assessment program. One of the goals of professional development is to enable teachers to adjust classroom instruction and become more efficient in their teaching practices. As with all 21st Century assessment components, technology will play a large role in strengthening professional development offerings. Strong professional development programs educate teachers on learning tools and methodologies, and enable teachers to:

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- Obtain an overview of what should be taught and how
- Analyze report data at the student, school, and district levels
- Transform data analyses into enhanced curriculum
- Target instruction at the individual and group levels
- Adjust instructional styles to meet student needs
- Acquire knowledge in areas of expertise
- Acquire new knowledge to expand skills base
- Effective professional development programs include:
 - On-site programs
 - Teacher-led Web-based programs
 - Web-based modules aligned to assessment programs that teachers can access 24 hours a day, seven days a week; these provide targeted information that helps teachers effectively plan assessment administrations

Parental Engagement

A key component of student success is ongoing parental involvement in learning. An ideal assessment program not only encourages this involvement, but also provides the tools, resources, and access that enable parents and families to support student achievement at the times that are most convenient to them—especially in our era of working-parent households. Key parent engagement tools include:

- Guidance for acting on assessment information at home—a sure way to increase student success
- Personal learning plans based on an innovative analysis of students' specific needs and strengths
 - Activities that help prepare for state/district curriculum and state standard mastery
 - Family-friendly home activities, planning tools, resources, and advice for each age group
- Multilingual formats to give both families and schools exceptional clarity around achievement

- Accessibility from any computer or Internet-access device
- Community information and resources for parent and student support, to strengthen learning and the home-school connection

Additional elements of a successful 21st Century assessment program include the following:

- Robust state assessment programs that have validity in the eyes of instructors of the next level, university admissions officers, and employers
- Assessments that are benchmarked to available international measures

21st Century Classroom – The Assessment and Reporting Vision in Practice

What will the ideal balanced assessment and reporting system look like in classrooms across the country? We envision an integrated assessment and instructional system in which targeted, engaging and differentiated instruction is informed by data derived from multiple assessment measures, enabled by technology and bolstered by professional development.

A personalized, highly motivating learning environment with multiple access points and immediate feedback will inform and improve individualized learning, including critical thinking and problem-solving skills. 21st Century Skills are not easily assessed using traditional technologies and will be more accurately measured with the use of innovative test item types, real-world simulations and computer-adaptive assessments focused on accurately and efficiently assessing student performance with items based on real-time student responses. Assessments will be scored immediately with Artificial Intelligence, economizing precious teacher and instructional time. Scores will be aggregated and disaggregated to enable comparison and trend information—from the individual to the district, state, national, and international levels with sub-group analysis. Online reports will be customized for different users of the information with anytime/anyplace access—an impossible task but for today's technology.

Assessments will be delivered in a variety of non-intrusive ways for students to demonstrate on a regular basis what they know and can do. This will involve a range of high- and low-tech methodologies, including but not limited to teacher observation, group discussions, student portfolios of work, paper-and-pencil assessments with scanned scores, computers and hand-held computing devices, clickers (student response devices), smart phones, touch screens, and new technologies yet to be developed. Technology would mitigate the

need for many accommodations and broaden the opportunities for delivering those that are still necessary.

Students will take tests at varying intervals, depending on the purpose of the test. Interim, benchmark, or formative assessments will be used with high predictive validity for a student's performance on summative assessments—but also provide targeted interventions for teacher and students. Assessment of students' soft skills such as flexibility and adaptability, self direction, social skills, productivity and accountability, and leadership and responsibility, would provide information on college and workplace readiness. Individual student study

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guides will be provided in paper and/or electronically, based on a student's test results. Current research demonstrates that students participating in a study guide program experience higher score growth and pass rates than similar students who do not participate². Lastly, parents will play an even greater role in students' success through access to online reports of student progress. These reports will not only help families review students' areas of strength and those requiring improvement, but will provide links to tutorial resources as well as school and community contacts, enabling parents to help their students truly succeed in the global economy.

Summary

Education assessments and related resources not only capture data on learning and achievement, but are fundamentally changing the way teachers teach, students learn, and parents engage in classrooms around the world.

The power of assessment to improve instruction and learning is greatest when the assessment occurs naturally within the learning environment and the feedback is immediate. Effective 21st Century assessment programs may include standardized tests that give educators, students and parents a view of student performance based on national comparisons; formative classroom assessments that identify learning gaps as they are occurring and provide opportunities for remedy; performance assessments that allow students to show their ability to do in-depth work; and summative assessments that gauge student mastery of learning standards. Assessment data become actionable through reports that not only provide assessment results but also present that data in ways that help educators as well as students know what is effective and what could be improved; and parent-friendly reports and resources that enable entire families to participate in the learning and achievement process. Technology enables real-time assessment administration, scoring, and reporting, and remedial interventions in ways that could not occur without these innovations.

Education assessments and related resources not only capture data on learning and achievement, but are fundamentally changing the way teachers teach, students learn, and parents engage in classrooms around the world. They provide essential information to guide genuine education reform and improvement, and they allow us to fairly hold ourselves accountable for providing students with the quality education they need to compete and thrive in the world economy.

²Hezel Associates. 2008. *An Evaluation of the Implementation and Efficacy of Grow's Personalized Study Guides in Arizona School Districts.*