Innovate to Educate:
System [Re]Design for *Personalized Learning*

A Report From The 2010 Symposium

SIIA Software & Information Industry Association

IN COLLABORATION WITH

ASCD LEARN. TEACH. LEAD.

CCSSO Council of Chief State School Officers

Author

Mary Ann Wolf, PhD, Wolf Ed

Editors

Elizabeth Partoyan, CCSSO

Mark Schneiderman, SIIA

Judy Seltz, ASCD

About the Author

Mary Ann Wolf, PhD is the CEO of Wolf Ed and has fifteen years of experience in education and education technology. Mary Ann consults with several education organizations focused on policy and practice for innovative education reform, educational technology, and instructional practices. Previously, Mary Ann was the Executive Director of the State Educational Technology Directors Association (SETDA), and she continues to work on efforts dedicated to ensuing America's and our students' competitiveness in the global economy. At SETDA, Mary Ann released several important research and position reports, testified before the US House of Representatives Education and Labor Committee, and co-hosted technology showcases on the Hill. Mary Ann taught fifth grade in Virginia and studied education leadership with a focus on teacher time and professionalism at the University of Virginia. Mary Ann has a PhD in Education from the University of Virginia, a Masters degree in Elementary Education from George Washington University, and a Bachelors degree in Accounting and Marketing from Georgetown University.

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System [Re]Design for *Personalized Learning*

A Report From The 2010 Symposium

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About the Host Organizations

SIIA - The Software & Information Industry Association (SIIA) is the principal trade association for the software and digital content industries. SIIA provides global services in government relations, business development, corporate education, and intellectual property protection for more than 500 leading software and information companies. SIIA's Education Division serves and represents more than 150 member companies that provide software, digital content and other technologies that address educational needs. The Division shapes and supports the industry by providing leadership, advocacy, business development opportunities, and critical market information. SIIA provides a neutral business forum for its members to understand business models, technological advancements, market trends, and best practices. With the leadership of the Division Board and collaborative efforts with educators and other stakeholders, the Division undertakes initiatives to enhance the use of educational technology. Contact: Mark Schneiderman, Senior Director, Education Policy, Software & Information Industry Association (marks@siia.net or 202-289-7442)

ASCD - Founded in 1943, ASCD is a nonprofit educational leadership association that develops programs, products, and services essential to the way educators learn, teach, and lead. We provide expert and innovative solutions in professional development, capacity building, and educational leadership. ASCD's membership comprises more than 170,000 principals, teachers, superintendents, professors of education, and other educators from 136 countries. Our association also has nearly 60 affiliates throughout the world. Contact: Judy Seltz, Deputy Executive Director, Constituent Services, ASCD (jseltz@ascd.org or 703-575-5612)

CCSSO - The Council of Chief State School Officers (CCSSO) is a nonpartisan, nationwide, nonprofit organization of public officials who head departments of elementary and secondary education in the states, the District of Columbia, the Department of Defense Education Activity, and five U.S. extra-state jurisdictions. CCSSO provides leadership, advocacy, and technical assistance on major educational issues. The Council seeks member consensus on major educational issues and expresses their views to civic and professional organizations, federal agencies, Congress, and the public. Contact: Elizabeth Partoyan, Strategic Initiative Director, Next Generation Learners, Council of Chief State Schools Officers (elizabethp@ccsso.org or 202.336.7000)

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Innovate to Educate:
System [Re]Design for *Personalized Learning*
A Report From The 2010 Symposium

Dear Colleagues:

On August 4-6, 2010 in Boston, Massachusetts, our three organizations hosted an invitation-only convening of education leaders to focus on the need for the systemic redesign of our K-12 education system to one that is centered on the personalized learning needs of each student. This report summarizes that two-day discussion and outlines the shared vision, views, and recommended action steps of the participants.

"Innovate to Educate: [Re]Design for Personalized Learning" was an initiative of the Software & Information Industry Association (SIIA) in collaboration with ASCD and the Council of Chief State School Officers (CCSSO). It uniquely brought together three key groups of education leaders – local and state practitioners, national thought leaders, and senior technology executives – with participants selected for their vision, leadership, and expertise with personalized learning.

- We joined under a common belief that our industrial-age, assembly-line educational model - based on fixed time, place, pace and curriculum - is insufficient in today's society and knowledge-based economy.
- We focused on identifying the policies, systems, practices, supports, and technologies needed to reengineer our education system to a student-centered, customized learning model.
- We developed a shared vision that educational equity and student success require that each student's educational path, curriculum, instruction, and schedule be personalized to meet his unique needs.
- We identified the key elements of student-centered education, as well as action steps necessary to advance its development, adoption, and implementation.

Most importantly, we, including our organizational constituencies and initiative participants, believe the fundamental redesign of our K-12 education system around the student is required for their and our nation's future success.

We wish to thank our sponsors, partners, and participants for their support and contributions. We look forward to a growing community of practice needed to redesign our education system and meet the personalized learning needs of our students.

Sincerely,

Kenneth A. Wasch
President
SIIA

Gene R. Carter
Executive Director/CEO
ASCD

Gene Wilhoit
Executive Director
CCSSO

Of the education leaders at the Symposium, 91% very strongly or strongly agree 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."

Key Findings

On August 4-6, 2010 in Boston (MA), 150 invited education leaders convened at the SIIA-ASCD-CCSSO Symposium on [Re]Design for Personalized Learning. They gathered under the common belief that today's education system is inadequate to meet the needs of tomorrow, and focused on identifying changes essential to transform learning for each student. Following are the Symposium participants' key findings about how to redesign our current education model to a student-centered, customized learning model that will better engage, motivate, and prepare our students to be career and college ready.

The Symposium confirmed the following assumptions among participants and others advocating and implementing a personalized learning model:

- Today's industrial-age, assembly-line educational model—based on fixed time, place, curriculum and pace—is insufficient in today's society and knowledge-based economy. Our education system must be fundamentally reengineered from a mass production, teaching model to a student-centered, customized learning model to address both the diversity of students' backgrounds and needs as well as our higher expectations for all students.

- Educational equity is not simply about equal access and inputs, but ensuring that a student's educational path, curriculum, instruction, and schedule be personalized to meet her unique needs, inside and outside of school. Educational equity meets each child where she is and helps her achieve her potential through a wide range of resources and strategies appropriate for her learning style, abilities, and interests, as well as social, emotional, and physical situation.

- Personalized learning requires not only a shift in the design of schooling, but also a leveraging of modern technologies. Personalization cannot take place at scale without technology. Personalized learning is enabled by smart e-learning systems, which help dynamically track and manage the learning needs of all students, and provide a platform to access myriad engaging learning content, resources and learning opportunities needed to meet each students needs everywhere at anytime, but which are not all available within the four walls of the traditional classroom.

Symposium participants jointly identified the following top ten essential elements and policy enablers of personalized learning:

Essential Elements

1. Flexible, Anytime/Everywhere Learning
2. Redefine Teacher Role and Expand "Teacher"
3. Project-Based, Authentic Learning
4. Student Driven Learning Path
5. Mastery/Competency-Based Progression/Pace

Policy Enablers

1. Redefine Use of Time (Carnegie Unit/Calendar)
2. Performance-Based, Time-Flexible Assessment
3. Equity in Access to Technology Infrastructure
4. Funding Models that Incentivize Completion
5. P-20 Continuum and Non-grade Band System

Education leaders at the Symposium rallied around redefining the use of time and the Carnegie Unit as the single most significant policy enabler for personalized learning. Personalized learning models reverse the traditional model that views time and place (that is, seat-time) as the constant and achievement as the variable. Instead, personalized learning ensures all students gain proficiency independent of time, place, and pace of learning.

Symposium attendees agree with the need for collective and individual actions moving forward to help education stakeholders further understand and implement a model of personalized learning. Specifically, the Symposium participants identified the following next steps:

- Expand research and development aimed at studying redesign for personalization models and practices and at sharing what works and the road map for getting there (92%)
- Support public-private partnerships to advance key technologies, including common metadata and technical standards needed to enable the interoperability of various applications, data, and content resources to form a more seamless, integrated learning platform (89%)
- Form a policy action network to identify and implement state and district policies that support personalized learning, including changes to seat-time and Carnegie units (88%)
- Develop a shared understanding of the vision, definitions, and effective communication of personalized learning to help inform education stakeholders (83%)

This paper provides both a summary of discussion and findings, as well as a primer on the topic of education system redesign to student-centered or personalized learning. Specifically, it provides a shared vision and definition, examples of successful implementations, and descriptions of key policies, systems, technologies, educator roles, and supports required to bring personalized learning to scale.

Among the Symposium attendees, 96% identified access to technology and e-learning as a critical or significantly critical cross-cutting platform to implement personalized learning and bring it to scale.

"We know that personalized learning is not new; it's as old as learning itself. But what is new is that the factory model that we've used to meet the needs of the average student in a mass production way for years is no longer meeting the needs of each student as our student body diversifies. What is new is that our expectations have grown of what students need to know and understand. What has changed is that our students...are surrounded by a personalized and engaging world outside of the school, but they're unplugging not only their technology, but their minds and their passions too often, when they enter into our schools. And what is new is that technologies are poised to provide tools and supports to scale and enable personalized learning."

MARK SCHNEIDERMAN
Senior Director
Education Policy, SIIA
Personalized Learning
Symposium, August 2010

Introduction and Background

"All of us do not have equal talent, but all of us should have an equal opportunity to develop our talent."

JOHN F. KENNEDY

On August 4-6, 2010, SIIA, CCSSO, and ASCD convened education leaders from across the country at the Harvard Club in Boston to delve into the opportunities and challenges of providing personalized learning for all students. Local and state practitioners, national leaders, and senior technology executives shared their vision for student-centered learning, presented how they are delivering on the possibilities, and identified the most significant components, policy and system enablers, and support resources – curriculum, technology, educator support, online/blended learning, and data and assessment – required to bring personalized learning to scale.

Education leaders came to the consensus that not only is personalized learning a viable option, but also that there is an urgent demand for systemic redesign to provide this type of education for all students. Attendees voted for a continued effort to develop and disseminate models, research, and policy recommendations on personalized learning. Everyone left inspired by the possibilities and results to date and challenged by the task ahead. This paper highlights key points, discussions, and next steps to build upon the Symposium and make personalized learning a reality for all students to ensure that they are prepared for college and career.

The Symposium discussions took place against a backdrop in which the education system in the United States is seemingly engaged in countless reform efforts to fix the failings that have led to approximately 30% of students dropping out of high school (Alliance, 2009), nearly 40% that graduate but are unprepared for entry-level jobs (Achieve, 2005), and nearly one-third of students in community colleges requiring remediation in their first year (NCES, 2008). Stakeholders suggest myriad causes and solutions. Many increasingly recognize one primary challenge: Schooling and instruction are mass-produced, expecting students of various abilities, support

systems, and interests to progress through the same educational program at the same pace without sufficient regard for their individual learning needs. Symposium attendee Ted Kolderie (Education Evolving) makes the following point:

> *"...nearly half of the high school dropouts point to boredom and lack of interest in classes as a reason for leaving school. This comes as no surprise; most students have little choice in what and how they learn. This is because the educational system is standardized with an increasing number of curriculum requirements and must, by design, ignore individual needs and interests of students. In fact, the premise is that student interests and individual learn-ing styles and strengths are at best secondary to the education process." (Kolderie, McDonald, 2009, p. 3).*

The education leaders participating in the Symposium represent a growing chorus of educators across the country who are increasingly focusing on redesign for personalized learning as critical to meeting the needs of all students. They recognize the definition of educational insanity: offering the same type of education model over and over again and expecting a different result. They admit that many educational "reforms" have fallen short as additional layers that have not changed the underlying core model. As Symposium speaker Rick Hess (AEI) put it, "In education, time after time, we ask people to wedge in innovation on top of and beside all that has come before." They understand that changing student outcomes requires transforming their experience and our current education system. These leaders see that educational equity is not simply about equal access and inputs, but as importantly requires that a student's educational path, curriculum, instruction, and schedule be personalized to meet her unique needs.

Personalization and Equity

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. For America's students, 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. Equity must also go beyond the classroom to educate the "whole child," recognizing that each child deserves to be "healthy, safe, engaged, supported, and challenged" (ASCD, 2010) and to incorporate informal and community learning opportunities.

> *"Each of our kids . . . has to have equity in access, equity in opportunity and equity in their possibilities and trajectory."*
>
> KEN SLENTZ, Associate Commissioner for District Services,
> New York State Education Department
> Personalized Learning Symposium, August 2010

This shift in our understanding of equity leads to an urgent call for the personalization of learning. Reform efforts that continue to follow the traditional one-size-fits-all, factory model of schooling are unlikely to make a sufficient difference for many students in this knowledge-age when student diversity is profound and expectations are higher than ever. Equity demands a careful consideration of the needs of each child.

In his featured remarks, Symposium speaker Rick Hess of the American Enterprise Institute (AEI) reviewed the shortcomings of education reform and offered a new innovation framework.

"In education, time after time, we ask people to wedge in innovation on top of and beside all that has come before... We often suggest... it's a best practice problem – if we can find out what works, we'll be able to turn it around...it ain't that easy. [For General Motors and TWA, for example] as the world evolved, as the tools available evolved, as models of delivery evolved, the exact same things that had once made [them] successful now made them unsuccessful... now became anchors around their ankles. And it wasn't, did they know what they were doing, it wasn't, did they understand best practices, it was that they – leaders in these organizations – were so constrained by systems and policies and past decisions that they couldn't get out of ...We focus on the one-seventh that we can control of that iceberg... but what's just too... difficult and messy is to think about the six-sevenths of the iceberg which constitutes the school year, the school day, the structure of the school district, funding streams..."

Hess went on to explain that it is those very systemic issues we must address to create an environment where educators and students can leverage the best educational models, tools and talent based on their unique needs and circumstances and unencumbered by outdated notions or policy constraints.

Key initiatives supporting the concepts of personalized learning:

ASCD's Whole Child initiative purports that "...each child, in each school, in each of our communities deserves to be healthy, safe, engaged, supported, and challenged" and emphasizes, "It is time to put students first, align resources to students' multiple needs, and advocate for a more balanced approach. A child who enters school in good health, feels safe, and is connected to her school is ready to learn." (Seltz, 2010).

CCSSO's Partnership for Next Generation Learning (PNxGL) brings together an Innovation Lab Network in states across the country and aims, in part, "to create a personalized system of education that engages and motivates each student – regardless of his or her circumstance – to be prepared for life, meaningful work, and citizenship...[and] will create replicable, scalable implementations of next generation learning." (CCSSO, 2009, p. 1).

SIIA's Vision K-20 provides a framework and benchmarks to help ensure that all students have access to a teaching and learning environment capable of preparing them to compete globally and lead the world in innovation. Vision K-20 asserts, "Digital technology provides multiple approaches to learning, allowing educators to effectively address each student's individual learning style, abilities, pace and interests effectively. Through embedded assessment and personalized instructional content, today's courseware helps educators understand and respond to the specific learning needs and styles of each student (SIIA, 2006)."

"It's not the plan that is so critical; it's the dream that casts the plan ...It's time for all of us to stand up for every one of our children."

DEBORAH DELISLE, Ohio Superintendent of Public Instruction
Personalized Learning Symposium, August 2010

Personalization Ubiquitous, Except in K-12 Education

In contrast to trends to personalize products, services, and the user experience throughout our economy, society and daily lives – in part by leveraging continually evolving technologies – education has only scratched the surface on personalizing the learner experience. Such efforts in education continue to be the exception rather than the rule and often represent a "tweaking" of the traditional model rather than the necessary systemic redesign of how we educate our children. Students have come to expect personalization in other aspects of their lives, such as through services like Facebook, Netflix, and iTunes. If Google and Amazon can thoughtfully leverage customer data and virtual communities to better serve each person's unique preferences and interests from afar, then education can do so for each student from the near to understand each one's learning performance level, whole child tenets, style, and preferences and then adjust instructional strategies and content to meet those needs.

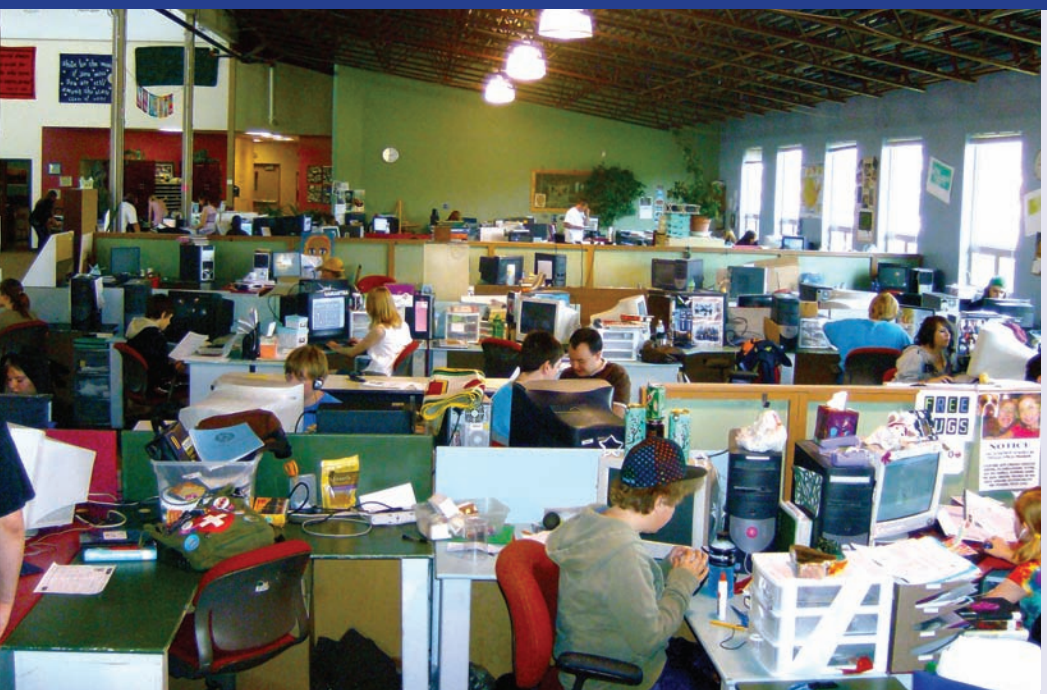
Education leaders involved in the [Re]Design for Personalized Learning initiative are working under the following assumptions:

- Today's industrial-age, assembly-line educational model – based on fixed time, place, curriculum and pace – is insufficient in today's society and knowledge-based economy. Our education system must be redesigned from a mass production to a mass customization model to better meet the diversity of students' backgrounds and needs and the higher expectations set for all students.

- Educational equity is not simply about equal access and inputs, but as importantly requires that a student's educational path, curriculum, instruction, and schedule be personalized to meet her unique needs, inside and outside of school.

- Personalization has and can take place without technology, but not at scale. Technology dramatically increases a teacher's ability to identify and manage the needs of many students, and for students to access a large variety of interventions, content, resources, and learning opportunities everywhere at anytime.

Based upon the input of, and discussions among, the education leaders at the Symposium, this paper contributes to our collective educational improvement efforts. It both presents research, actual models and practices, and Symposium discussions. It also identifies next steps to support education stakeholders in their efforts to understand and move towards a redesigned education system that facilitates personalized learning.



Defining Personalization

> *"The structure of the day for American children is more than just timeworn. It is obsolete."*
>
> TIME, LEARNING, AND AFTERSCHOOL TASK FORCE (FOREWARD)

Symposium participants frequently referenced that the idea of personalization is not new and credited education researchers and advocates who have identified for many years the need to focus on individual students through programs and approaches targeted to how each child learns best. Symposium attendees agree with education leaders like Comer, Gardner, and Tomlinson on the importance of recognizing the differing needs of students to maximize the potential of each individual. While the notion that students learn in different ways and come to the education system with a very wide range of knowledge, abilities, interests, and experiences is well researched and obvious to any teacher, our education system has not implemented a scalable structure in which personalized learning for each student is likely or even possible.

- James Comer emphasizes that children come to school at different points in many development areas and that social skills and self-esteem are important factors in academic achievement (Comer, 2004).
- Howard Gardner's multiple intelligences work identifies at least eight kinds of intelligences, including verbal linguistic, visual spatial, mathematical logical, bodily-kinesthetic, intrapersonal, musical rhythmic, naturalist, and interpersonal. Since each person possesses a different combination and so learns in a different way, the implication is that any topic can and should be taught and learned with many different approaches. These may include visual depictions, a kinesthetic or collaborative experience, or a video clip demonstrating a real-life example (Gardner, 2010).
- Carol Ann Tomlinson speaks about the growing importance of a differentiated classroom and school in which students have ownership of their own learning (Tomlinson, 2006).

QUESTIONS TO CONSIDER:

- In a redesigned system, what does personalization look like from a student/learning perspective?
- What are the essential elements to redesigning education for personalized learning (vs. those that are optional)?
- How important is student curriculum choice and flexibility of time, place, and pace?
- How does the teacher's role change under a personalized learning model?

"Personalized learning involves Individuation and Pluralization. Individuation means that each student should be taught and assessed in ways that are appropriate and comfortable for that child. Pluralization means that anything worth teaching could and should be taught in several ways. By so doing, one reaches more students. Today, we live in a computer age. For the first time in human history, individuation and pluralization are potentially available to any young person. And so the ideas of non personalized, remote, or cookie-cutter style teaching and learning will soon become anachronistic."

HOWARD GARDNER
(2010, ED REFORMER)

"We have an opportunity. We have an awesome responsibility...Our conversation in the future is not about fixing schools. It's about defining an optimum learning experience for every child in America. When you begin to define it in that way, then all of the aspects of the historic institution we have established are up for grabs. The only thing that is not, that we cannot equivocate on, is this goal of every child graduating prepared and ready for life."

GENE WILHOIT
Executive Director, CCSSO
Personalized Learning
Symposium, August 2010

Personalization is often confused with the related terms individualization and differentiation, which are frequently employed in education, but sometimes represent tweaks within the long-standing, mass-production approach. True personalization goes further and requires a major shift in focus from an institution/teacher-centered approach to an authentic, student-centered approach. True personalization provides a learning program and approach specifically tailored to the abilities, interests, preferences, and other needs of the individual student.

The Obama Administration's Transforming American Education: Learning Powered by Technology calls for "an alternative to the one-size-fits-all model of teaching and learning" (http://www.ed.gov/technology/netp-2010) and notes that "personalization" incorporates, but moves beyond both individualized learning and differentiated instruction:

> *"Personalization refers to instruction that is paced to learning needs [i.e. individualized], tailored to learning preferences [i.e. differentiated], and tailored to the specific interests of different learners. In an environment that is fully personalized, the learning objectives and content as well as the method and pace may all vary."*
>
> U.S. DEPARTMENT OF EDUCATION, 2010, P. 12

Businesses often conceptualize personalization as the Market of One, which is a "Level of customization and customer service at which a customer feels that he or she is an exclusive or preferred customer of the firm." (BusinessDictionary.com) When Amazon recommends other products based upon a customer's previous selections, they are specifically marketing to the individual (though the targeting is informed by the preferences of like-customers). Grocery stores similarly provide point-of-purchase coupons based upon a customer's purchases and even brand preferences. Such industry practices contrast to simply mass marketing one product or service and raises question of how personalization can be adapted to education to ensure that student's individual needs are met.

Although the very nature of personalized learning demands a departure from "one-size fits all" education and allows for myriad models and practices for its implementation, certain characteristics appear to be central to this paradigm shift in all its iterations. Education leaders discussed at length the critical and optional components of personalized learning with the majority of discussions centered on the learning process, roles and relationships, standards and expectations, and learner assessment. As background for their discussions, Symposium attendees reviewed two scenarios, providing anecdotal examples of what some elements of personalized learning might look like in practice (See Section VII).

Symposium attendees agreed that the elements in the following chart represent what a full-blown personalized learning system could look like and contrast that with our current education system. In total, these differences do not represent marginal change, but rather assume transformative system redesign. Not all of the components below are necessarily core to customize learning, and different models will mix and match the components based upon needs and capacity.

Current System	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
Academics Addressed in Isolation	Learning Plan Recognizes and Integrates "Whole Child" range of social, emotional and physical needs
Fixed Time; September-June; 9 a.m. – 3 p.m.	Flexible Schedule; Anytime; 24/7/365; Extra Time 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 Determined and Limited Instructional Sources (Teacher and 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 and Locked Student Report Card	Portable Electronic Student Portfolio Record
Printed, Static Text as Dominant Content Medium	Digital, Interactive Resources as Dominant Content Medium
Isolated Data and Learning Objects	Interoperable Data and Unbundled Learning Objects
Physical/Face-to-Face Learning	Online Learning Platform to Enable Blended Learning
Informal Learning Disconnected	Informal Learning Integrated

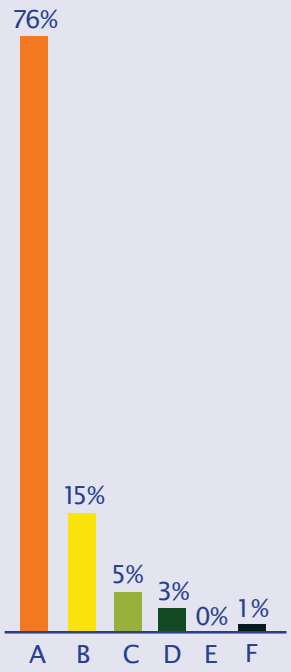
Five Essential Elements

From among these and other attributes of a personalized learning system considered in breakout discussion groups, Symposium attendees identified the following as the top five essential elements central to personalized learning:

1. Flexible, Anytime/Everywhere Learning
2. Redefine Teacher Role and Expand "Teacher"
3. Project-Based/Authentic Learning Opportunities
4. Student Driven Learning Path
5. Mastery/Competency-Based Progression/Pace

SYMPOSIUM ATTENDEE POLL
August 5-6, 2010

"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."

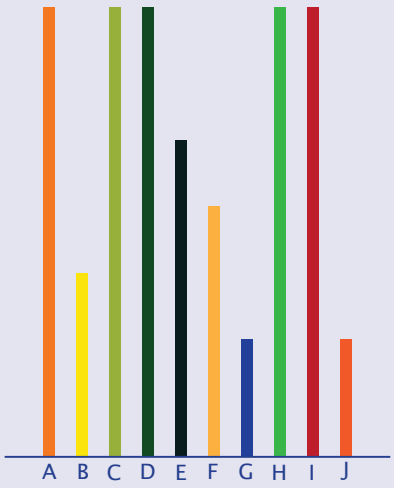


A. Very Strongly Agree
B. Strongly Agree
C. Agree
D. Disagree
E. Strongly Disagree
F. Very Strongly Disagree

SYMPOSIUM ATTENDEE POLL
August 5-6, 2010

What are the top 5 essential elements of personalized learning?

A. Student Driven Learning Path
B. Content Based on Strengths/Interests/ Modalities
C. Flexible, Anytime/ Everywhere Learning
D. Redefine Teacher Role/ Expand "Teacher"
E. Robust Use of Technology/ Blended Learning
F. Options for Demonstrating Learning/Assessment
G. Real-Time, Robust Student Data
H. Mastery/Competency-Based Progression/Pace
I. Project-Based/Authentic Learning Opportunities
J. Equity for All Regardless of Circumstance



Inherent in these core components are both the need for a change in the nature and use of assessments, as well as the critical role of technology and data (systems) to personalize learning at scale. Systemic redesign for personalized learning suggests the need for technology-based, online platforms to integrate the currently fragmented education silos, manage the personalized portfolio of each student, and provide 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.

Of Symposium attendees, 96% identified access to technology as critical or significant to implement all aspects of personalized learning and bring it to scale.

1. 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 so time can be the variable and learning can be the constant, as well as by providing access to courses and instructors often not otherwise available within the school. Several policies, such as seat time or Carnegie units, often restrict implementation of models offering such flexible learning time and place for online or blended learning and experiences in the community (See Section IV for further discussion).

2. Redefine Teacher Role and Expand "Teacher"

"We model learning. I need to be the lead learner."

SARAH BROWN WESSLING, National Teacher of the Year
Personalized Learning Symposium, August 2010

Education leaders overwhelmingly agreed that the role of the teacher dramatically changes with personalized learning, as it emphasizes a shift from a single teacher delivering knowledge to his classroom of students to teachers as facilitators of learning, often as a part of a team of teachers with differentiated roles. While the teacher directed model has its place, this facilitator model is a significant departure from the way teachers have been trained to teach and learned through themselves as children. Included is an expanded view of the teacher to include not only school-based educators, but also other mentors 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), social workers and health providers, scientists and other experts perhaps available online, and other tutors and teachers available in online learning communities.

Through further differentiation of the teacher's role, student-teacher ratios and instructional relationships can be varied to meet the diversity of student needs. Symposium presenters Joel Rose (School of One) and Wendy Battino (RISC) explained how their models group teachers in teams that orchestrate what is best needed for each child (see Section III). Changing

the role of the teacher requires ownership among teachers and other stakeholders, job-embedded and sustainable professional development and training, and support in implementing the new approach or model of personalized learning (See Section V, Educator Support). Teacher contracts and other regulatory constraints may also need to be addressed to provide the flexibility in a teacher's role needed to make this dramatic shift in instruction.

3. Project-Based and Authentic Learning Opportunities

Project-based and authentic learning opportunities can help increase the relevance of learning and improve students' ability to apply knowledge and use critical thinking skills. Education leaders view this as an instructional shift to one better able to incorporate meaningful content and 21st century skills and to meet the interests and learning styles of many students. Symposium participants generally agreed that project-based and authentic learning opportunities therefore can help increase student engagement and ongoing attention, which improves the likelihood of learning and achievement.

4. Student-Driven Learning Path

> *"We need to think about shifting from controlling what's happening with students to coordinating it."*
>
> KAREN PITTMAN, Co-Founder, President and CEO,
> The Forum for Youth Investment, Personalized Learning Symposium, August 2010

Symposium attendees identified a student-driven learning path as synonymous to personalized learning. Such a model provides learning opportunities tailored to the expressed learning interests and abilities, whole child factors, schedule, and goals of the students. Although ensuring alignment and mastery of 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.

The School of One illustrates how technology – through online learning, online tutors, and instructional software (including games and simulations) – helps support each student's path. Inherent in this concept is *student-driven*, meaning that the student has more explicit control to design and determine their curriculum. Online or blended learning can provide access to courses not otherwise available, give additional help or support, and allow for learning at a time that works better for a student's schedule. Interestingly, this also led to discussions in breakout sessions about differing learning goals and assessments for students to allow their mastery of standards to be expressed and demonstrated in various ways, especially when considering the pace of work and form of assessments.

"What is the model we have built for our teachers to this point? You are to be the engineer of all –instruction, assessment, initial discipline, across the board. How many of us can actually pull that off 180 days a year . . . ? What do the new teacher engineers need to look like?"

KEN SLENTZ
Associate Commissioner for District Services, New York State Education Department
Personalized Learning Symposium, August 2010

The U.S. Department of Education's definition of Connected Teaching takes this concept even one step further. Connected teaching involves full access to student data, analytical tools, content, and professional resources; but is also a collaborative or team activity.

"In connected teaching, teaching is a team activity. Individual educators build online learning communities consisting of their students and their students' peers; fellow educators in their schools, libraries, and after school programs; professional experts in various disciplines around the world; members of community organizations that serve students in the hours they are not in school; and parents who desire greater participation in their children's education" (U.S. Department of Education, 2010, p. viii).

"Moving to a competency-based system, away from seat-time, is an essential condition to getting personalized learning."

SUSAN PATRICK
President and CEO,
International Association for K-12 Online Learning (iNACOL)
Personalized Learning Symposium, August 2010

"We need to literally think outside of the box in that [the] cube called school takes up between...17 and 27 percent of what we would call developmental space. So I'm going to draw you a bigger cube...we're talking about young people learning 24/7, year round ...School is a mandatory box... that hopefully fills some of that space, but there is a lot of space outside of school that we euphemistically call community... We really haven't analyzed the learning resources that are in communities...That technology can be expanded into the whole cube. There is no reason why we can't have formal learning partners [from the community]...So as we talk about getting rid of seat time, we might also want to talk about how we are going to explicitly get rid of the boundaries between school and community."

KAREN PITTMAN
Co-Founder,
President and CEO
The Forum for Youth Investment
Personalized Learning Symposium, August 2010

5. Mastery- or Competency-Based Progression/Pace

"Our solution is to create personalized learning in a systemic way - a standards-based or performance-based system for all students. The key is letting students move at their own pace...if you're in algebra for a semester and you can demonstrate proficiency after two weeks, you can move on. Likewise, if you need more time, you can take it."

WENDY BATTINO, Co-Founder and Executive Director, Re-Inventing Schools Coalition, RISC
Personalized Learning Symposium, August 2010

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. For some students, this may accelerate the pace of learning based upon abilities, needs, and interests, while for others this may require additional learning time and alternative instructional formats until the student masters the information. As such, competency-based learning is really the authentic implementation of standards-based education. The former requires proficiency before advancement, while implementation of the latter in most systems tends to keep time constant and learning variable.

Of course, mastery-based progression can be inhibited by the strict confines of grade/age banding. While grouping frequently occurs within schools, it is almost always limited to within a grade level, especially in elementary and middle school. For example, middle schools may offer both "regular" and "advanced" 8th grade language arts, but students are still clearly labeled as 8th graders and are all 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. Most districts and schools redesigning their system to personalize learning move away from narrow grade/age level grouping policies as a key component.

These five core components of personalized learning identified by the Symposium attendees lay the critical groundwork for providing opportunities to meet the needs of all students based upon their needs, abilities, and preferences. And while personalized learning is not about the technology itself, technology is a critical driver and conduit to transforming our current one-size-fits-all system.

Models and Practices

> *"We can personalize learning on the basis of academic needs. Why should students be held hostage because of the pace of the class?"*
>
> JOEL ROSE, School of One, New York City Department of Education
> Personalized Learning Symposium, August 2010

Throughout the Symposium, leaders who initiated, implemented, or worked with personalized learning models shared the potential, challenges, and outcomes to remind stakeholders that personalized learning is happening and is possible, but reiterated that significant work remains to make this a reality for more, and eventually all, students. The following models are not intended to serve as the model or as a prescriptive approach to personalization, but are rather intended as illustrative examples. School districts have implemented these programs and practices with success. As a result, these programs offer promise in terms of student performance, and illustrate several of the key characteristics central to personalization. They demonstrate that personalization can take place at many points and dimensions along the learning continuum, including at the levels of the learning object, the lesson, the class or course, and the school itself.

Adams 50, Colorado: Re-Inventing Schools Coalition (RISC)

In 2008, Adams 50 School District in Colorado dramatically changed the very nature of teaching and learning. 75% of the district's students are eligible for free and reduced lunch, and 40% are English Language Learners (ELL). Following the RISC model, Adams 50 replaced the current and common time-based system with a standards-based reform model that is competency-based in which grade levels are no longer used.

Students work through ten different learning levels at their own pace. Students of varying ages work together on a particular skill, despite the fact that they would have been in different grades in a traditional model. Struggling students have access to different types of activities and can work at their own pace. Students who quickly grasp the concept can advance

QUESTIONS TO CONSIDER:

1. What innovative models, practices, and technologies can provide a paradigm shift to a student-centered, personalized learning system?
2. What do practitioners need to implement, support and scale personalized learning and overcome barriers?
3. What new school/institution culture is needed to transform to a system of personalized learning?
4. What is required to manage a personalized environment where every student is a "school of one"?

to the next level whenever they prove ready. Adams 50 began with an elementary school pilot and has expanded to the middle and high schools, completely revolutionizing the structure, teaching, and learning in their schools.

> *"Early signs are encouraging... Metz's fourth and fifth-grade reading and math scores rose in the first year, and discipline problems went down by 40 percent 'because kids were at their own level, not bored or frustrated.'"*
>
> COPPER STOLL, Adams 50, Chief Academic Officer
> (American School Board Journal, March 2010, p. 18)

The RISC approach grew out of efforts in Chugach, Alaska and includes the following characteristics, several of which are consistent with key components for personalization:

- Students become leaders of their learning process.
- Teachers become facilitators and partners.
- Low-level knowledge/skill is not enough, and students must demonstrate a much higher mastery level.
- The pathway from level to level - and ultimately to graduation - is transparent to everyone.
- In contrast to a traditional system, learning is the constant and time is the variable, and students move at their own pace, which honors natural developmental differences.

"This year I learned more than I've learned in all of my years in school. I have learned self-esteem. I learned things I didn't know I could do. I've learned things I knew I could do that school didn't know I could do. I feel like I've been an equal partner in creating my system of education."

WENDY BATTINO
Co-Founder and Executive Director, Re-Inventing Schools Coalition (RISC), sharing from a speech given by one of RISC's first graduating seniors
Personalized Learning Symposium, August 2010

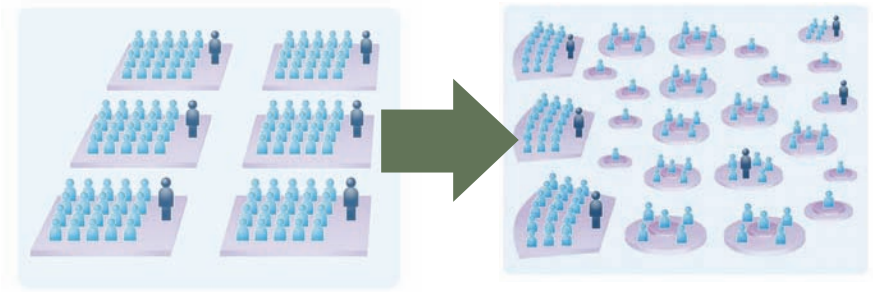
School of One, New York City Department of Education

New York City Department of Education's School of One began as a summer and after school math program before being recently deployed for the full school day/year. The School of One model is based not only on the specific achievement level and concepts mastered by each student, but also on each student's learning styles and reactions to specific instructional techniques. Additionally, the School of One transforms the traditional classroom model of one teacher for a group of 30 students and creates instead teams of educators working in varying combinations, methods, and ratios to address the needs of each student. School of One required "unbundling the learning process" (Childress, 2010, p. 5) in terms of both the curriculum and instructional approach.

Based upon a learning style assessment and daily assessments to identify their learning preferences and needs, students receive a unique daily "playlist" from a bank of available instructional lessons/activities/strategies to address the pertinent, needed learning standards. For example, one student who is working on pre-algebra may have a teacher-based instructional period, a video game, and an on-line tutor built into his "playlist" for a day. This allows students to take advantage of various instructional approaches and strategies and to learn in a truly personalized manner and pace regardless of age, grade level, or class assigned. The support staff and teachers collaborate to build the best learning program and "playlist" for the students based on a computer algorithm generated recommendation and ongoing evaluation of what is making a difference, what is not working, and what else is needed.

The School of One embodies the key characteristics of personalization as it:

- Adopts a student-centered learning paradigm;
- Dramatically shifts the teacher's role to being part of a collaborative team that works with a larger universe of students, but also provides more one-on-one or small group time with many as needed;
- Capitalizes on technology to match students with resources, address the many different learning styles, provide additional time on task, adjust to a student's pace, and provide multiple pathways; and
- Utilizes computer-based assessments to power the algorithms critical for the real-time development of the daily playlist at the center of the personalization for each student.



New York City School of One

"If I don't understand something, I can try and learn it in a new way and take my time.

I don't have to learn it the same way everyone else does. It helps me more, and I get to understand it.

I get to know more of the teachers."

ISABEL GONZALES
School of One student (July 29, 2010, Interview)

Harlem Children's Zone

Harlem Children's Zone (HCZ) recognizes that students come to our education system with a wide range of basic needs, abilities, support, and motivation, and HCZ strives to ensure that children are supported from birth through college and career to support the whole child. The two fundamental principles of The Zone Project are to help kids in a sustained way, starting as early in their lives as possible, and to create a critical mass of adults around them who understand what it takes to help children succeed (Harlem Children Zone). Although clearly focusing on academics, HCZ's holistic approach emphasizes the importance of rebuilding the community so that families are supported and thus able to help children. Beginning with The Baby College for parents of children ages 0-3, HCZ includes in-school, after-school, health, community, and social services.

HCZ has two charter schools and also places AmeriCorps Volunteers in public schools in the area. Results from HCZ demonstrate the potential to support each child to be college- and career ready. One hundred percent of third graders in HCZ's Promise Academy I and II Charter Schools were at or above grade level on the statewide math assessment. The charter school third graders also dramatically increased scores on the English Language Arts state-wide assessment with 94 percent at or above grade level at Promise Academy I and 86 percent at or above grade level at Promise Academy II.

The Harlem Children's Zone represents several characteristics of personalization as it:

- Recognizes and supports that learning takes place anytime and everywhere;
- Redefine the teacher by looking beyond traditional school-based educators to support learning; and
- Identifies and addresses each student's unique needs, including looking beyond academics to support the whole child.

"If personalized learning becomes real . . . you're going to be facilitating a person in a process of self inquiry, intrinsically led self-directed learning. The teacher will have to have a very different role. That whole shift in paradigm will require a long-term orientation... with teachers getting out of their environments and visiting... [model] schools. In order to really grasp the way learning is going to change, having that personal experience is important..."

TALMIRA HILL
Director, Association for High School Innovation
Personalized Learning Symposium, August 2010

Providence (RI) Metropolitan Career and Technical School: Big Picture Model

The Big Picture Model originated at Providence's Metropolitan Career and Technical School and primarily targets students who may not have succeeded in a traditional high school. The Big Picture Model requires students to plan their personalized educational program with their families and stretches the traditional school day by providing opportunities for internships two days per week. This program focuses on standards, and charges students to achieve five learning goals: "communications, empirical research, personal qualities, quantitative research, and social reasoning" (p. 33, 2007, Time, Learning, and Afterschool Task Force). The use of technology and community resources provide many additional opportunities to engage students and personalize the learning experience beyond the school day into what may typically be considered informal learning time. The Big Picture Model has expanded to over 60 schools across the country, and a majority of students – many of whom had been identified as at-risk - is entering college immediately upon graduation.

The Big Picture Model emphasizes that learning does not and should not begin and end with the traditional school day, and that students will be better served in a comprehensive system that takes advantage of before and after school programs, home, and community.

The Big Picture Model employs several elements of personalized learning outlined in A New Day for Learning (2007, p.4):

- Recognizes and supports that learning takes place anytime and everywhere;
- Redefinition of student success;
- Use of knowledge about how students learn best throughout the day, early to late – and year round;
- Integration of various approaches to acquiring and reinforcing knowledge; and
- New leadership and professional development opportunities.

While these four models represent different approaches to the personalization of learning, each has redesigned assumptions and implementations typical in our education system, creating alternatives to limitations by age or grade bands, time-based structures, and common instructional methods for all students.

Policy and System Enablers

> *"We had a system that said, 'You'll spend 180 days in the chair. Hopefully, you've progressed enough to progress to the next grade'..."*
>
> VAN SCHOALES (Vail, 2010, p. 17)

Personalized learning requires a shift in the enterprise of schooling. Our education system is shaped by many stakeholders – state and federal regulators, district and school leaders, communities, teachers, and parents – who help to create many policies, traditions and cultural norms that may encourage, but too often hinder, the redesign of education to personalize learning. In many cases, these policies and practices were implemented well before the advent of online learning, digital content, and Web 2.0 resources. Personalized learning is not simply about replication of a few favored models and best practices, but about creating essential policy and systemic conditions for enactment of a range of practices and models that meet local needs and adhere to the tenets of personalized learning.

Five Policy and System Enablers

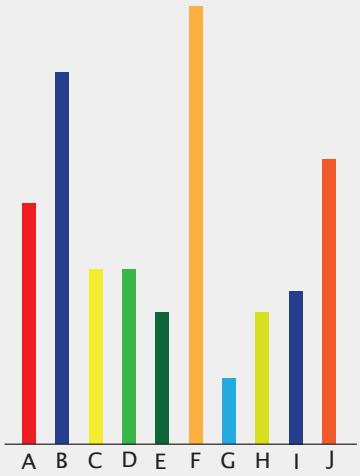
During in-depth breakout sessions, Symposium attendees discussed the policy and system enablers for creating and sustaining personalized learning for all students. Although many enablers emerged, attendees reached consensus in voting the following as the top five policy enablers of personalized learning:

1. Redefine Use of Time (Carnegie Unit/Calendar)
2. Performance-Based, Time-Flexible State Assessment
3. Ensure Equity in Access to Technology Infrastructure
4. Funding Models that Incentivize Completion
5. P-20 Continuum and Non-grade Band System

QUESTIONS TO CONSIDER:

1. What are the state and local policies, systems, and institutions needed to redesign education to enable personalized learning (and overcome barriers)?
2. What is the alternative to age banding, how important is it, and how difficult is the transition?
3. How are the funding models and incentives working against personalized and competency-based learning, and what new funding models would encourage the transformation from seat-time to a student-centered, personalized approach?

SYMPOSIUM ATTENDEE POLL
August 5-6, 2010



What are the top 5 policy enablers of personalized learning?

A. Funding Models/Incentivize Completion

B. Performance-Based, Time-Flexible State Assessment

C. P-20 Continuum/Non-grade Band System

D. Restructure Licensure/ Certification/Evaluation

E. Portable/Interagency Data Systems

F. Redefine Use of Time (Carnegie Unit/Calendar)

G. Expand Definition of State-Adopted Materials

H. Enable Teacher and School Autonomy

I. Support the Whole Child

J. Ensure Equity in Access to Technology/Infrastructure

1. Redefine Use of Time (Carnegie Unit/Calendar)

Education leaders at the Symposium strongly rallied around redefining the use of time and the Carnegie Unit as the single most significant policy enabler for personalized learning. Many personalized learning models reverse the traditional model that views time as the constant and achievement as the variable. 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. These physical limitations of time and place can dramatically hinder the flexibility needed to encourage and enable personalized learning.

In contrast, a personalized learning model would support students in progressing on their own pace and schedule. Typically, if a student mastered Algebra I in one semester instead of two, seat time requirements may prevent them from receiving their required course credit, and most systems would not give them that opportunity to even demonstrate mastery until year's end. Seat time can similarly limit the ability of a student to take an online or blended learning course or participate in learning within the community with experts or apprenticeship-like experiences. Related policy issues are the fixed school schedule and calendar, which assume and limit formal learning time based around an agrarian calendar, rather than providing flexibility for 24/7/365 learning. Seat time policies are often closely contrasted with performance-, mastery- or competency-based approaches to learning.

> *"The biggest barrier is the] Carnegie unit, seat time... We are basing our entire system on the number of minutes within four walls... Moving to a competency-based system, away from seat time is an essential condition to getting to personalized learning. The funding incentives and structures need to change..."*
>
> SUSAN PATRICK, President and CEO, International Association for K-12 Online Learning (iNACOL)
> Personalized Learning Symposium, August 2010

2. Performance-Based, Time-Flexible State Assessment

Symposium attendees emphasized how much the timing and rigidity of current state assessments shape instruction and expectations, and they identified rethinking state assessments to be performance-based and time-flexible as critical to personalized learning. We know that assessment plays a significant role in what is taught in our nation's districts and schools – "teach to the test" and "if they don't test it, we don't teach it" – are common references. Primary are state tests, which are most often delivered to all students in a grade on the same material at the same time. Education leaders discussed that personalized learning requires a shift in this one-size-fits-all approach to assessments as follows:

- High-stakes state and other static assessments that occur at the same time for all students are unlikely to meet each student's needs. 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.

- 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 multiple, varied opportunities to demonstrate

mastery better reflects student diversity and may more accurately measure achievement. Learning goals should go beyond content to include student communication, collaboration, creativity, critical thinking, and other skills that are often under-appreciated in our current accountability system simply as learning modalities.

- Technology provides many opportunities to expand assessments to include more dynamic options, including embedded or formative assessments, especially with online or portfolio options. This may also allow for personalizing the type of assessment depending upon the standards, content, and the child. This may include performance-based assessments, observations, or applications of knowledge in a group and will likely require flexibility in timing relative to both the time of the year and the age of the student.

While some of these assessments exist in certain forms – and federal Race to the Top assessment grants address several of these possibilities and challenges -- current policies and practices generally present a challenge to this more flexible assessment system.

3. Ensure Equity in Access to Technology Infrastructure

While it may be possible to implement personalized learning without technology for a few students at a time or for a few lessons, education leaders overwhelmingly agree that it is almost impossible to bring the program to scale for all students without capitalizing on technology. This includes access to technology at school, home, and wherever learning takes place, including high-speed broadband, instructional applications, and related tools and resources. The flexibility and options central to personalized learning typically involve robust learning platforms, data systems, digital content, online/blended learning, and Web 2.0 resources.

Without reliable access to technology and broadband, teachers and students will undoubtedly miss the full potential of personalized learning. However, education policy still primarily budgets for technology as a supplemental expense, rather than as a baseline teaching and learning platform. Other regulations often limit the flexibility to use funds to achieve certain program goals through technology. These challenges are often more pronounced in high-poverty and rural communities seemingly lacking in fiscal resources, geographic access, and economies of scale.

4. 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.

Many districts and states have not yet fully considered or adapted funding policies related to personalized learning, so they are left wondering about the financial consequences of a student graduating early, dual enrollment in college, and students receiving services outside of the school building. Current funding models may also not account for the differentiated roles of educators, including what, how, where, and when they teach.

"[The cost of trying to teach all children in the same way regardless of their readiness, learning styles, or preferences is a] . . . massive inefficiency of time - we spend time teaching kids skills they're not ready to learn and that others have mastered. The amount of time we waste trying to deliver [such one size fits all] instruction is incredibly high"

JOEL ROSE
School of One
NYC Department of Education
Personalized Learning
Symposium, August 2010

SYMPOSIUM ATTENDEE POLL
August 5-6, 2010

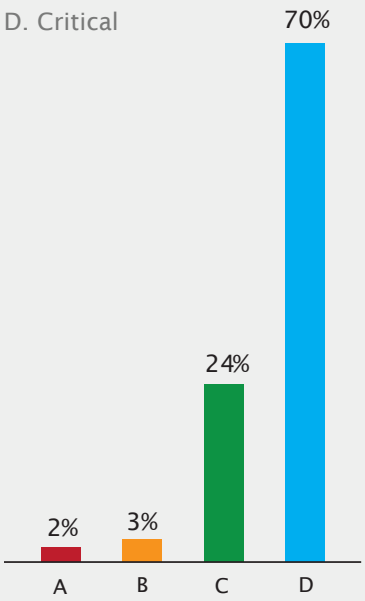
How important is changing our seat-time/Carnegie unit policy to enabling personalized learning?

A. Not Very

B. Somewhat

C. Significant

D. Critical



Supporting flexibility in teaching practices to meet student needs must be matched by educator compensation policies. Long-held funding policies often discourage or prohibit districts and schools from offering such personalized learning opportunities.

> *"[In Ohio, we asked:] What are ways that students get high school credit and demonstrate mastery of learning other than seat time? . . . We still have a Carnegie unit, but . . . we have a credit flexibility plan now."*
>
> DEBORAH DELISLE, Ohio Superintendent of Public Instruction
> Personalized Learning Symposium, August 2010

"In our school system, we have done away with grades as we know it... Rather, we level children according to instructional levels...We...worked with Dr. Robert Marzano...to identify essential learning for our kids. Essentially, kids know exactly what it is that they're held accountable for, teachers know exactly what it is that they're required to teach, and parents know exactly what it is that their kids are going to be held accountable for, because it is a very transparent system with the technological base that we have."

ROBERTA SELLECK
Superintendent, Adams County School District 50 (CO)
Personalized Learning Symposium, August 2010

Funding models may also require a rethinking of resources. Symposium attendees asked, "What is the personalization ROI?" A personalized learning system enabled through a technology-based learning platform may be seen as more expensive than traditional models. But our current models may be inefficient by teaching to the mean, failing to leverage technology, and keeping time and place fixed rather than leveraging anytime, everywhere learning opportunities. Symposium attendees agreed that further research and data are needed to document the budget impact of a personalized design, and to provide budget models that allocate resources in a more cost-effective manner than traditional models.

5. P-20 Continuum and Non-grade Band System

Education leaders at the Symposium understood that the traditional grade band system is often institutionalized by culture and expectations through the age-old question of "What grade are you in?" Performance- or level-based student grouping, rather than the traditional grade/age bands, is therefore a key policy component for authentic personalization of learning. The fact that students are all born within a preset 12 month period does not, and should not, dictate their abilities or performance at a given time (or age). While often controversial, working toward a P-20 continuum rather than being hindered by age and grade-bands 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.

Assessment, Data, Curriculum, Technology and Educator Support

> *"[In the past when differentiating instruction, a teacher] . . . couldn't manage all the data for 25 kids in different sections, but along comes technology, and thank goodness for all of us that want to manage large systems."*
>
> ROBERTA SELLECK, Superintendent,
> Adams County School District 50 (CO)
> Personalized Learning Symposium, August 2010

Personalized learning requires a shift in the design of schooling as well as the tools and resources available to teachers and students. Symposium leaders participated in in-depth discussions about an interdependent portfolio of assessment, data, curriculum, technology, and educator supports; and they recognize that certain qualities for each are needed for successful personalization of learning. For example, personalized learning requires sophisticated data and assessment systems, which dynamically track, illustrate, and translate the data to inform not only the student and teacher, but also help determine the instructional tools, content, and learning approach best suited for each student – and all this must work together seamlessly. Education leaders brainstormed progressive ideas on the specifications and applications of these tools, resources, and supports. The brainstorm included a review of what currently exists and what further developments are needed to make scaling up personalized learning a more likely reality.

1. Assessment

To power personalized learning, assessments should encompass a broader range of measures beyond performance on academic tests, including information on a student's learning style preferences, previously successful experiences, interests, and other factors in a learner's life. The practical expansion of assessments follows the discussion about the importance

QUESTIONS TO CONSIDER:

1. What are the student and teacher support tools needed to deliver personalized learning in a redesigned, student-centered system?
2. What are the key functions and design elements for the following areas: assessment, data, curriculum, learning platform, and teacher professional development and support?
3. What are the new types of student data, technical standards, content delivery models, and integrated learning technologies needed as a platform for personalized learning?

of more flexible policies for assessment referenced in Section IV. While several systems and tools are moving in this direction, few districts provide a comprehensive approach to inform instruction on a daily or even hourly basis as required by the personalized learning models shared during the Symposium. Systems rarely allow for different forms of assessments depending on the content or student. Products such as portable electronic student portfolios, embedded formative assessments, and learning management systems support these efforts. New types of assessments that correlate to the personalized learning experiences will likely evolve and be required to maximize the efficiency of these systems and student learning.

2. Data

Personalized learning requires that teachers and students have real-time access to meaningful data to better facilitate each student's experience. Typically, in our one-size-fits-all model, the data referenced is almost solely academic test data. The personalized learning models shared at the Symposium expand this definition to include data on student learning style preferences, correlations between instructional approaches and achievement, student interests, and information on the whole child. Having this depth of data available on a regular basis and being able to translate the information via algorithms into recommendations for instruction require a robust, sophisticated platform and data system. In the School of One model, the algorithms, which capitalize on data and assessments daily, allow for the development of individual playlists for students.

Further instructional technology advances will ensure ever more sophisticated learning platforms and data systems that not only more efficiently identify student needs, but also more effectively identify and deliver matching interventions from a repository of adaptive software, engaging digital content and instructor-delivered resources (online and face-to-face) not otherwise available through traditional means. The maturity of data interoperability and content portability standards will enable educators, students, and software applications to assemble ever more unique, best of breed resources customized to each student.

3. Curriculum

Personalized learning requires access to a universe of curriculum resources to meet the wide range of student learning styles, performance, and interests. A personalized curriculum utilizes and draws upon different types and sources of information, providing teachers and students with choices. Access to multi-dimensional and multi-modal curriculum options ensures learning can be personalized by reading levels, interaction, and other preferences. The use of well-developed learning progressions helps address the potential tension between curriculum coherence and pliability, allowing customization and relevance to the student within the framework of learning standards. Modularized forms of content allow a mix and match of unbundled but aligned learning objects and resources. Personalization also expands curriculum to include learning apprenticeships in the community, cross-curricular opportunities, group or team learning, and problem-based experiences. Symposium attendees also supported the organization of content around essential questions in an environment that encourages instructors to let go of some control and support student exploration.

Technology helps enable many key elements needed to support personalized learning from a curriculum perspective, including digital content, online learning platforms and instructional software. Large banks of content are more easily accessible anytime, anywhere if in digital format.

"We need to NOT count those core competencies that young people were saying are really life skills they can take with them as modalities for learning, we need to count them as competencies, we need to measure them, we need to make sure young people are getting enough time in them."

KAREN PITTMAN
Co-Founder, President and CEO, The Forum for Youth Investment
Personalized Learning Symposium, August 2010

Interoperable content can be more easily tagged, organized, searched and accessed in a manner unique to each student's needs. Interactive, multimedia resources can engage students by learning preference and modality. Adaptive courseware can support individualized pacing, reading levels, and opportunities for review or extension depending on a student's needs. Learning algorithms can track progress, identify skill gaps, and suggest learning resources. Web 2.0 methods provide students with opportunities to engage with peers and create their own content. Digital content and curriculum exists in many forms today, including through subscriptions, software, and open education resources. Symposium attendees agree that content delivery and pricing models, curriculum formats, and the learning platform are important areas of focus to realize the potential of personalized learning.

4. Technology

Technology underpins each of the areas referenced above and is critical to bringing personalized learning to scale. When considered systemically, technology allows for a shift from the current fragmented approach to curriculum, instruction, and assessment to a much more integrated platform that can be managed and accessed anytime, from anywhere. Technology based platforms are needed to gather and analyze assessment and other data, and to deliver multiple types of instruction through digital content and online/blended learning. Modern learning technologies efficiently identify student skills, learning styles, and preferences in an on-going way and enable delivery of a wide range of matching curriculum and learning activities to meet each student's personalized needs.

Technology applications support personalization, including:

- multi-modal and universally designed digital content, adaptive software, and multimedia resources, including learning games and simulations, that address various learning styles and reading levels;
- computer-based and learning-embedded formative assessments that dynamically identify student needs to immediately impact instruction, along with related data systems for managing that information; and
- online learning and virtual learning communities that provide a range of opportunities otherwise not available, including platform for peer-to-peer learning and communication with community-based people and resources.

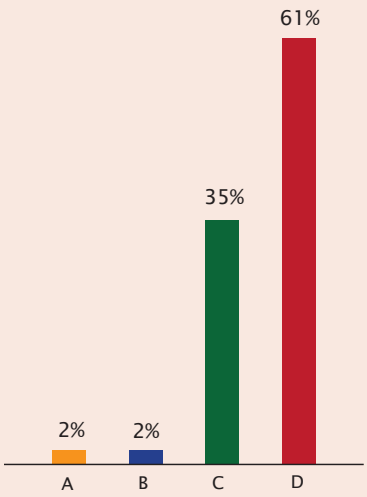
Symposium attendees called for a robust, comprehensive learning platform that incorporates learning algorithms, assessment, and curriculum and content in its many forms. While technology in and of itself is not the silver bullet for personalized learning, it is a critical driver and conduit to transforming our current one-size, fit-all system. Policies that encourage equity in access to technology infrastructure are central to personalizing learning for all students.

Like models for personalization of learning, the technologies and resources will continue to evolve and grow. Ever more sophisticated tools and integrated systems are required to meet this bold approach to learning. Allowing students to bring their own personal computing devices (e.g., laptop, cell phone, smart phone, etc.) also provide an opportunity to personalize, and make mobile, learning, and also reallocate resources, but require careful planning and implementation.

"Because of technology, we have a remarkable opportunity to personalize learning."

KAREN CATOR
Director of Educational Technology, US Department of Education
Personalized Learning Symposium, August 2010

SYMPOSIUM
ATTENDEE POLL
August 5-6, 2010



How important is technology to personalized learning?

A. Not Very: A supplement but not needed

B. Somewhat: Important for some aspects/practices, but not all

C. Significant: Necessary for many aspects/practices, and for scale

D. Critical: Necessary to implement all aspects/ practices and scale for all learners

5. Educator Support

As referenced in Section II, education leaders identified the changing role of the teacher as critical to achieving the authentic, student-centered approach required for personalized learning. However, most teachers do not have experience or training in the facilitator or collaborator role, and are challenged to differentiate instruction. Teachers require and deserve support through on-going and sustainable professional development to acquire these skills and fully implement personalized learning. This includes a comprehensive set of tools and resources, easy access to data, curriculum and content resources, and technology to implement the lessons and resources.

Additionally, teachers, administrators, and other educators need professional development, models, and peer support for changing their role as educators and how they interact with students. A teacher who has always taught a single group of 28 third grade students each year is going to have a very different day when working across a group of students with a broader age-range. This will require not only new training, but also a new design for ongoing teacher collaboration, professional development and support. Online professional development, professional learning communities, instructional coaches, and collaborative planning time are several options for teachers striving to change their role for personalized learning for all students.

Cross-cutting these five tools of personalization is the concept of the "learning genome" – To deliver a personalized pedagogy, we need to develop the science for further understanding the underlying traits, needs and appropriate learning resources/processes of each student. Further R&D is needed to create data-rich, dynamic learning communities to power personalized learning. Educators, researchers, and software developers must collaborate to carry out this R&D.

As Symposium attendees agree, implementing personalized learning requires a change in the business of schooling. Utilizing the tools and resources referenced above each has many policy and operational ramifications and requirements. As districts and schools implement personalized learning models, careful planning is required to ensure that the tools and resources are in place and the educators supported in their use.

Conclusions and Next Steps

Symposium attendees left more convinced than ever that personalized learning offers much promise and possibility to address our nation's educational challenges and goals – to ensure equity for all students, and to better engage each student to achieve at higher levels expected for them to be college and career ready, and successful overall in this global, knowledge-based society. Many education leaders expressed excitement about the breadth and depth of personalized learning models being developed and implemented across the country. Symposium organizers and participants feel compelled to continue the effort to shift from an institution/teacher-centered education system to one in which the student is at the center and learning and instruction are customized to their unique needs. Education leaders also reiterated that, while it builds upon long-standing research and understanding on how students learn and achieve in unique ways, personalized learning authentically implemented represents a true paradigm shift, not tweaks to the system.

By its nature, personalized learning does not have a one-size-fits-all answer to be simply replicated. But key components highlighted by Symposium attendees are common in the various models and approaches, including:

1. Flexible, Anytime/Everywhere Learning
2. Redefine Teacher Role and Expand "Teacher"
3. Project-Based and Authentic Learning Opportunities
4. Student-Driven Learning Path
5. Mastery- and Competency-Based Progression/Pace

As referenced earlier, 96% of attendees identified access to technology as critical or significant to implement all aspects of personalized learning and bring it to scale. This emphasis is particularly apparent as education leaders consider the potential with a robust technology platform using algorithms to personalize learning to address students' abilities, learning

"Your choice is not to be about perfection. We're not going to be perfect. But we need to shift from being ordinary to becoming extraordinary . . . Our options are to be about bold action or status quo. To be about focusing on evidence – the research – or being speculative. And finally, being happy with criticisms from our cynics or criticism from future generations. Those are the options that we face."

GENE CARTER
CEO and Executive Director, ASCD
Personalized Learning Symposium, August 2010

preferences, learning styles, and previous performance. Technology can accelerate this shift because it encourages and allows the extensive development and implementation of personalized content, curriculum, and assessment. It also empowers the learner through Web 2.0 learning communities. Ensuring personalized learning for all students requires a shift in thinking about long-standing education practices, systems and policies, as well as significant changes in the tools and resources. Curriculum, online/blended learning, data, and assessment represent important areas for further development and adoption.

Policy-makers play an important role in providing the opportunities for personalized learning. Many decades-old policies are hindering innovative personalized learning models. The paradigm shift to a competency-based approach from a time-based or seat-time measurement of completion demands certain policies to be changed. Clearly, with Symposium attendees, policies related to seat time and the Carnegie unit are the highest priority for change, but this is just the beginning. As discussed in Section IV, education leaders identified the following five system and policy enablers:

1. Redefine Use of Time (Carnegie Unit/Calendar)

2. Performance-Based, Time-Flexible State Assessment

3. Ensure Equity in Access to Technology Infrastructure

4. Funding Models and Incentivize Completion

5. P-20 Continuum and Non-grade Band System

Education leaders and practitioners must not only further develop and implement these essential elements and policy enablers of personalized learning; they must also adopt new resources, tools, practices, and supports to carry through on this transformation. To support further development and refinement of these 21st century learning tools, 84% of Symposium attendees recognized as very valuable or valuable discussion between education leaders and publishers/developers of software, digital content, and related educational technologies and services.

Of course, Symposium attendees and organizers also recognize the challenges in transforming the inherently political K-12 public education system. Symposium keynote speaker Jane Feinberg of the FrameWorks Institute shared her multi-year, multi-method research on messaging for education reform to ensure understanding, ownership and ultimately support among stakeholders, including parents and the community. She reminded attendees that people generally are nervous about transformation or a major overhaul to the system. Her research shows that focusing on future preparation is the most well received message for our country related to education reform: "Our nation's success depends on our ability to prepare our population for the 21st century." (Feinberg, August 5, 2010, Symposium). Interestingly, Feinberg noted that the word personalized often suggests the responsibility is on the individual, rather than on the need for systemic redesign. Feinberg suggested that *customized* and *student-centered* may be more appropriate terms for conveying this vision and model.

"I have seen the success. I have seen lives turned around - for students, for staff members, and for communities - when they have taken on personalized learning . . . and made that the premise for a systemic paradigm shift."

WENDY BATTINO
Co-Founder and Executive Director, Re-Inventing Schools Coalition (RISC)
Personalized Learning Symposium, August 2010

Collectively, as stakeholders committed to improving education and ensuring that each student receives a personalized education, education leaders overwhelmingly agreed that continuing the effort and movement for scalable personalized learning is critical for our education and our nation to address the many achievement and economic challenges. Symposium attendees discussed and voted on the highest priority next steps, including:

- Expand research and development aimed at studying redesign for personalization models and practices, and sharing what works and the road map for getting there (92%)
- Support public-private partnerships to advance key technologies, including common metadata and technical standards needed to enable the interoperability of various applications, data, and content resources to form a more seamless, integrated learning platform (89%)
- Form a policy action network to identify and implement state and district policies that support personalized learning, including changes to seat time or Carnegie units (88%)
- Develop a shared understanding of the vision, definitions, and effective communication of personalized learning to help inform education stakeholders (83%)

The time is right for a true paradigm shift: Education stakeholders understand the need for change to meet today's demands. The technologies now exist to bring personalized learning to scale. Further, students themselves want to learn in the way that helps them achieve their potential. Education leaders at the Symposium left with a sense of responsibility and opportunity to move beyond the current mass production and marginal reforms. They will share the vision and models with other stakeholders to make personalized learning available for all students to address the dropout rate and other issues facing our education system. The challenge before us is to take the research on how students learn and to build upon the models that represent a true paradigm shift to provide all students with a personalized learning system.

With bold leadership and a commitment to dramatic change in our education system, personalized learning is within reach. By maximizing the ideas shared at the Symposium, we can move the discussion forward, and we can further develop and implement tangible next steps. Fortunately, many education experts and leaders are dedicated to the urgency of this movement to ensure that equity and excellence will prevail by providing a personalized learning experience for all students.

"It takes a village to personalize."

Scale-Up Roadmap,
Birds of a Feather Group
Personalized Learning
Symposium, August 2010

Symposium Resources

A. Symposium Program & Speakers

Innovate to Educate: A Symposium on [Re]Design for Personalized Learning
August 4-6, 2010 · Harvard Club · Boston (MA)

WEDNESDAY, AUGUST 4

6:00 PM - 7:30 PM
Welcome Reception
Hosted by Pearson
501 Boylston Street, 9th Floor, Boston

THURSDAY, AUGUST 5

8:30 AM - 8:45 AM
Welcome & Overview
Ken Wasch, President, SIIA

8:45 AM - 10:00 AM
Grand Challenge & Opportunity: Defining Personalization

Gene Wilhoit will outline the common mission and vision around personalized learning, and share the CCSSO Next Generation Learners initiative to systemically redesign education. Wilhoit will then moderate a panel of leading innovators Joel Rose and Wendy Battino, who will share their initiatives and introduce the morning's work of defining a shared view of personalized learning and its essential elements.

Panelists:
Wendy Battino, Co-Founder and Executive Director, Re-Inventing Schools Coalition

Joel Rose, CEO, School of One, New York City Department of Education

Presenter:
Gene Wilhoit, Executive Director, Council of Chief State School Officers

10:00 AM - 10:50 AM
Personalization in Context: Student Equity and the Whole Child

Gene Carter will help to put personalized learning in the context of serving the full range of student needs and providing equity of student outcomes. Carter will then further explore the intersection of these issues with two champions of student equity and support.

Panelists:
Karen Pittman, Co-Founder, President and CEO, The Forum for Youth Investment

Ken Slentz, Associate Commissioner for District Services, New York State Education Department

Presenter:
Gene Carter, Executive Director & Chief Executive Officer, ASCD

11:15 AM - 12:30 PM
Defining Personalization (Breakout Group Discussions)

Attendees will divide into facilitated breakout groups to create a shared understanding of personalized learning, and identify the core common elements of an education system redesigned around each student's customized learning needs.

12:30 PM - 1:40 PM
Lunch & Keynote: Framing Education Redesign and Personalized Learning

Jane Feinberg will present the FrameWorks Institute's multi-method research aimed at understanding: What is the public appetite for reform of the education system? How can education be reframed to evoke alternative policy choices? Discussion will focus on the implications for education redesign for personalized learning.

Keynote:
Jane Feinberg, Senior Associate, FrameWorks Institute

2:00 PM - 2:30 PM
Education Unbound: A Framework for Education Innovation

Education scholar and pundit Rick Hess will review the shortcomings of education reform and offer an innovation framework: one built not on replication but on creating policy and systemic conditions where educators can implement personalized learning based on their unique local circumstances.

Presenter:
Frederick M. Hess, Resident Scholar and Director of Education Policy , American Enterprise Institute (AEI)

2:30 PM - 3:40 PM
Specifications I: Policies and Systems

Leading education reformers will share the public policies, systemic structures and educational cultures they have, and hope to, implement to support the redesign of education around personalized learning.

Moderator:
Mark Schneiderman, Senior Director, Education Policy, SIIA

Panelists:
Deborah Delisle, Superintendent of Public Instruction, Ohio Department of Education

Susan Patrick, President & CEO, International Association for K-12 Online Learning

Roberta Selleck, Superintendent, Adams County School District 50 (CO)

3:40 PM - 3:55 AM
Break

3:55 PM - 5:00 PM

Specifications I: Policies and Systems (Breakout Group Discussions)

Attendees will divide into breakout groups to identify the essential polices and systemic conditions needed to redesign education for personalized learning.

5:15 PM - 6:30 PM

Reception

FRIDAY, AUGUST 6

8:30 AM - 8:45 AM

Making the Turn: Day 2 Recap & Day 2 Overview

Symposium organizers will recap the previous day's efforts and outline the Day 2 agenda and goals.

Host:
Karen Billings, Vice President, Education Division, SIIA

Elizabeth Partoyan, Strategic Initiative Director for Next Generation Learners, Council of Chief State Schools Officers

Judy Seltz, Deputy Executive Director, Constituent Services, ASCD

8:45 AM - 10:00 AM

Double Keynotes. Specifications II: Assessment, Data, Curriculum, Technology and Educator Support

Keynote speakers Sarah Brown Wessling and Karen Cator will introduce the breakout group topic on the tools and resources educators and students need to personalize learning. Wessling will discuss effective teaching practice and the implications for a change in teachers' roles, skills, training, and support. Cator will focus on the necessary systems and applications, including many yet to be invented.

Keynote:
Sarah Brown Wessling, National Teacher of the Year and English Teacher, Johnston High School (IA)

Karen Cator, Director, Office of Education Technology, U.S. Department of Education

10:30 AM - 12:00 PM

Specifications II: Assessment, Data, Curriculum, Technology, and Educator Support (Breakout Group Discussions)

Attendees will divide into breakout groups to identify the enabling tools, resources, and supports needed to enable personalized learning.

- Educator Support: Massachusetts Room
- Data: Aesculapian Room
- Assessment: Saltonstall Room
- Technology: Estabrooks Room
- Curriculum: Bartlett Room

12:15 PM - 1:45 PM

Lunch Panel: Personalized Learning, Take 2.0

Representatives from each of the major attendee stakeholder groups will synthesize the Symposium discussion, distill what was learned, identify what was missed, and examine how to nurture the growing momentum and multiple networks to redesign education for personalized learning.

Moderator:
Nick Donohue, President & CEO, Nellie Mae Education Foundation

Panelists:
Todd Brekhus, President, Digital Solutions, Capstone Digital

Bruce Connolly, Director, Center for Education Innovation and Regional Economic Development

Talmira Hill, Director, Association for High School Innovation

2:00 PM - 3:00 PM

Next Steps 'Birds of a Feather' Roundtables

Attendees will divide into discussion groups to work through a variety of issues needed to help advance the effort to redesign education for personalized learning. Topics will include scale-up, public understanding, R&D, policy, educator support, coordination and common platform, among others. Each will draft/outline a deliverable that would ultimately support the collective personalization movement.

B. Symposium Attendees

Jill Abbott, Associate Executive Director, SIF Association

Rick Abrams, General Manager, Scholastic/Tom Snyder Productions

Susan Adelmann, Director, Partnerships & Business Development, Follett Software Company

Berj Akian, CEO, ClassLink, Inc.

Daniel Aks, Senior Vice President & Chief of Staff, McGraw-Hill Education

Kwasi Asare, Office of Innovation and Improvement, U.S. Department of Education

Vaunce Ashby, Educational Consultant, Wisconsin Department of Public Instruction

Art Bardige, President, Enablearning, Inc

Lisa Barnett, VP, Product and Marketing, Atomic Learning

Justin Bathon, Associate Director for Technology, University of Kentucky

Wendy Battino, Co-Founder and Executive Director, Re-Inventing Schools Coalitions

Jennifer Bergland, Director, Governmental Relations, Texas Computer Education Association

David Bill, Online Community Manager, New Tech Network

Karen Billings, Vice President, Education Division, SIIA

Michele Blatt, NxGL Coordinator, West Virginia Department of Education

Todd Brekhus, President, Capstone Digital

Harold Brown, President, EdWorks, a subsidiary of KnowledgeWorks

Sarah Brown Wessling, National Teacher of the Year and English Teacher, Johnston High School (IA)

Dan Buckley, Director of Research and Development, Cambridge Education

Vicki Burns, Superintendent, Maine School Administrative District 15, Gray-New Gloucester

David S. Byer, Senior Manager, Education Leadership & Policy, Apple Inc.

Naomi Calvo, Manager, Education Resource Strategies

Karen Caprio, Curriculum Director, Maine School Administrative District 15, Gray-New Gloucester

Gene Carter, Executive Director and CEO, ASCD

Karen Cator, Director, Office of Education Technology, U.S. Department of Education

Linda Clark, Superintendent, Joint School District No. 2

Carla Collins, Director, Assessment & Evaluation, Yonkers Public Schools (NY)

Bruce Connolly, Director, Wisconsin Center for Education Innovation and Regional Economic Development

Matthew Constant, Director, Instructional Technology, Davies County High School (KY)

David Cook, Director, Innovation and Partner Engagement, Kentucky Department of Education

DouglasCrets, Executive Editor, EdReformer, Vander Ark Ratcliff

Nina Cullen-Hamzeh, Academic Director, Marblehead Community Charter Public School (MA)

Jillian Darwish, Vice President, Organizational Learning and Innovation, KnowledgeWorks

Frank Davis, President, TERC

Chris Dede, Timothy E. Wirth Professor in Learning Technologies, Technology, Innovation and Education, Harvard Graduate School of Education

Matt Deevers, Teaching and Learning Director, Orange City Schools (OH)

Deborah Delisle, Superintendent of Public Instruction, Ohio Department of Education

Deb deVries, VP Marketing & Business Development, SkillsTutor

Erin Dillon, Senior Policy Analyst, Education Sector

Michael DiMaggio, Director, Strategic Partnerships, Council of Chief State School Officers (CCSSO)

Joseph DiMartino, President, Center for Secondary School Redesign

Nick Donohue, President and CEO, Nellie Mae Education Foundation

Owen Donovan, Associate in School Health Education, New York State Education Department

David Engle, Superintendent, North Platte Public Schools

Bart Epstein, Senior VP, Corporate Development, Tutor.com

Sam Evans, Dean, College of Education & Behavioral Science, Western Kentucky University

Angela Faherty, Acting Commissioner of Education, Maine Department of Education

Jane Feinberg, Senior Associate, FrameWorks Institute

Donna Flynn, Executive Director, Academics in College Readiness, College Board

Rob Foshay, Director – Research, Texas Instruments Education Technology Group

Nick Gaehde, President & CEO, Lexia Learning Systems, Inc.

George Gatsis, Vice President, Product, Marketing & Development, Follett Software Company

Alberto Giordanelli, Chief Business Development Officer, Victory Productions

Michael Golden, The Golden Company

Helen Gooch, Instructional Technology Coordinator, Clarksville-Montgomery Co School System (TN)

Diana Gowen, Alliance Manager, Education Programs, Intel

David Griffith, Director of Public Policy, ASCD

Lori Gully, Senior Manager, Florida Virtual School

Adam Hall, President, SkillsTutor

Leah Hamilton, Program Officer, Carnegie Corporation of New York

Mary Sylvia Harrison, Vice President Programs, Nellie Mae Education Foundation

Mary Forte Hayes, Executive Director, Massachusetts ASCD

Frederick M. Hess, Resident Scholar and Director of Education Policy, American Enterprise Institute (AEI)

Talmira Hill, Association for High School Innovation

Julie Hirschler, Research Scientist, New York Comprehensive Center at EDC

Reed Howard, Owner, Brain Hurricane / Wowzers

Robert Hull, Assistant Superintendent for Curriculum and Instruction, Putnam County Schools (WV)

Lynn Hurt, Central Office, Wayne County Schools (WV)

Michael Jay, President, Educational Systemics, Inc.

Mark Johnson, Vice President, Business Development, Pearson Education

Thomas Jones, Director, AdvanceED/Southern Association of Colleges and Schools

George Kane, Group Vice President, Product Development and Innovation, School Specialty

Marty Keast, President, School Division, Pearson Canada

William J. "Bill" Kelly, CEO, Learning.com

George Kiley, Superintendent of Schools, Hornell City School District (NY)

Glenn Kleiman, Executive Director, Friday Institute for Educational Innovation, NC State University

Sue Koch, VP, Marketing, School Specialty Literacy and Intervention

Ted Kolderie, Senior Associate, Education|Evolving

Keith Krueger, CEO, CoSN

Paul Leather, Deputy Commissioner, NH Dept of Education

Douglas Levin, Executive Director, State Educational Technology Directors Association

Gregg Levin, Vice President, Aventa Learning

Chet Linton, President & Chief Executive Officer, School Improvement Network

Christopher Lohse, Strategic Initiative Director, Information Systems & Research, Council of Chief State School Officers (CCSSO)

Melinda Maddox, Director, Technology Initiatives, Alabama Department of Education

Jon Madian, Co-Founder, Smart Learning Communities

Tim Magner, Consultant

Tasiyiwa, Mapondera, Education Division Manager, SIIA

Joseph Marrone, Director of Administrative Services, Quaker Valley School District

Monica Martinez, President, New Tech Network

Marsha Mays-Smith, Asst. Supt. of Curriculum, Planning and Technology, Ilion Central School District

Molly McCloskey, Managing Director, Whole Child Programs, ASCD

Sean McDonough, Director of Information Technology, Harrisburg School District (PA)

Ann McMullan, Executive Director, Educational Technology, Klein Independent School District (TX)

Ken Meyer, AVP Business Development, Scantron Corporation

Barbara Michelman, Director of Communications, ASCD

Beth Miller, Director of Research, Nellie Mae Education Foundation

Chris Minnich, Director, Member Services, Council of Chief State School Officers (CCSSO)

Bailey Mitchell, Chief Technology and Information Officer, Forsyth County School System (GA)

Wanda Monthey, Team Leader PK-20/Adult Ed and Federal Programs, Maine Department of Education

Anita Murphy, Deputy Superintendent, Syracuse City School District (NY)

Anh Nguyen, Portfolio Manager, Bill & Melinda Gates Foundation

Steve Nordmark, VP, Solutions Management & Development, netTrekker

Douglas O'Brien, Director, TechSmith

David O'Connor, Executive Vice President, Learning Technology Group, Pearson

David Opfter, Mathematics Teacher, Orange City Schools (OH)

Carmi Paris, SVP, Corporate Development, Spectrum K12, School Solutions, Inc.

Greg Partch, Director of Education Technology, Hudson Falls Central School District

Elizabeth Partoyan, Strategic Initiative Director, Next Generation Learners, Council of Chief State School Officers (CCSSO)

Larry Paska, Coordinator, Technology Policy, New York State Education Department

Susan Patrick, President & CEO, International Association for K-12 Online Learning

Ed Pearson, VP of Strategic Planning & Development, Follett Software Company

Raymond Pecheone, Executive Director, School Redesign Network, Stanford University

Lynn Peebles, Director, Shasta Secondary Charter School (CA)

Paul Penna, High School Principal, Maine School Administrative District 15, Gray-New Gloucester

Amy Perry-DelCorvo, CEO/Executive Director, NYSCATE

Matthew Petersen, Principal, Jones Middle School, Upper Arlington City School District (OH)

Rebecca Petersen, Director, eLearning Resources and Professional Development, Lesley University

Linda Pittenger, Consultant, Council of Chief State School Officers (CCSSO)

Karen Pittman, Co-Founder, President and CEO, The Forum for Youth Investment

Terri Lynn Queen, Principal, Wayne Elementary (WV)

Rae Raffin, Education Policy Manager, SMART Technologies

Alice Ray, CEO, Ripple Effects, Inc.

Tom Reycraft, President, Benchmark Education

John Richards, President, Consulting Services for Education

Jim Rickabaugh, Consultant, Wisconsin Cooperative Educational Service Agency 1

Daniel Rinn, VP, Alliances & Partnerships, Turning Technologies

Kevin Roebuck, Solution Specialist, Oracle

Tina Sartori Rooks, VP & Chief Instructional Officer, Turning Technologies

Joel Rose, CEO, School for One, New York City Department of Education

Chris Rush, Founding Member, School of One, New York City Department of Education

Mary Lou Rush, Executive Director, Center for Reform and Strategic Initiatives, Ohio Department of Education

Debbie Russell, Principal, Wayne Elementary, Wayne County Schools (WV)

Jim Ryan, VP, Marketing, Key Curriculum Press

Stephan Samuelson, President & CEO, Twist Education, LLC

Todd Sandvik, Executive Director of Global Services, MetaMetrics

Mark Schneiderman. Senior Director, Education Policy, SIIA

Rick Schreiber, Co-founder and Director of Operations, Re-Inventing Schools Coalitions

Caleb Schutz, President, The JASON Project, National Geographic Society

Roberta Selleck, Superintendent, Adams County School District 50 (CO)

Judy Seltz, Deputy Executive Director, Constituent Services, ASCD

Chip Slaven, Senior Advocacy Associate, Alliance for Excellent Education

Ken Slentz, Associate Commissioner, New York State Education Department

Robert Spielvogel, CTO and VP, EDC

Thomas Squeo, Chief Information Officer, Measured Progress

DouglasStein, Principal, MemeSpark LLC

Glen Taylor, Executive Director of Inclusion US / WAY Program, Westwood Community School District (MI)

Charles Toulmin, Director of Policy, Nellie Mae Education Foundation

Barbara Treacy, Director, EDC/EdTech Leaders Online (ETLO)

Ellen Usher, Co-Director, Motivation and Learning Lab, University of Kentucky

Joe Warden, Business Development Executive, Northrop Grumman, Education Assessment Division

Ken Wasch, President, SIIA

Chris Weinman, Executive Director, Career & Technical Education, Greater Southern Tier BOCES (NY)

Gene Wilhoit, Executive Director, Council of Chief State School Officers (CCSSO)

Linda Winter, President, Winter Group

Mary Ann Wolf, CEO, Wolf Ed

Mark Wolfe, Research Manager, Adaptive Curriculum

Judy Zimny, Chief Program Development Officer, ASCD

C. 2 Scenarios of Personalized Learning

ELEMENTARY LEVEL STUDENT SCENARIO

It's 7:30 AM and Mrs. Lopez is arriving early at Brookvale Elementary to begin her day as the third grade Lead Teacher. Her smartcard ID allows her entrance to the building, and her classroom before hours. She settles into her chair, powers up her laptop and opens a web browser. Her home page is set her teacher desktop and she clicks on the link to the district's data dashboard. The page loads quickly and displays set of key indicators for the performance of her students and their relative performance compared with other students in 3rd grade across her school and the district. She and Mr. Robertson, her 3rd grade Team Teacher, have been team teaching a combined math and science unit on plant growth and she is particularly interested in looking at how well the students are grasping several concepts based on the feedback items she and Mrs. Franklin, Brookvale's Assessment Coordinator, created for the assessment station.

She notices an alert message that a new student enrolled yesterday and will be joining her class today. She clicks on it and up pops a profile of Emily Nguyen. The profile includes Emily's picture, the same one that will appear on Emily's smartcard that serves as her school ID, library card, lunchroom card, and building access card. The profile also includes Emily's academic record. Even though Emily moved to Brookvale from out of state, her previous academic record is included in the profile. Emily is not a native English speaker, although she has made significant progress since arriving in the US last year. Her performance on state assessments as well as her school performance reports, examples of Emily's writing and artwork and even a note from Emily's second grade teacher Mr. Wynn, are included. Mr. Wynn writes that Emily is quiet but has a special passion for animals and wants to be a veterinarian. He's included his email address should Emily's new teacher have any questions about Emily's performance.

Scrolling down, Mrs. Lopez can see how Emily fared on the district's diagnostic assessments that Mrs. Franklin, administered to Emily yesterday when she enrolled. Included is a short video of Emily's interactions with Mrs. Franklin during the intake process. These assessment results confirm much of what Mrs. Lopez learned from Mr. Wynn. And, since Emily's language assessments and her achievement of state benchmarks have been correlated with Brookvale's diagnostic assessment, Mrs. Lopez can see that although Emily is below grade level in reading, her phonemic awareness is very good and she is reading on a par with 3 of the other students in her class who have already been identified for additional assistance. Emily is almost on grade level in math and science, although she appears to struggle in social studies, likely because of her weak reading.

Mrs. Franklin has included a predictive plot of how Emily might fair on the end of year state exam given her current performance on the benchmarks. By selecting different views of the information, Mrs. Lopez can see where Emily needs additional assistance and where she is in relation to other students with similar trajectories. The evaluation also highlighted science and animals as areas of interest for Emily, confirming Mr. Wynn's note, but also providing Mrs. Lopez some ideas for how to engage Emily.

Mrs. Lopez selects the Student Planner button and an individualized learning plan template pops up, pre-populated with Emily's information. The Planner allows Mrs. Lopez to place Emily's possible trajectory against a calendar and to link it to suggestions for specific resources, activities from the district's digital basal and supplementary materials subscriptions, as well as books in the library and free websites, in topics that Emily has expressed a preference in, which are calibrated to her reading level, and which are also designed to help her achieve progress against her benchmarks. Mrs. Lopez selects several of these to populate Emily's learning desktop and several offline activities as well. This learning pack will cover Emily's first week in Mrs. Lopez's class.

Mrs. Lopez uses the school's online calendar to schedule time for Emily to spend with several of the schools specialists for additional screening and adds the creation of Emily's individualized academic plan to the agenda for the 3rd grade-planning meeting regularly scheduled for Thursday afternoons.

Throughout the week, Emily will participate in several online formative assessments, spend some time working in groups with her new classmates, and spend some one-on-one time with Mrs. Lopez. At the end of the week, Emily's guardian Mrs. Nguyen, her aunt with whom she lives, will arrive for the conference that was scheduled with her when Emily was enrolled. By that time, Mrs. Lopez will have had the opportunity to evaluate Emily's strengths and weakness herself, as will the Reading Specialist and the Third Grade Team will have put together a longer-range academic plan for Emily that the Team will share with Emily's aunt at the conference. Once Emily's family and teachers are agreed on the plan, Mrs. Lopez will share it with Emily. Emily's family and Mrs. Lopez will be able to see Emily's progress in real time through Brookvale's education portal.

Because Emily's aunt does not have a computer at home, Emily's family will be issued one of Brookvale's home learning appliances, a thin-client laptop-like

device connected to Brookvale's community wireless network. The device is linked only to the school's network and is designed to ensure that families have access to all of the district's information and learning resources. Emily's aunt will be encouraged to participate in one of Brookvale's parent introduction classes, to become familiar with how to operate the device and take advantage of the information available on the education portal. She will also be able to use the device to improve her English or take other classes through the district's online adult education program if she is interested.

Emily's learning desktop is available on any of the schools computers and her home-learning appliance as well. This desktop is the focal point for Emily's online academic activities. Through it, she can access any of the activities or resources that Mrs. Lopez has selected for her, as well as an array of other district resources and activities that Emily may choose to explore on her own. Third grade is also the first time that students are introduced to monitoring their own performance. Students are provided with a series of basic pictographs that help them understand how they are progressing toward their academic goals. For third grade, the pictographs are more general (a race car moving toward a checkered flag, or pieces of a puzzle that create a picture) and students are able to select the type of pictograph that they use to monitor their progress. As students become older, more information is provided.

Now that Mrs. Lopez has Emily's first day squared away, she opens her teacher's desktop. The teacher's desktop includes a snapshot of each child's academic plan for the day as well as the resources and whole and small group activities that Mrs. Lopez has planned for the day. As she looks over the plans, she adds Emily into several activities.

Author: Tim Magner; July 2010

HIGH SCHOOL LEVEL STUDENT SCENARIO

It's 7:30 PM and Alex Walters, a sophomore, enters his bedroom to begin his nightly homework.

Alex sits down at his computer, opens a web browser, and logs into his education portal. Alex is a member of four different Learning Teams that constitute his academic schedule. In addition to his academic teams, he is also as the second string center on the football team, a struggling trumpet player and a member of the Key Club. Each of his Learning Teams as well as his extracurricular activities has a dedicated section on his portal's homepage. Each section includes a news feed, calendar, photos, and video as well as message board capabilities.

Alex clicks on his NorthFace Learning Team (NFLT) in the Science section. His NFLT is one of five interdisciplinary, multi-age learning teams in the school that has been 'hired' by NorthFace to analyze various materials for use as the bottom of a back pack. NorthFace has provided each team a list of requirements for durability, flexibility, water resistance, texture, and strength-to-weight ratio that the fabrics must meet as well as a series of swatches and possible backpack designs. Each of the NFLTs has one semester to do their analysis and provide feedback to NorthFace representatives during a final meeting just before Winter Break. At this point in the process, in consultation with Alex's Lead Teacher, his team has decided to explore the impact of various chemical compounds on the fabric fibers as a coating to increase durability and water resistance. Tomorrow his team will begin a discussion about which chemical compounds might be worth analyzing.

As a sophomore on the team, Alex needs to meet his state's Chemistry Standards, and is taking the class for dual credit at the local community college. As a result, he has been appointed the Chemistry Lead on his team. As the Chem Lead Alex is responsible for leading tomorrow's discussion and delivering a presentation which provides his team with background on the various chemical compounds as well as his predictions about which ones will have the greatest impact. Alex's teacher has uploaded a set of videos, articles, and narrated presentations that cover polymers, chemical bonds and the rest of the material Alex is responsible for presenting, as well as a set of links to websites for further reading and viewing. Alex has been working on his presentation for several days and so decides to tackle this one last.

Next Alex clicks on his Skate Park Team as part of his Social Studies Section. The Skate Park Team is a team focused on advising the city council about what to do with a skate park that has fallen into disrepair. The team is using GIS and demographic data as well

as building and conducting online and door-to-door community surveys to determine community sentiment for the area. As one of the younger members of this team, and needing to meet his Algebra II standards, Alex has been tasked with analyzing historical GIS and demographic data to look for changing use patterns, such as a decline in the number of families with children located within close proximity to the now rarely used park. Next week, Alex will need to share his findings with the rest of the team as they prepare their presentation to the council's Park and Recreation Subcommittee. Tonight, Alex will spend about 30 minutes with a new data set provided to Mr. Edwards, his teacher, by the council. During his analysis, Alex has a question about an ambiguously labeled data column. Stymied, Alex opens the portal to post a message to Mr. Edwards and sees that his icon is illuminated, indicating that he is online. Alex opens an instant message session with Mr. Edwards. As it happens, another student from a different team also had the same question and is online as well. Mr. Edwards opens a web conference room so the three of them can discuss the data and proceed with the assignment.

After completing his data analysis, Alex selects his Heroes and Villains Team from the English section of his portal. The theme for the month has been Heroes in Everyday Life, in addition to several online readings provided by the Lead Teacher each team member has been allowed to pick two novels and two movies that interest them. Tomorrow's English class will focus on a set of discussion questions drawn from one of the group readings. Alex downloads the questions and required reading and reads them. Alex and one of his classmates, Yukio, have a month long assignment to analyze a movie they have selected together and to create a five-minute video analysis of the movie's relevance to the current theme.

Through the portal, Alex scans his calendar and sees that his first Team Meeting, his NFLT, is at 9:30. He pulls up Yukio's public calendar, sees that she is free before 9:30 and views the availability of recording and editing stations in the school's media lab. He IM's Yukio and together they schedule a time to work on the video editing for this project from 8:30-9:25.

Last week on of Alex's teams finished a project recommending an overhaul of the contents of the beverage dispensers located throughout the school. Alex had served as the Project Lead on this project and had been responsible for the final presentation to the school principal and food service manager. As such, Alex needs to develop or join another project team to fill up his schedule. Before tackling his chemistry presentation, Alex views the school's Project Blog that lists available projects. He also reviews his Competency Chart that lists the skills and standards he has mastered as well as those he still must complete. Each project in the Project Blog has a narrative abstract and each participant role in a project is coded with the expected competencies or content that the student will need to master in order to be a successful part of the team. Alex reviews several project descriptions and highlights a few he is interested in.

Alex scans his Online Resume to make sure that all of his latest skills and competencies were updated from the teacher grade book, checks to see if his Peer Recommendations are up to date and adds a comment of his own about his improved presentation skills. He notes the names of the various Project Leads and sets a reminder on his handheld to "interview" with each Project Lead (usually upper classmen) during "Hiring Time" which occurs daily from 7:45-8:30. As a sophomore, Alex doesn't yet have complete freedom to choose his projects, and so schedules some time with his advisor to review his options and help him select the project team that will be the best one to both keep his interest and allow him to make progress toward his goals.

At 7:45 the next morning, Alex arrives at school and enters the spacious Common Area. He pulls out his handheld computer and opens to the schools "Hiring App" which gives him the name, picture, and location in the Common Area of each Project Lead he highlighted the night before. Each Lead is seated at a table or collection of chairs. Some Leads have students lined up in front of them, others do not. As Alex is here for Informational Interviews only, he finds a Lead, Rosa, a senior, with no line, introduces himself, and sits down.

Rosa's project is designing and building the set for the upcoming school play. With her handheld, Rosa scans the barcode on Alex's ID card and his Online Resume pops up. She reviews it with him, they discuss his competencies and experiences, and she shares what responsibilities he would have on her team. She is looking for someone to spearhead the design and to draft the construction plans for the set, a 50's style living room. Alex is impressed by Rosa's organizational skills and interested in applying his Algebra and Geometry knowledge to an actual design and construction project. Rosa is less impressed with Alex's experience, and they discuss the possibility of his serving as the assistant designer if she finds a suitable upper classman to be the designer. They agree that he will add her project to the list that he discusses with his advisor.

Author: Tim Magner; July 2010

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Software & Information
Industry Association

1090 Vermont Ave NW Sixth Floor
Washington DC 20005-4095
Main: 202.289.7442
Fax: 202.289.7097
www.siia.net