

Invited Written Testimony

From  
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To  
The New NY Education Reform Commission

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On behalf of the Software & Information Industry Association (SIIA) and our member high-tech companies, thank you for inviting me to provide testimony about the future of our education system and the role of technology and digital learning. I am Mark Schneiderman, SIIA's director of education policy. SIIA commends Governor Cuomo and the Commission for gathering input and providing vision, leadership and recommendations to guide education forward in New York.

SIIA is the principal trade association for the software and digital content industry. SIIA provides global services in government relations, business development, corporate education and intellectual property protection to more than 500 leading high tech companies setting the pace for the digital age. SIIA provides a neutral business forum for technology leaders to understand business models, technological advancements and market trends, as well as set industry standards and best practices.

All SIIA Members depend on the nation's schools for a skilled, high-tech workforce. They are concerned with the nation's challenge in producing students with necessary science, technology, engineering and math skills. And they are seeking graduates with the necessary 21<sup>st</sup> century higher-order skills including in the areas of problem-solving, communication, collaboration, information literacy, computer literacy and the ability to be self-directed lifelong learners.

Some one-third of SIIA's members partner with schools and universities to develop and deliver educational software, digital curricula and related technologies and services that meet their teaching, learning and enterprise management needs. These range from learning management systems to data systems to adaptive learning software. They are helping to personalize learning, improve student access, and increase educational productivity and performance. I've attached a list of our Education Division members for your reference.

SIIA views technology and digital learning as a critical engine for education system redesign and a core component of modernizing our educational institutions and practices in order to better meet the needs of our students, educators and society. SIIA has long collaborated with educators, policymakers and other stakeholders to develop policies, practices and standards needed to improve education through the use of innovative learning technologies.

As the Commission’s charter notes, “There are serious issues facing our system of public education. . . . Future generations of students cannot compete in the global economy unless we dramatically reform our education system.”

In SIIA’s view, our educational inadequacy is due in part to the fact that our systems and practices are largely unchanged over a century or more. Too often today, as you perhaps have heard before and recognized yourselves, we have an education system in which:

- Instruction is a teacher-centered, stand-and-deliver broadcast paradigm of one to many, which too often teaches to the mean rather than engaging and empowering each individual learner;
- The school day and year follow the farmer’s almanac, and learning outside the classroom is walled off from our seat-time, Carnegie unit measures;
- Students are grouped, instructed and advanced primarily by age and not enough by their educational needs; and
- Instructional resources are mostly analog, undifferentiated, and limited to the resources on the school building bookshelf.

In short, education ineffectively follows a factory, assembly-line model whereby time is the constant, but achievement is the variable such that too many students are under-educated.

This system was practical in past eras when our population was less diverse, the world’s knowledge could fit in a library, and basic high school skills were sufficient for lifelong success. But our society and educational needs have evolved significantly. Contrast our legacy system to the reality today, where:

- Too many students are disengaged, not due to lack of technology, but due to the lack of being met where they are as learners and individuals;
- Expectations are rising from the Common Core standards, Flatworld global competition, and the increasing percentage of jobs requiring not only initial postsecondary education but lifelong learning and retraining;
- Student population diversity is growing, including their demographic and family background, their language and other abilities, and their educational performance levels; and
- Education budgets and tuition have increased dramatically, but achievement is relatively flat.

To help address this challenge, in 2010 SIIA (in collaboration with the Council of Chief State School Officers and ASCD) convened 150 education and technology leaders, including a team from New York state led by Deputy Commissioner Ken Slentz. At that time, 91% of participants very strongly or strongly agreed that “We cannot meet the personalized learning needs of students within our traditional system – tweaking the teacher/classroom-centered model is not enough, and systemic redesign is needed.”

The mandate is not for marginal change, but for decoupling learning from the physical limitations of time, place and paper and transforming our education system to one that meets the personalized learning potential of each student through a wide range of instructional resources, strategies, and schedules appropriate for her abilities, interests and needs. This personalization has and can take place without technology, but not at scale.

My testimony will:

- I. Outline many of the ways in which technology and digital learning are making a positive impact on teaching and learning; and
- II. Make several recommendations for the state of New York to address the Commission’s objectives through technology and digital learning.

## I. Vision K-20: Education Redesign and Personalized Learning

In conjunction with education practitioners and technology leaders, SIIA crafted several years ago its “Vision K-20” for how our educational system and institutions can better prepare students to be successful global citizens by combining proven technologies with solid educational approaches.

Our vision is based on the experience that technology:

- Creates personalized learning experiences for all students;
- Enables more efficient and effective teaching and learning; and
- Is essential for life-long learning.

Pioneering systems have already pointed the way to what is possible when good education and good technology come together. From pre-school to graduate school, technology has repeatedly proven its power to connect and energize educators and learners and to improve learning outcomes.

Before describing the elements of the vision itself, it is important to outline the two general ways in which we can think of the role of technology and digital learning:

- Automate & Supplement. First, technology has been traditionally used to automate and/or supplement existing practices and resources, including the digital grade book, digital textbook and tutorial software. This use of technology is necessary and effective, but insufficient.
- Redesign & Personalize. Second, technology should also be more often used to redesign the system in ways that transform practices and our use of educational resources; most notably by enabling the shift from a mass-production to a mass-customization model, whereby there is personalization of learning time, place, pace and resources to better meet the unique needs of each student.

Traditional System	Redesigned, Personalized Learning System
Mass Production	Mass Customization
Time Constant/Achievement Variable; Seat Time	Time Variable/Achievement Constant; Mastery/Competency Based (with concern for student readiness for learning new/advanced concepts)
Industrial Age, Assembly-Line, Common-Pace Instructional Model	Knowledge Age, Individualized, Variable-Pace Learning Model
End of Year/Course Assessment of Knowledge	Ongoing, Embedded, and Dynamic Assessment of Knowledge/Skills, Learning Styles, and Interests
Institution/Teacher Centered	Student-Centered
Fixed Place; School-Based	Anywhere and Everywhere; Mobile
Fixed Time; September-June; 9 a.m. – 3 p.m.	Flexible Schedule; Anytime; 24/7/365; Extra as Needed
One-Size Fits all Instruction/Resources	Differentiated Instruction
Teach the Content; Sage at the Stage	Teach the Student; Guide at the Side; Collaborative Learning Communities
Comprehensive Teacher Role	Differentiated and Specialized Teacher Roles
Geographically Limited Instructional Sources (Teacher/Textbook)	Virtually Unlimited, Multiple Instructional Sources (Online Resources and Experts)
Limited/Common System Determined Curriculum-to-Life Path	Unique Student Voiced Curriculum-to-Life Path
Limited & Locked Student Report Card	Portable Electronic Student Portfolio Record
Printed, Static Text as Dominant Content Medium	Digital, Interactive Resources as Dominant Content Medium
Physical/Face-to-Face Learning	Online Learning Platform to Enable Blended Learning
Informal Learning Disconnected	Informal Learning Integrated

At the 2010 SIIA-CCSSO-ASCD summit, 96% of participating education and technology leaders identified access to technology and digital learning as a critical or significant cross-cutting platform to implement personalized learning and bring it to scale. The technology is needed to integrate currently fragmented education silos, manage the personalized portfolios and interventions of each student, and provide learning access anytime, from anywhere. Such a technology platform is inherently customizable, scalable, and flexible in a way not possible in the physical and analog world of most of our schools today.

SIIA's Vision K-20 identifies the following six educational goals empowered by technology:

1. Help Meet the Personalized Needs of All Students. Digital technology enables multiple approaches to learning to effectively address each student's individual learning style, abilities, pace and interests. Through embedded assessment and personalized content, today's data powered courseware helps educators understand and respond to the specific learning needs of each student. Simulation and animation can be used to make complex concepts more visual. Robust support tools – including virtual mentors and tutors, portals with tailored entry points to information, adaptive and accessible technologies for students with disabilities, and digital assistants to help with everything from searching and sorting to voice recognition – help level the playing field and deliver key learning skills, making it possible for a wide range of students to succeed and thrive.
2. Support Accountability and Inform Instruction. Computer-based assessment not only helps address, enrich and measure individual student progress as it occurs, it also provides educators with valuable data for making instructional decisions and creating more effective learning organizations. In assembling their digital learning portfolios, students not only build organization and presentation skills, but also document their complete educational journey and accomplishments. Portfolios can migrate with learners through their school years and beyond, and serve as an “education ID” that documents learning and achievement. Technology is also the only means for helping integrate the pieces of the learning puzzle, creating new connections between isolated pockets of assessment and other student and school data over time. Technology helps pinpoint systemic strengths and weaknesses, creating a model for educational accountability and continual improvement.
3. Deepen Learning and Motivate Students. Compelling and broadly accessible digital content and tools engage students, fuel exploration and motivate learning. These learning technologies range from virtual field trips that allow students to travel across the globe without leaving their desks, to interactive and adaptive courseware, to immersive, game-based multimedia simulations. They provide a range of modalities, topics, complexity and representations to ensure the breadth and depth of content resources needed to meet every student's interests and abilities. Such electronic learning resources make lessons visually interesting within exciting contexts to capture and hold student attention. In this way, they provide both the means and the motives for achievement, helping to ignite in students a life-long love of learning. Ultimately, this passion may be how technology best prepares American students to thrive in an increasingly competitive and fast-paced world, where change is the norm and flexibility, ability and desire to learn are the keys to success.
4. Facilitate Communication, Connectivity and Collaboration. As members of “Generation M,” the multi-tasking, multimedia-fluent and continually-connected young people in today's schools and colleges are already accustomed to rich digital multimedia resources, online collaborative spaces and other social interactions mediated by technology. Participation in a variety of virtual and informal learning communities inspires students and teachers to discover, explore, guide and share—and to refine the collaborative skills so crucial to 21st century work environments. With

24/7 connectivity, it is possible for parents and other community members to access information and communicate with learners, teachers, professors and administrators at times convenient to all involved.

5. Manage the Education Enterprise Effectively and Economically. Just as businesses have harnessed the power of technology to increase productivity and manage complex organizational tasks, schools and colleges are discovering the benefits of technology to help run the education enterprise. By employing powerful digital tools for data analysis and management, investing in key communications technologies, and leveraging the digital infrastructure for multiple purposes, schools save money while achieving better results. Accessible data also provides answers to questions of accountability and progress. Procurement, finance and accounting, human resources and professional development, physical plant, registration, scheduling and many other institutional functions are conducted more efficiently and effectively, thus increasing focus and resources on the core teaching and learning mission.
6. Enable Students to Learn from Any Place at Any Time. Advancements in technology provide increasingly ubiquitous high-speed, mobile Internet access. As a result, learning and teaching are no longer constrained by the physical limits of space and time (including the scheduled class time). Postsecondary education has led the charge in providing ubiquitous access to its students, making it possible for faculty and students to interact, communicate and learn nearly anywhere, at any time. Online learning helps meet the needs of traditional and non-traditional students, of rural students with otherwise limited options and of those for whom the traditional classroom model is neither practical nor convenient. Students are empowered to take control of their learning and enroll in virtual and hybrid classes and degree programs and engage in lifelong learning experiences that address their personal, academic and professional needs.
7. Nurture Creativity and Self-Expression. Students of all ages are now creators of – and commentators on – digital content, not simply consumers of it. As they interact with peers around the world, students naturally come to see the value of collaboration, creative thinking skills and the importance of being able to convey one’s thoughts clearly, in an engaging and persuasive manner. These are skills that will serve them well in the workplace and as a global citizen. Moreover, multiple forms of expression—including writing, music, the spoken word, visual arts and a variety of other media—are equally valued on the Internet’s digital stage. These representations tap into, and enable the development of, students’ full creative range, while allowing them to demonstrate mastery of knowledge and skills in more comprehensive and authentic ways.

To achieve this vision for K-20 education, SIIA anticipates an education system that effectively, and as a matter of common practice, leverages technology and digital learning. Yet, the results of SIIA’s recent 2012 Vision K-20 Survey of 1,635 instructors and administrators found that, while educator interest in digital learning is high, the reality is that technology access and use is modest at best.

In K-12 education, while a majority (79%) of respondents report technology integration as highly important to them and their ideal level of technology integration as high (77%), only 21% say their institution currently has a high level of technology integration. K-12 educators rate:

- their own actual access to the level of technology resources, training and support common to other professionals as a 2.6 (out of 4), while their ideal level is 3.94;
- student actual access to online courses to ensure access to high-quality instruction, no matter their location or schedule, as a 1.69 (out of 4), while their ideal level is 3.21;
- student actual access to courseware and digital curriculum as 2.21 (out of 4), while their ideal level is 3.73; and

- actual use of courseware and/or learning management systems to differentiate instruction as 2.07 (out of 4), while their ideal level is 3.54.

In postsecondary education, most (86%) respondents say technology integration is highly important to them and their ideal level of technology integration is high (82%), yet only 30% say their institution currently has a high level of technology integration. Postsecondary educators rate:

- actual use of information systems to provide digital student and achievement data that support instructional decisions by educators and administrators as 2.54 (out of 4), while their ideal level is 3.84;
- their own actual access to online professional development resources, courses, and peer collaborative communities as 2.35 (out of 4), while their ideal level is 3.77; and
- student actual access to electronic supplemental instructional resources and/or online tutoring as 2.45 (out of 4), while their ideal level is 3.78.

Responses from New York state respondents were not significantly different from these national averages. And these survey results have not changed significantly in the several years that SIIA has conducted this survey, suggesting that there is some stagnation – perhaps due to the fiscal environment – in our actual adoption of technology and digital learning, despite strong interest in modernizing practices and resources.

## II. Recommendations for the Commission’s Objectives and Technology

The Commission is charged with addressing seven critical objectives. Each of these objectives can be addressed, in part, through the redesign of education to personalize learning and through the use of technology-enabled teaching and learning practices.

Following are SIIA’s recommendations for each of the seven Objectives:

### Objective 1: Find ways to improve teacher recruitment and performance, including the teacher evaluation system.

SIIA Recommendations:

- Provide Teachers with Professional Tools, Including Technology. The further professionalization of teaching requires their access to, and effective use of, modern technology tools and practices, including a computer, software, data and access to online resources and communities. Today, many teachers have inadequate access to technology, and inadequate related training and support. The state should ensure all teachers have access to a minimum slate of digital tools and applications. The state should also ensure all teachers have access to instructional technology coaches or mentors in their school or district, ideally at a ratio of at least one per one thousand students.
- Support Online Professional Development & Peer Community. The use of technology is critical to remedy teacher isolation, provide support and reduce turnover. Online professional development and virtual professional peer communities provide teachers with access to real-time, ongoing and relevant learning opportunities, and can be a more timely and cost-effective manner than traditional, episodic and face-to-face training. The state should encourage and help fund teacher access to such online support.
- Provide Leadership to Redefine the Teacher’s Role. States should help support the shift from the primary model of a single teacher delivering knowledge to his classroom of students to one of

teachers as facilitators of learning, often as a part of a team of teachers with differentiated roles. Through further differentiation of the teacher's role, student-teacher ratios and instructional relationships can be varied to meet the diversity of student needs, forming flexible teacher teams that can orchestrate what is best needed for each child. The state should support schools of education and teachers directly in this shift. Teacher licensure, contracts and other regulatory constraints may need to be addressed to provide the flexibility in a teacher's role needed to make this shift.

- Embed Technology and Personalized Learning Models in Curriculum of Schools of Education. The state should ensure all teachers and education leaders are prepared with the skills needed to effectively use technology and digital resources to identify and address the needs of each and all students. Most teacher education programs assume a traditional classroom with modest use of supplemental technologies. A new school of education curriculum is needed to prepare educators for a new personalized learning model, whereby educators can use data systems to inform instruction, leverage digital and online media to engage students, and differentiate instruction to meet the individual needs of each student.
- Embed Technology in Educator Certification & Licensure. The state should place a premium on educators who can provide the needed vision, instruction and classroom management to personalize learning through technology. The state should examine and update as needed the state certification and licensure requirements to ensure these educator skills for teachers and administrators.

## Objective 2. Improve student achievement.

### SIIA Recommendations:

- Provide Students with Anytime, Everywhere Access to Personalized, Digital Resources. Technology is a learning accelerator by engaging and empowering students with digital content and other technology-based interventions that can help dynamically identify and address their unique needs. These digital applications include adaptive software, online tutors and courses, electronic simulations, and learning-embedded assessments. The state should encourage and support a shift to ensure students have access to digital learning resources within the classroom as well as from home and other learning locations to maximize learning time and efficiency.
- Support Educator Access to and Training in Use of Technology to Improve Student Engagement and Differentiate Instruction. Technology is a teaching force multiplier by enabling teachers to identify, track and address diverse student learning needs. Use of online formative assessment, sophisticated data engines, and interactive software can free some teacher time from rote and administrative activities so their time can be directed to more value-added individual, group and project-based instruction.
- Create a statewide online learning authority for approval and oversight of virtual learning providers to New York students and schools. Such a state entity can help improve access, ensure quality, and provide a one-stop entry point for students, teachers and providers. Participation should be open to all entities regardless of their location in or out of the state, including public schools and agencies, non-profit providers and for-profit providers. Approval should be made at the course level, recognizing that many online providers will specialize in certain subject areas and grade levels or that quality may vary by subject area. And ongoing approval should be based upon student performance. With the plethora of online learning providers, this approach may be

more effective than the state of New York creating its own state virtual school, including by giving students and schools more options.

- Support Teachers through Informal Instructional Networks. Support teachers by expanding their and their student's support network to include other mentors and experts in the community at-large who can support student learning. These mentors might include those from informal learning providers (e.g., museums, boys/girls clubs, businesses), scientists and other experts, and other tutors and teachers available in online learning communities.

### Objective 3. Examine education funding, distribution and costs.

#### SIIA Recommendations:

- Create a Personalized, Competency-Based Model. By focusing on outcomes over inputs such as seat-time as well as leveraging informal and prior learning, the state and districts can better target resources to specific needs while reducing other costs.
- Invest in Technology and Digital Learning. Technology-enabled practices are an important long-term strategy to change the education cost-curve, including the use of technology as an instructional force multiplier, to enable student self-paced learning, for online learning, and to enable data-drive decision making to identify gaps and the most effective practices. The state should make initial investments to reach critical mass of access and infrastructure, after which recurring hardware and connectivity costs can be better absorbed locally by repurposing funds and amortizing costs across various operational budgets where savings can be found relative to existing face-to-face or paper processes.
- Invest in Online Learning for Students and Teachers. Online learning can be a more cost-effective means for delivering instruction and teacher professional development, especially in cases where it may not be possible or practical within the budget to support face-to-face instruction such as in rural areas or with AP or foreign language courses. The state should provide flexibility for students to take online courses full-time, part-time or by individual course, and the state should not inappropriately limit the amount of credits earned online.
- Increase Flexibility in the Use of State Grant Funds. Enable districts and schools to repurpose funds to best meet their needs as determined locally, unconstrained by certain programmatic silos and regulatory requirements, with instead an outcomes-based accountability system. This includes the allowance for districts to acquire digital content through instructional material budgets.
- Facilitate Consortia or State-Wide Purchasing. Where appropriate without limiting local choice, facilitate local consortia purchasing or statewide purchasing to aggregate demand and reduce costs, such as for hardware, broadband access and other technologies.
- Move to Funding Models that Incentivize Completion. Federal, state, and local education funding is largely based upon student Average Daily Attendance (ADA), as measured by the number of students counted in their seats one or more times during the school year. This model predates online and blended learning, and apportioning funding for online courses taken outside of the district or the state often has negative financial consequences for the district. While online learning has exposed these barriers, these funding models may also create disincentives for a school or teacher to help advance a student faster than proficiency within a traditional or blended setting, or to provide alternative, off-campus learning opportunities. Early graduation, dual

enrollment, and the leveraging of non-traditional providers can all help translate completion-based funding models to systems savings.

Objective 4. Increase parent and family engagement in education.

SIIA Recommendations:

- Set Minimum Expectations for School/Teacher Electronic Communication with Parents and Families. Technology provides anytime, real-time access for parents and families to communicate with their children's teachers and administrators, including via email, text messaging, online forums, etc.
- Support Home Access to Student Performance Data, Assignments and Curriculum. In this digital age, parents and families should expect online (secured and private) access to their children's test scores, assignments, attendance and other information needed for them to track and support their learning on their schedule. Likewise, schools and teachers should provide families with the means to support learning at home by connecting to online learning resources provided through the school or from outside the school, including instructional videos, adaptive software and online tutoring. The state should set expectations, provide models, and provide technical and other assistance to school districts to implement such systems.
- Empower Students and Families to Create a Student-Driven Learning Path. A student-driven, personalized learning path tailors learning to the expressed interests, abilities, schedule and goals of the student. Although ensuring alignment and mastery of state standards, each student's path may vary not only in terms of when and where learning takes place, but also in terms of the modalities and instructional strategies used, the pace and place of learning, and the types of courses and topics studied. In theory, an unlimited number of models exist depending upon each student's needs and interests, and the student-driven learning path may include opportunities for online courses, project-based learning, tutoring or small group instruction, formal courses and community-based learning, and any hybrid of these and other elements.

Objective 5. Examine the problem of high-need and low-wealth school communities.

SIIA Recommendations:

- Provide Equity in Technology Access. Increase direct state investment in technology access, infrastructure and tools, including computer devices, high-speed connectivity, software, digital content and related technologies. While sustained investments are ideal, one-time or programs that sunset can be very effective in helping manage the shift to digital.
- Redefine Equity through Personalized Learning. Personalization provides the opportunity to dramatically redefine the very concept of equity: from one that goes beyond providing all students with the same educational inputs and opportunities to one in which all students have access to a unique learning experience (and resources) based upon their individual needs. Equality does not necessarily equal equity. The intent is to meet each child where he is and help him meet his potential through a wide range of instructional resources, content, strategies, and schedules appropriate for his learning style, abilities, and interests, as well as social, emotional, and physical factors.
- Support Flexible, Anytime/Everywhere Learning. Flexible, anytime/everywhere learning includes learning beyond a traditional school day or building through online or blended learning, hands-on

opportunities in the community, and instruction offered by a range of teachers, experts, or technologies. Adding a virtual educator to digital content creates various models of blended and online learning to personalize the education for each child. These models can help better support students by offering learning opportunities 24/7/365 from anywhere, as well as by providing access to courses and instructors often not otherwise available within the school. With regard to online learning, remove policy restrictions such as class-size ratios, enrollment caps and geographic limits.

Objective 6. Find the best use of technology in the classroom.

SIIA Recommendations:

*Note: SIIA's recommendations around best uses of technology are embedded throughout objectives 1-6.*

In addition, SIIA recommends that the state be guided by the following policymaking principles with regard to this objective, with a focus not on the state prescribing best practices for the use of technology but instead empowering educators and students to innovate as best meets their unique needs:

- Create the policy conditions for use of technology and digital learning by updating outdated, restrictive policies and regulations and thus reducing barriers to more innovative local and institutional practices.
- Provide targeted funding, as well as funding flexibility and incentives, to support institutions and districts in their acquisition and implementation of technology access, infrastructure and implementation, including hardware, connectivity, software and digital content.
- Support innovative pilot programs – perhaps through competitive grants – that can serve as examples to community leaders, education administrators and faculty members about what is possible and what steps are needed to innovate through technology.

Objective 7. Examine the structure of New York's education system to see if it meets the needs of our students while respecting the taxpayer.

SIIA Recommendations:

- Shift to a Personalized, Mastery/Competency-Based System. Adopt policies and investments that further incentivize a shift from our seat-time, industrialized education model (where time is constant but learning is variable) to a more flexible, student-centered model built around personalized learning needs whereby learning time, place, pace and path can vary according to student needs and pace (where learning is constant and time is the variable). For some students, this may accelerate the pace of learning based upon abilities, needs, and interests, while for others this may drive educators to provide additional learning time and alternative instructional formats until the student masters the information. Specifically:
  - Eliminate the Carnegie unit (credit for seat time) as the measure of learning and replace it with a system that provides credit for learning – and progression to the next grade or graduation – based upon demonstrated mastery of required learning standards and competencies through appropriate assessments. Traditionally, our education system is designed around seat time - the requirement that students may advance only with the required time spent physically in a school classroom for a particular Carnegie unit or course. Seat time can limit the ability of a student to accelerate their learning, while also allowing students to progress without mastery (i.e., social promotion). It can also limit ability to take an online or blended learning course or undervalue prior learning from community-based or experiential learning. In contrast, mastery or competency-based

progressions provide opportunities for students to work at their own pace and to reinforce a particular skill or standard until they have mastered the content. Students address standards at the time and in the manner that meets their needs, rather than being taught only when the entire group covers a certain topic.

- Provide regulatory flexibility so that students can leverage out-of-school and other formal and informal learning opportunities and receive “credit” for prior learning. The state should allow ‘credit’ for learning anytime, anyplace, anyhow and at any pace, provided the impact of those learning outcomes on student knowledge and skills is certified by an assessment demonstrating mastery. This includes supporting extended learning opportunities for credit toward graduation such as from online courses, independent study, dual-enrollment, internships and other community-based learning.
- Eliminate specific definitions of learning time around the fixed school schedule (hours per day; learning days of the week) and calendar (180 day school year; long summer break), which assume and limit formal learning time based around an agrarian calendar, rather than providing flexibility for 24/7/365 learning.
- Provide funding flexibility so that educators can direct funds to the instruction and curriculum most appropriate for the personalized learning needs of each student. This could include shifting the school role in some cases to certifying rather than delivering knowledge, as well as to supporting use of funds for learning opportunities outside the school building. Most often, it involves employing multiple in-school interventions and varying class-size, instructional strategies, curricular materials and technologies as needed for each student.
- Provide Time-Flexible Summative Assessments. High-stakes state and other static assessments that occur at the same time for all students are unlikely to meet each student’s needs. State tests are most often delivered to all students in a grade on the same material at the same time. Personalized learning requires a shift in this one-size-fits-all approach to assessments. In a system of personalized learning, each student will likely be at very different point in the curriculum and standards on any given day, and thus a single testing date for all students may, for example, limit the ability of a student to progress more quickly if they have mastered the content. Instead, the state should allow students to complete summative assessments when they are ready to complete the course or unit, and not only during a single, fixed time on the school calendar.
- Provide more flexibility in the assessment instrument. High-stakes tests most often included only a limited, one-size test item format that may not account for students’ varied learning styles and abilities. Providing varied means to demonstrate mastery better reflects student diversity and may more accurately measure achievement. Technology provides many opportunities to expand assessments to include more dynamic options, including embedded or formative assessments, especially with online or portfolio options.
- Eliminate the banding of students by only age-based grades. Mastery-based progression can be inhibited by the strict confines of grade/age banding. While grouping by ability frequently occurs within schools, it is almost always limited to within a grade level, where all students are expected to meet the same standards in basically the same timeframe and to be assessed on the standards during a year-end, high stakes test given on a certain day. While often controversial, working toward a P-20 continuum opens the

doors for personalizing learning for all students by helping to shift the role of the teacher, addressing the individual child's needs, and focusing on performance and mastery.

- Create vertically integrated systemic innovation zones. In the public education system, regulations and programs must be coordinated to drive and enable significant change. Vertical system innovation zones are a coordinating mechanism to remove regulatory barriers and reform, leverage and align federal-state-local policy, practice and budget as necessary to create the conditions needed for innovation success. Such partnerships should include participation of struggling schools and districts, as well as a coordinated research and evaluation strategy focused on capturing the pathways to success as a model for others.
- Enact higher education policies that provide flexible, innovative models that decouple student certification from seat-time requirements. There is an important need for traditional postsecondary models, including physical campus, full courses and degrees. At the same time, there are many students not being served by that model who are seeking a more flexible model where they can demonstrate prior learning, complete course modules that fit their gaps, and receive appropriate certifications and credentials with value in the workplace market. New York state should support policies that allow for unbundling of higher education; a decoupling of student aid, credentialing, etc. from traditional institutional/degree models; and innovative, flexible, student-centered models that include modular courses and competency-based (rather than seat-time) learning.
- Recognize the Role of the Private Sector. Private sector organizations invest hundreds of millions of dollars each year to research, develop, improve, deliver and support usage of their educational technology devices, platforms, applications, online learning and digital content. Their work across time and across customers allows them to sustain product improvement and support through political and funding cycles, gather input from a variety of users to inform product innovation and quality, and serve customers across agency and institutional boundaries to aggregate demand and reduce price.
  - Support public-private partnerships as an important means for achieving system goals.
  - Do not limit state or local grants to governmental and non-profit entities, but instead ensure private and for-profit organizations are eligible to respond to requests for the procurement of products and services by educational agencies and institutions.
  - Limit the state's direct investment in developing software applications, digital content, and related digital learning services and technology products where those needs are already being best addressed by the private sector.
  - Invite the private sector to partner directly with education policy makers, administrators and instructors to identify a vision for a technology-enabled education system and the policy, practice and technology means needed to achieve it.
  - Encourage research partnerships between educational agencies and institutions and the developers of educational software and digital content aimed at both evaluating and improving the efficacy of educational technologies, related educational practices and their models of implementation.
- Minimize Regulatory Barriers to Providing All Students with Access to High-Quality Online Courses. The state should ensure regulations do not restrict access to high-quality online courses with policies such as class-size ratios, caps on enrollment and/or budget, geographic boundaries.

Our nation's continued success will require that our educational system adopt modern methods and means to remain not only effective, but even relevant, in a 21<sup>st</sup> century marked by innovation, knowledge,

technology and global competition. Technology alone is not the answer, but technology is the engine to shift from our industrial-age education system to one built around the personalized learning needs of each student. Information and communication technologies are responsible for the “flattening” of the world, integral to our society and our student’s daily lives, and key to innovation and knowledge in this century.

While use of technology and digital learning is significant and growing, our education system trails nearly all other sectors in its transformative deployment. We believe this Commission and the State of New York should adopt policies and programs as outlined above to ensure our education sector better leverages technology in a manner necessary to provide our students with a learning environment that best prepares them for the world of tomorrow.

Finally, let me share several resources that may be of interest to the Commission:

- Vision K-20: SIIA’s [Vision K-20](#) lays out how we can utilize modern technologies to create a world-class teaching and learning environment that prepares all students as global citizens capable of leading the world in innovation. Educators can [review the means](#), take a [benchmarking survey](#), and review [examples and evidence](#) as well as the latest national educator [survey results](#). See [www.siiia.net/visionk20](http://www.siiia.net/visionk20).
- Personalized Learning: [Innovate to Educate: System \[Re\]Design for Personalized Learning](#) is a roadmap for education leaders to restructure our education system around the unique needs of each student. Developed by SIIA in collaboration with state (CCSSO) and local (ASCD) education leaders, the [report](#), [resource page](#), and [symposium archive](#) provide descriptions, practices, policies and examples for personalizing learning. See [www.siiia.net/pli](http://www.siiia.net/pli).
- Digital Learning Now: This national initiative – co-chaired by former governors Jeb Bush and Bob Wise – identified and is advocating for [10 Elements of High Quality Digital Learning](#) as a roadmap for state policy reform, and provides a rating of each state through a [Digital Learning Report Card](#). See <http://digitalllearningnow.com>.
- The Each Child Learns Act: This working draft from the Alliance for Excellent Education provides model state legislation for 21st-Century Student-Centered, Personalized and Digital Learning. See <http://www.all4ed.org/digitalllearning/legislation>.
- Florida 2.0 Digital Learning Group: This taskforce of stakeholders was appointed by the Florida State Board of Education to create a plan to ensure Florida remains a national leader in digital learning. Testimony and draft recommendations are available. See <http://www.fldoe.org/fldlg/>

SIIA and our member companies look forward to working with the Commission, Governor Cuomo and all stakeholders to support New York in its identification and implementation of new policies and programs needed to best meet the needs of students moving forward. Please do not hesitate to contact me at 202-789-4444 or [marks@siiia.net](mailto:marks@siiia.net).

## SIIA Member Companies – Education Division

- [95 Percent Group Inc.](#)
- [ABC-CLIO](#)
- [Academic Benchmarks](#)
- [Academic Business Advisors, LLC](#)
- [Achieve3000](#)
- [Adaptive Curriculum](#)
- [Adobe Systems, Inc.](#)
- [American Public University System](#)
- [Ann Foster Consulting](#)
- [Apple Education](#)
- [Apprio, Inc.](#)
- [Arc Capital Development](#)
- [Arcademics](#)
- [Atomic Learning](#)
- [Avant Assessment](#)
- [Avanti Management Group](#)
- [AWC - Ann Watson Consulting](#)
- [Becker Professional Education](#)
- [Benchmark Education Company](#)
- [Berkery, Noyes & Co.](#)
- [Bert Davis Executive Search](#)
- [Blackboard Inc.](#)
- [BLEgroup](#)
- [Boardworks](#)
- [Brain Parade, LLC](#)
- [BrainPOP](#)
- [Bridgepoint Education - Learning Resources](#)
- [Brighter Future for Beautiful Minds](#)
- [BSG Team Ventures](#)
- [BuzzMath](#)
- [C. Blohm & Associates, Inc.](#)
- [CafeScribe](#)
- [Cambium Learning Technologies](#)
- [Capstone Digital](#)
- [Carolina Science Online](#)
- [CDW Corporation](#)
- [Cengage Learning](#)
- [Chalkable](#)
- [Cherry Tree & Associates, LLC](#)
- [Clarity Innovations](#)
- [ClassLink, Inc.](#)
- [College Board - SpringBoard Division](#)
- [CollinsConsults](#)
- [Computer Power Solutions of Illinois, Ltd. \(CPSI\)](#)
- [ConnectYard, Inc.](#)
- [Consulting Services for Education](#)
- [Courseload, Inc.](#)
- [CyberSmart! Education Company](#)
- [Datasync Solutions, Inc.](#)
- [Dell ASAP](#)
- [DeVry - Educational Technology Research and Development](#)
- [Digital Ignite](#)
- [DJS EdTech Consulting](#)
- [Dorsey & Whitney, LLP](#)
- [DreamBox Learning](#)
- [E.T.C. International](#)
- [EducAide Software](#)
- [Education Networks of America \(ENA\)](#)
- [Education Week and Digital Directions](#)
- [Educational Systemics, Inc.](#)
- [Educurious Partners](#)
- [EDUMETRIX INC.](#)
- [EduTone Corporation](#)
- [edWeb.net](#)
- [eGenio Education Solutions](#)
- [Egremont Associates, LLC](#)
- [eInstruction](#)
- [Empirical Education Inc.](#)
- [Espresso Education](#)
- [ETA hand2mind](#)
- [Filament Games, LLC](#)
- [First Analysis Corp.](#)
- [Flat World Knowledge, Inc.](#)
- [Florida Virtual School- Global Services Division](#)
- [Focus EduVation, Inc.](#)
- [Follett Corporation - Technology Solutions & International Group](#)
- [Foundations in Learning, Inc.](#)
- [Funds for Learning, LLC](#)
- [Gaggle](#)
- [Game to Learn](#)
- [Generation YES, Inc.](#)
- [GoingOn Networks](#)
- [Google, Inc.](#)
- [Greaves Group LLC](#)
- [Grockit](#)
- [GuideK12](#)
- [Houghton Mifflin Harcourt](#)
- [IBM Corporation](#)
- [Inside Music, LLC](#)
- [Intel Corporation Education Group](#)
- [Interactive Educational Systems Design, Inc.](#)
- [Intrinsic Strategy](#)
- [itslearning, Inc.](#)
- [ITWorx Inc.](#)
- [Jordan Edmiston Group, Inc.](#)
- [K12, Inc.](#)
- [Key Curriculum Press KJR Associates](#)
- [Knovation](#)
- [Knowledge Delivery Systems, Inc.](#)
- [Language Express](#)
- [Learning.com](#)
- [LearningExpress, LLC](#)

- [LearnSprout](#)
- [LectureTools Inc.](#)
- [Lerner Publishing Group - Electronic Content Division](#)
- [Lesson Planet](#)
- [Lexia Learning Systems, Inc.](#)
- [Marketing Projects, Inc./Big Deal Book](#)
- [MathResources, Inc.](#)
- [Mayer-Johnson](#)
- [McGraw-Hill Companies, Inc.](#)
- [MCH Strategic Data](#)
- [Measured Progress](#)
- [MemeSpark LLC](#)
- [MetaMetrics, Inc.](#)
- [Mimio Interactive Teaching Technologies](#)
- [MIND Research Institute](#)
- [Mindset Works](#)
- [MMS Education](#)
- [Mojo Learning Inc.](#)
- [Monarch Teaching Technologies](#)
- [Muzzy Lane, Inc.](#)
- [My Learning Plan Inc.](#)
- [National Geographic Learning](#)
- [Naviance](#)
- [Ness USA, Inc.](#)
- [New Markets Venture Partners](#)
- [NextGenEd Consulting](#)
- [O'Donnell & Associates, LLC](#)
- [Olympus Math](#)
- [Operant Systems Inc.](#)
- [Oracle Corporation](#)
- [Owen Software](#)
- [PASCO Scientific](#)
- [Paula Maylahn Consulting](#)
- [PCI Education Publishing](#)
- [Pearson](#)
- [PolyVision](#)
- [PR with Panache!](#)
- [Promethean Inc. \(USA\)](#)
- [Red Hat, Inc.](#)
- [RedRock Reports](#)
- [Renaissance Network, Inc.](#)
- [Ripple Effects](#)
- [Rosen Digital](#)
- [Sanford Rose Associates-Austin](#)
- [SAS Institute](#)
- [SAS Institute Education Group](#)
- [Sassafras Software, Inc.](#)
- [Scholastic Education - Curriculum](#)
- [School Improvement Network](#)
- [Schoology, Inc](#)
- [Second Avenue Learning](#)
- [Seeds Software](#)
- [Seward Incorporated](#)
- [Shore Communications, Inc.](#)
- [SMART Technologies ULC](#)
- [SMARTHINKING, a division of NCS Pearson](#)
- [SoftChalk LLC](#)
- [Sophia Consulting LLC](#)
- [SRI International - Center for Technology in Learning](#)
- [StudySync](#)
- [Sublime Learning, Inc.](#)
- [Tales2Go Inc.](#)
- [TATA Consultancy Services](#)
- [TechEd Connect Executive Recruiters](#)
- [TechERA \(Technology for Education Reform and Accountability\)](#)
- [Texas Instruments Education Technology Group](#)
- [Texthelp, Inc.](#)
- [Think Through Learning Inc.](#)
- [Thomson Reuters](#)
- [Triad Interactive Media, Inc.](#)
- [Turning Technologies](#)
- [Tutor.com](#)
- [TVTextbook](#)
- [Twist Education, LLC](#)
- [uBoost](#)
- [Vernier Software & Technology - Software Division](#)
- [Victory Productions Inc.](#)
- [Virtual Nerd, LLC](#)
- [Vocab Network LLC](#)
- [Washington Corporation](#)
- [Waterford Institute](#)
- [Whitestone Communications](#)
- [Wicks Group of Companies, L.L.C.](#)
- [WILL Interactive, Inc.](#)
- [Winter Group](#)
- [Wireless Generation](#)
- [World Wide Workshop](#)
- [Wowzers](#)
- [WS Sales Advisors](#)
- [YourTeacher](#)
- [Zac Fisher Consulting](#)