Technology and The Next Generation Learning Standards

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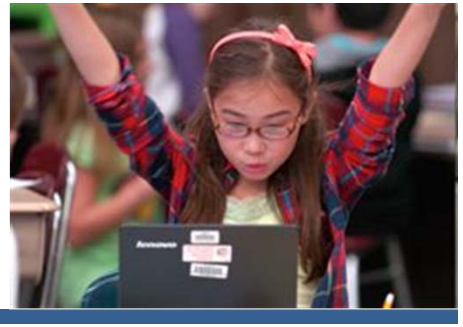
Agenda

- Overview of Connections between Standards and Technology
- Keyboarding Instruction
- District Spotlight: Akron CSD
- Leadership: Implementing Personalized Learning with Technology
- Wrap Up and Questions

Technology in NYS Schools



- Technology is a powerful tool, and should be utilized in everyday instruction, across all subjects, to enhance teaching and learning.

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To: District Superintendents
Superintendents of Public Schools
Public School Administrators
Nonpublic School Administrators
Charter School Administrators

From: Angélica Infante-Green

Subject: Technology Literacy

Date: October 24, 2017

Technology is a powerful tool, and should be utilized in everyday instruction, across all subjects, to enhance teaching and learning. The definition of technology literacy should broadly encompass the technology knowledge and skills students must learn to be successful in school, college, and careers in the 21st Century.

To better understand the current landscape, needs, and challenges related to technology literacy, NYSED released a survey in February 2017 that asked respondents to provide feedback on a number of topics related to this subject. The survey was then re-opened in May 2017 to ensure all stakeholders had the opportunity to respond. In total, NYSED received 3375 responses, over 70% of which were from New York State teachers. The following common themes were immediately apparent:

1. **A need exists for a common statewide understanding of student technology literacy.** 93% of respondents indicated that a common understanding is needed.
2. **Technology integration decisions are most often left to individual teacher discretion.** Few respondents indicated that technology is embedded in school- or district-wide technology maps.
3. **School and District Leadership play the key role in technology literacy instruction.** While respondents look to organizations such as the International Society for Technology in Education (ISTE), the majority of respondents look to their school or district for guidance on technology literacy.

Takeaways from this Morning

- The “What” and the “How” (and how technology fits in)
- Follow a student
  - Voice
  - Engagement
  - Individual needs
  - Belonging
- Preparing students for jobs that don’t yet exist
- Personalized, differentiated, adapted, culturally & linguistically relevant, and context-based

Technology and Mathematics

Changing expectations for mathematics achievement

To prepare students for the changes in the way we live and work, and to be sure that our education system keeps pace with what it means to be mathematically literate and what it means to **collaboratively problem solve**, we need a different approach to daily teaching and learning. We need content-rich standards that will serve as a platform for advancing children's **21st-century** mathematical skills —their abstract reasoning, their collaboration skills, their ability to **learn from peers and through technology**, and their flexibility as a learner in a dynamic learning environment.

Technology and Mathematics

- Today's children live in a society where
  - many of their peers are from diverse backgrounds and speak different languages
  - technology is ubiquitous and central to daily life
- They will enter a workforce and economy that demands
  - critical thinking skills
  - strong communication and social skills
  - significant attention to STEM

Standards for Mathematical Practice

5. Use appropriate tools strategically.

- Mathematically proficient students consider the available tools when solving a mathematical problem.
- Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations.
  - Analyze graphs of functions and solutions generated using a graphing calculator
  - Technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data.
  - Identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems.
  - Use technological tools to explore and deepen their understanding of concepts.

Technology in MS Math Standards

NY-7.G Geometry

- **Draw, construct, and describe geometrical figures and describe the relationships between them.**
- 2. Draw triangles when given measures of angles and/or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
  - Note: Create triangles through the use of freehand drawings, materials (scaffolds may include: pipe cleaners, Legos®, and toothpicks), rulers, protractors, and/or technology.

NY-8.G Geometry

- **Understand congruence and similarity using physical models, transparencies, or geometry software.**

High School – Modeling with Technology

- When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.
- Diagrams of various kinds, spreadsheets and other technology, and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations.
- Graphing utilities, spreadsheets, computer algebra systems, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

Technology in HS Math Standards

AI-A.REI Algebra - Reasoning with Equations and Inequalities

- Given the equations $y = f(x)$ and $y = g(x)$:
- ii) find the solutions approximately using technology to graph the functions or make tables of values

AI-F.IF Algebra - Interpreting Functions

- 7. Graph functions and show key features of the graph by hand and by using technology where appropriate. ★

AI-F.BF Algebra - Building Functions

- 3a. Using $f(x) + k$, $k\ f(x)$, and $f(x + k)$:
- iv) use technology to experiment with cases and explore the effects on the graph.

AI-S.ID Statistics and Probability

- 8. Calculate (using technology) and interpret the correlation coefficient of a linear fit.

Technology in HS Geometry

- Use of a variety of tools and methods for construction is encouraged.
  - Includes dynamic geometric software

- Dynamic geometry environments
  - Provide students with experimental and modeling tools that allow them to investigate geometric phenomena using visualization, reasoning, and geometric modeling to solve problems
  - Allow students to create geometric models and ideas to solve not only problems in mathematics, but in other disciplines or everyday situations.

Literacy for History/SS, Science, and Technical Subjects

What is Literacy?

A high degree of proficiency in literacy is essential as students attempt to acquire and build knowledge in each of the content areas. Students must be able to read social studies textbooks, analyze historical documents, follow scientific procedures, and discuss complex written problems, as well as respond to issues in their subject area content through speaking, writing, and **crafting digital responses**.

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- In all technical subjects, students encounter charts, graphs, diagrams, maps, and data sets presented in a variety of media. They must be able to understand and analyze these data in a variety of formats (Reading Standard 7).

Reading Standard 7: H/SS

- 6-8: Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- 9-10: Integrate and evaluate visual and technical information (e.g., in research data, charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- 11-12: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

Reading Standard 7: ST

- 6-8: Identify and match scientific or technical information presented as text with a version of that information presented visually (e.g., in a flowchart, diagram, model, graph, or table).
- 9-10: Translate scientific or technical information expressed as written text into visual form (e.g., a table or chart), and translate information expressed visually or mathematically (e.g., in an equation) into words.
- 11-12: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

Range of Text Types

- Informational Text in both print and digital sources
- Discipline-specific material, including
  - Blogs/websites
  - Texts written by members of a discipline community for others in that community, such as articles appearing in professional journals and on the websites of professional organizations

Technology and Writing for History/SS, Science, and Technical Subjects

- The standards for writing require students to use technology to produce and publish their analyses (Writing Standard 6)

- **Standard 6:** Gather relevant information from multiple sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

ELA Introduction

The rate at which knowledge is generating and shared today, often via **technology**, is unprecedented in human history... Today's children must also become adults who are able to **communicate** and **navigate** an **increasingly interconnected society**—one in which literacy skills are routinely called upon. In other words, all students in NYS classrooms must develop advanced literacies. *Advanced literacies* denote a set of skills and competencies that enable communication, spoken and written, in **increasingly diverse ways** and with **increasingly diverse audiences**.

ELA Introduction: Additional Guidelines

- The development of all literacy skills requires extensive opportunities to practice, especially with authentic texts and **real-life communication situations**, including authentic social, cultural, professional, and academic contexts.
- The standards address a student's ability to read, listen to, and view creative works in various genres and across various cultures. In addition to acquiring knowledge about the history, forms, and artistic craft of the works studied, students are expected to develop informed written, spoken, visual, and **digital responses**.
- The word "text" should be construed as encompassing far more than printed material. Text may also refer to **speech, graphics, visual art, digital representations, video, and other visual and audio** depictions of ideas, concepts, and experiences.

ELA Introduction: Additional Guidelines

- Students should understand and be able to observe the differences between the form and function of the conventions of academic English and features of informal written communication, speech, and **electronic communication**, with the goal of furthering their capacity to **communicate with broader audiences** using both conversational and academic English.

- The standards include frequent references to **digital media**. Students must **achieve fluency and develop skilled practice in the use of current media**, and, given the pace of technological development, they must be able to adapt quickly to new media as they develop.

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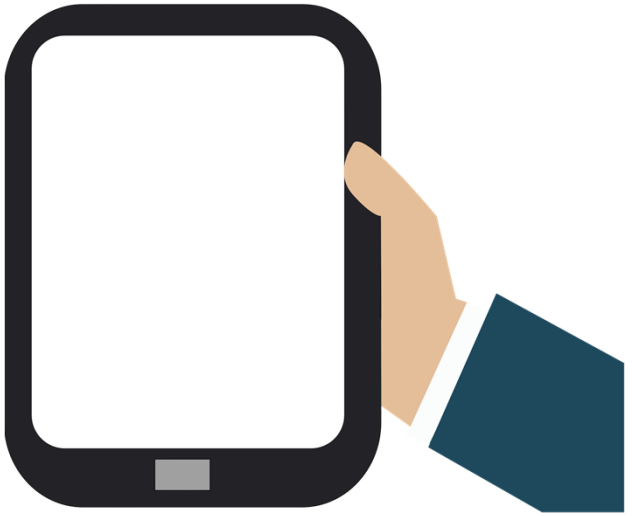
Technology in the Reading Standards

Range of Student Reading Experiences

- **Informational Text:** Both print and digital sources



Reading Standard 7 in 6-8

- 6R7: Compare and contrast how different formats, including print and digital media, contribute to the understanding of a subject. (RI&RL)
- 7R7: Compare and contrast a written text with audio, filmed, staged, or digital versions in order to analyze the effects of techniques unique to each media and each format's portrayal of a subject. (RI&RL)
- 8R7: Evaluate the advantages and disadvantages of using different media-- text, audio, video, stage, or digital-- to present a particular subject or idea and analyze the extent to which a production remains faithful to or departs from the written text. (RI&RL)

Technology in the Writing Standards

Lifelong Practices of Writers:

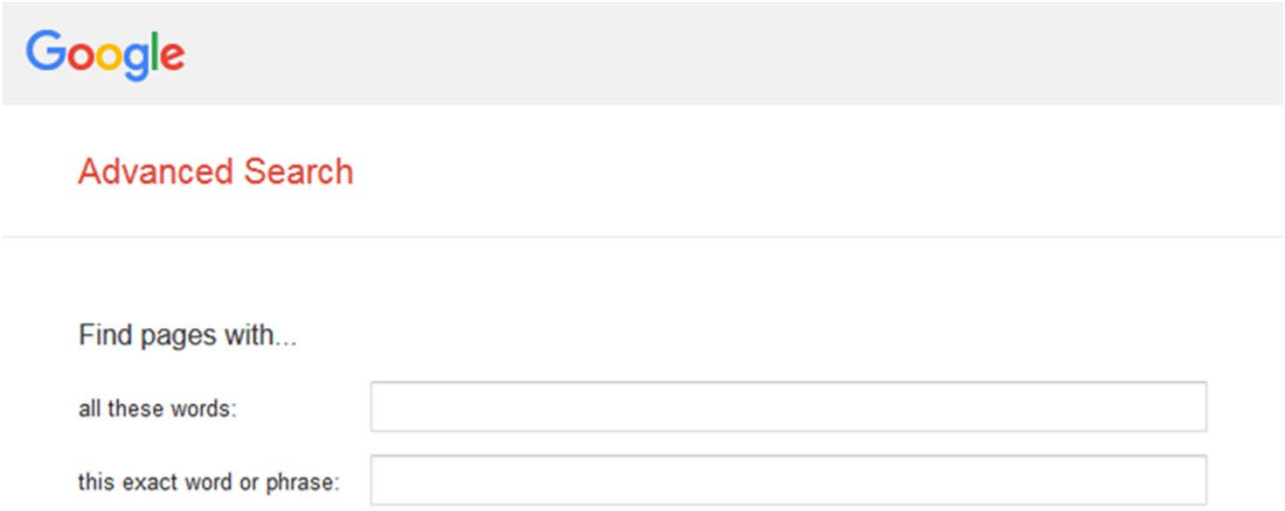
- Writers write often and widely in a variety of formats, using print and digital resources and tools.

Technology in the Writing Standards

- Grades PreK–1:
  - Begin to learn about how technology and digital tools for writing can increase learning and communication (e.g., use technology to write, draw, and explore concepts)
- Grades 2-12:
  - Learn about various tools (print and digital) to produce, share, and publish writing
  - As part of their writing development, students should continue to learn about how technology and digital tools for writing can increase learning and communication

Technology in the Writing Standards

- 9-10 and 11-12 W7:
  - Gather relevant information from multiple sources, using advanced searches effectively



Technology in the Speaking and Listening Standards

Standard 5: Make strategic use of digital media and visual displays to express information and enhance understanding of presentations.

Include digital media and/or visual displays in presentations to

- 2SL5: clarify or support ideas, thoughts, and feelings
- 3SL5: emphasize certain facts or details
- 4SL5: emphasize central ideas or themes
- 5SL5: emphasize and enhance central ideas or themes.
- 6SL5: clarify information and emphasize and enhance central ideas or themes
- 7SL5: clarify claims and findings and emphasize salient points
- 8SL5: clarify information, strengthen claims and evidence, and add elements of interest to engage the audience.
- 9-10 and 11-12 SL5: enhance understanding of findings, reasoning, and evidence, and to add elements of interest to engage the audience.

Keyboarding

Guidance: Keyboarding Instruction

The University of the State of New York

The State Education Department

Guidance:

Keyboarding Instruction

2017

Keyboarding Instruction

As the use of technology for teaching, learning, and assessment becomes more prevalent in New York State schools, and as teachers and leaders continue to make decisions that ensure their students are receiving a quality, 21st Century education, the topic of keyboarding instruction will and must emerge as a focus area.

Keyboarding, the ability to operate a keyboard efficiently while typing, is an important skill that allows students to write fluently and communicate more effectively, and is critical to success in school, college, and careers in the 21st Century.

Keyboarding

Grade(s)	Keyboarding Instruction Expectations in NYS Next Generation English Language Arts Learning Standards	Page
PreK	Students should begin to explore keyboards.	12
K	Students should explore keyboards.	18
1	Students should continue to explore keyboards.	25
2	Students should be introduced to keyboarding.	32
3 and 4	Students should receive instruction in keyboarding, with a focus on technique over speed.	39, 46
5 and 6	Students should continue to improve keyboarding skills, with a focus on increasing speed as well as accuracy.	53, 60
7, 8, 9/10	Students should continue to improve keyboarding skills to increase speed and accuracy.	68, 74, 83
11/12	Students should demonstrate proficient keyboarding skills.	90

Keyboarding

Keyboarding Programs Utilized by NYS Schools

Rank	K-12	K-5	6-12
1	Typing.com	TypingClub	Typing.com
2	TypingClub	Typing.com	Typing Instructor
3	Sunburst Digital Type to Learn - K-12 Keyboarding Curriculum	Sunburst Digital Type to Learn - K-12 Keyboarding Curriculum	TypingClub
4	Typing Instructor	BBC Bitesize - Dance Mat Typing	EduTyping
5	Keyboarding Without Tears	Keyboarding Without Tears	Mavis Beacon
6	BBC Bitesize - Dance Mat Typing	Typing Instructor	MicroType 5
7	EduTyping	Mavis Beacon	Sunburst Digital Type to Learn - K-12 Keyboarding Curriculum
8	Mavis Beacon	EduTyping	TypingTest.com
9	ABCya	ABCya	Keyboarding Without Tears
10	EasyTech	EasyTech	ABCya

Is Technology the Answer?

SAMR Model

THE SAMR MODEL

Dr. Ruben R. Puentedura

S — **SUBSTITUTION**
Technology acts as a direct substitute, with no functional change

A — **AUGMENTATION**
Technology acts as a direct substitute, with functional improvement

ENHANCEMENT

M — **MODIFICATION**
Technology allows for significant task redesign

R — **REDEFINITION**
Technology allows for the creation of new tasks, previously inconceivable

TRANSFORMATION

Gradual Release of 1:1 Chromebooks at Akron CSD

2016-2017

- Elementary Grade K
- Elementary Grade 5
- Middle School Grade 7
- High School Grade 9

2017-2018

- Elementary Grade K
- Elementary Grade 1
- Elementary Grade 5*
- Middle School Grade 6*
- Middle School Grade 7
- High School Grade 9
- High School Grade 10

2018-2019

- Elementary Grade K
- Elementary Grade 1
- Elementary Grade 2
- Elementary Grade 3
- Elementary Grade 5*
- Middle School Grade 6*
- Middle School Grade 7*
- Middle School Grade 8
- High School Grade 9
- High School Grade 10
- High School Grade 11

2019-2020

- PreK-12

Professional Learning Communities

- Technology Department
- Technology Integration Specialist(s) (BOCES)
- Instructional Coaches*
- Teacher Leaders
- Administrators

Assistive Technology

Assistive Technology is defined as: Any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities. IDEA (Individuals with Disabilities Education Act, 2004)

Low Level	Magnifying glass, highlighters, pencil grips or calculators
High Level	Screen readers (zoom devices), contrast, special keyboards, FM systems, speech to text apps, other various apps/software

App-y Hour Specials

APP-Y HOUR SPECIALS (as of 10/27/17)

Featured Friday, 11/3 & Tuesday, 11/14 - 9th Period, Akron Central LMC

Scholastic News Hosted by: Caity Johnston & Alicia Nowak Elementary	**Quizizz** Find amazing quizzes made by other teachers, or create your own quizzes and share them with the world! Quizizz is a fun multiplayer classroom activity that allows all your students to practice together! Hosted by: Mazin Gmeiner & Caity Johnston Any Level	**Kahoot!** A free, game-based learning platform Hosted by: Danielle Chase Any Level
Seesaw Student driven digital portfolios and simple parent communication Hosted by: Sarah Kwiatkowski Any Level	**Plickers** A powerfully simple tool that lets teachers collect real-time formative assessment without student devices Hosted by: Hailey Barmasse Any Level	**BrainPOP** An engagement tool with learning games, movies and activities Hosted by: Lisa Lamont Elementary & Middle
Study Island Practice and Classroom Assessments for Math, ELA, Science & Social Studies Validated by Marzano Research, Study Island is proven to improve student achievement. Results of an effectiveness study confirms that when used consistently, just 30 minutes per week, per subject, Study Island produces significant growth outcomes. Hosted by: Sue Ginton Elementary & Middle	**cubelets** Cubelets robot blocks enable all sorts of robot construction and learning opportunities *Might you be interested in a hands-on technology partnership across buildings in our district?* Hosted by: Christina O'Malley Any Level	**CODE** Code.org increases diversity in computer science by reaching students of all backgrounds where they are — at their skill-level, in their schools, and in ways that inspire them to keep learning. Hosted by: Justin Metzgenhagen Any Level
ClassDojo Communication app that connects teachers, parents & students who use it to share photos, videos & messages - Encourages positive student behaviors Hosted by: Chrischell Samouis & Becca Jacobs Elementary & Middle	**XtraMath** A free program that helps students master addition, subtraction, multiplication, and division facts (11/14 only) Hosted by: Mazin Beth Mathews Elementary & Middle	**ZEARN** Digital Math Lessons: Students learn at their own pace with digital manipulatives, paper and pencil transfer, and precise digital feedback at the moment of misconception. (11/14 only) Hosted by: Molly Coppola Elementary

→

padlet Online virtual "bulletin" board where students and teachers can collaborate, reflect, and share links and pictures in a secure location (almost like electronic post-it notes) Hosted by: Mr. Shanley & Diana Nigro Any Level	**QR Codes** QR stands for "Quick Response", which refers to the instant access to the information hidden in the Code Hosted by: Janine DeTine Any Level	**Kami** With Kami tools, you can annotate, markup, and collaborate on your PDF, document, or image files. (11/3 only) Hosted by: Denise Johnson Any Level
Quizlet Quizlet makes simple learning tools that let you study anything. Start learning today with flashcards, games and learning tools — all for free. Hosted by: Darlic Bregge Any Level	**Destiny Discover** Search and access all print and digital resources, including eBooks, audiobooks, and interactive books, as well as free and paid subscription databases Hosted by: Cindy Magera Middle & High	**MobyMax** Identifies and addresses learning gaps with the power of personalized learning Hosted by: Caitlin Durkin Elementary & Middle
remind A free text messaging app that helps teachers, students & parents communicate quickly & efficiently Messages are sent in real time to an entire class, a small group, or just a single person. You can also schedule announcements ahead of time and attach photos and other files. Hosted by: Kaizen Stachowiak Any Level	**epic!** Instantly access 25,000 of the best books, learning videos, quizzes & more • Books with only text • Read to Me Books • Audiobooks • Appropriate for children up to approximately age 12 • Tons of choices! Hosted by: Laura Boeing Elementary & Middle	**BEE-BOT** This colorful and easy-to-operate little robot is a perfect tool for teaching counting, sequencing, estimation, problem-solving, and just having fun! **Makey Makey** An electronic invention tool and toy that allows users to connect everyday objects to computer programs Hosted by: Laura Penn Any Level
planbook.com Online Planbook Plans can be viewed by day, week, month, or class Hosted By: Emily Penner Any Level	**Study.com** With over 20,000 video lessons & other resources, students are guaranteed to find what they need to study. Lends itself to flipped classroom model Hosted By: Justin Gerstinger Middle & High Schools	

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Several Teachers' Responses

Positive Outcomes of the Change…

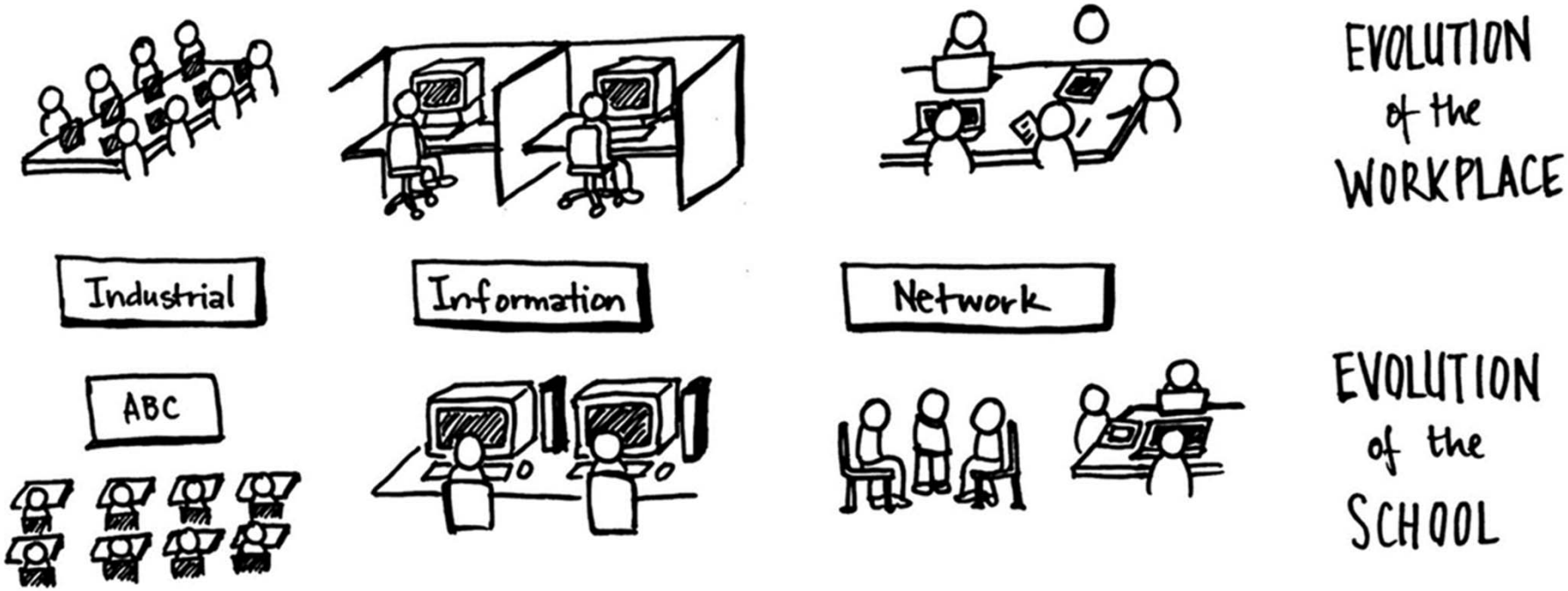
- Organization is no longer an issue
- No more "forgotten" homework at home
- No need for a pencil/pen
- No need to decipher handwriting
- Absent/transfer students can get caught up faster
- Instant communication to students
- Increased collaboration
- Information at their fingertips

Personalized Learning

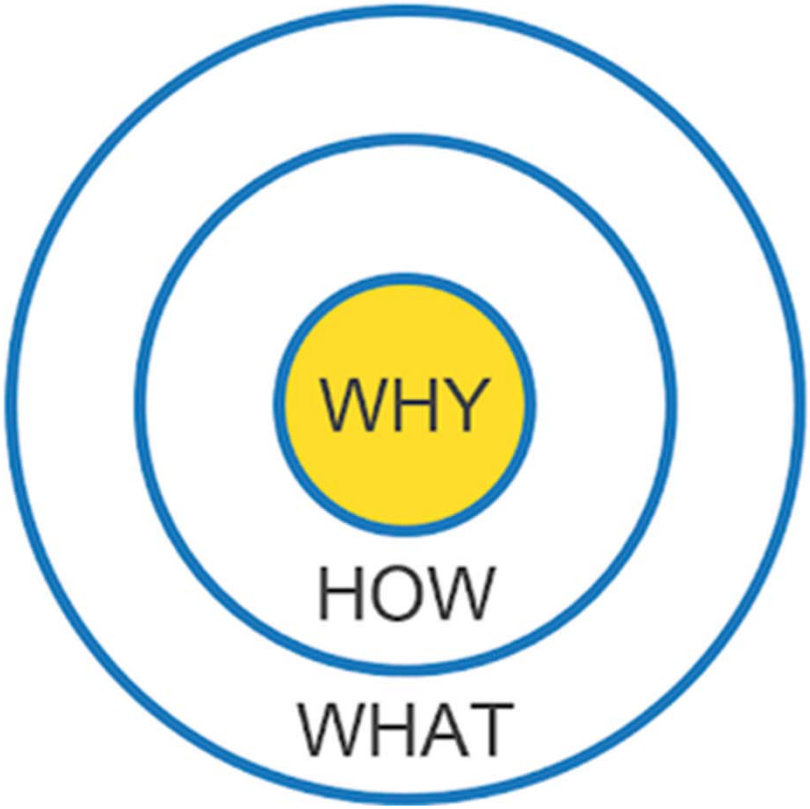
All about EmPOWERment

- Teachers
- Administrators
- Parents
- Students

Personalized Learning



Personalized Learning



The Golden Circle

Personalized Learning

"Personalized learning is tailoring learning for each student's strengths, needs and interests, including enabling student voice and choice in what, how, when, and where they learn, to provide flexibility and supports to ensure mastery at the highest standards possible."

Mean What You Say: Integrating Personalized, Blended and

Competency Education Patrick, Kennedy, Powell, iNACOL 2013

Personalized Learning

Personalization
vs.
Differentiation
vs.
Individualization

Personalization v Differentiation v Individualization Chart (v3)

There is a difference between personalization, differentiation, and individualization.
One is learner-centered; the others are teacher-centered.

Personalization	Differentiation	Individualization
The Learner…	**The Teacher…**	**The Teacher…**
drives their learning.	provides instruction to groups of learners.	provides instruction to an individual learner.
connects learning with interests, talents, passions, and aspirations.	adjusts learning needs for groups of learners.	accommodates learning needs for the individual learner.
actively participates in the design of their learning.	designs instruction based on the learning needs of different groups of learners.	customizes instruction based on the learning needs of the individual learner.
owns and is responsible for their learning that includes their voice and choice on how and what they learn.	is responsible for a variety of instruction for different groups of learners.	is responsible for modifying instruction based on the needs of the individual learner.
identifies goals for their learning plan and benchmarks as they progress along their learning path with guidance from teacher.	identifies the same objectives for different groups of learners as they do for the whole class.	identifies the same objectives for all learners with specific objectives for individuals who receive one-on-one support.
acquires the skills to select and use the appropriate technology and resources to support and enhance their learning.	selects technology and resources to support the learning needs of different groups of learners.	selects technology and resources to support the learning needs of the individual learner.
builds a network of peers, experts, and teachers to guide and support their learning.	supports groups of learners who are reliant on them for their learning.	understands the individual learner is dependent on them to support their learning.
demonstrates mastery of content in a competency-based system.	monitors learning based on Carnegie unit (seat time) and grade level.	monitors learning based on Carnegie unit (seat time) and grade level.
becomes a self-directed, expert learner who monitors progress and reflects on learning based on mastery of content and skills.	uses data and assessments to modify instruction for groups of learners and provides feedback to individual learners to advance learning.	uses data and assessments to measure progress of what the individual learner learned and did not learn to decide next steps in their learning.
Assessment **AS** and **FOR** Learning with minimal **OF** Learning	Assessment **OF** and **FOR** Learning	Assessment **OF** Learning

Personalization v Differentiation v Individualization Chart (v3) by Barbara Bray & Kathleen McClaskey
Version 3 is licensed under a Creative CommonsAttribution-NonCommercial-NoDerivs 3.0 Unported License
Download chart at http://eepurl.com/fUZM and website for any updates: www.personalizelearning.com
For permission to distribute copies, contact Personalize Learning, LLC at personalizelearn@gmail.com

Personalized Learning

People Make It Happen

- Otselic Valley - 1:1, Flipped
  - Math
- Central Valley - Curriculum, 1:1
  - Writing, Math
- Frontier - Curriculum, 1:1, Academies

Personalized Learning

"PEDAGOGY IS THE DRIVER.
TECHNOLOGY IS THE ACCELERATOR."

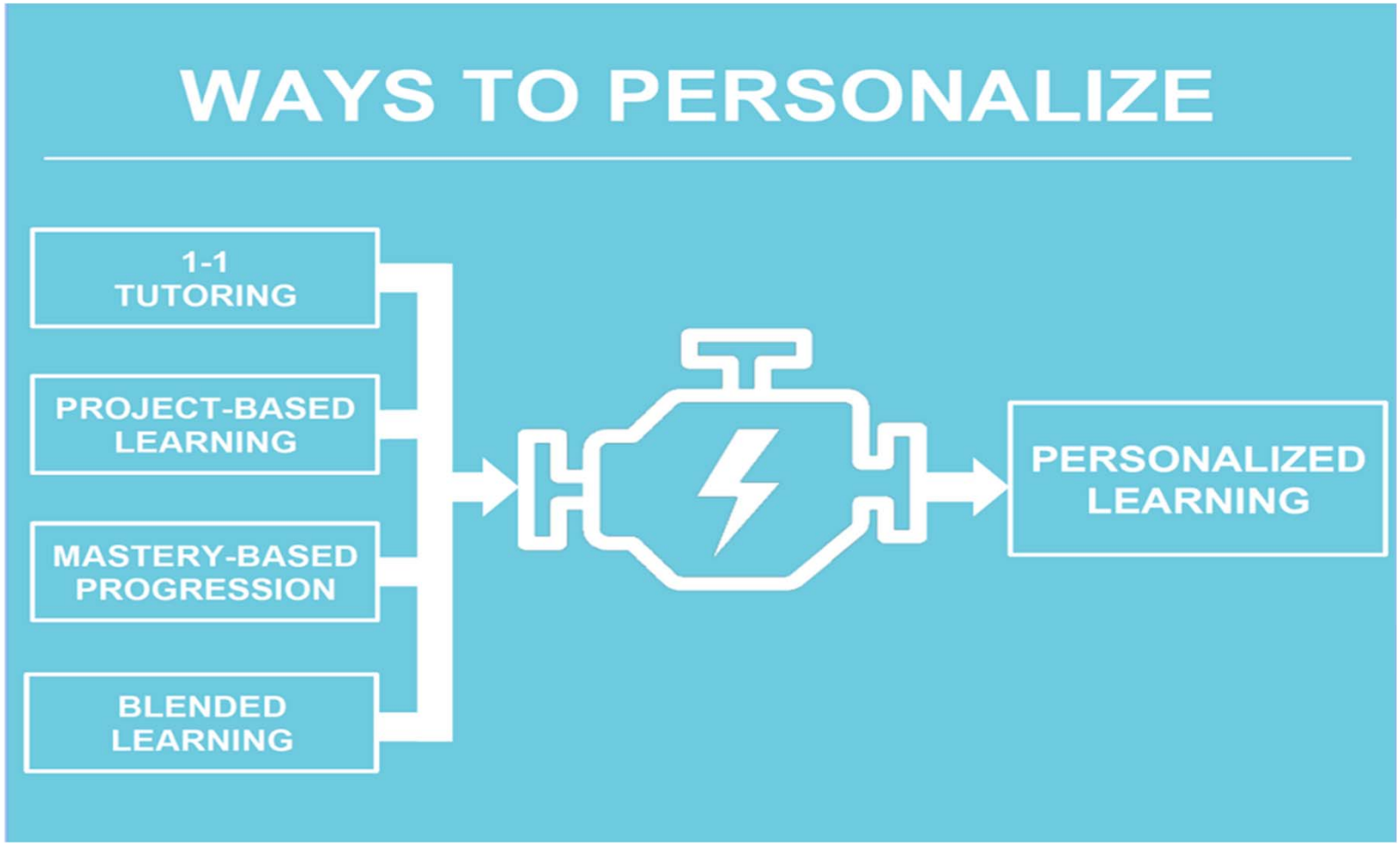
- MICHAEL FULLAN

Personalized Learning

Reflection

- State Testing
  - Curriculum check
- Benchmarks
  - 3-4 times a year
  - Spiral learning
  - Growth
- Formative
  - Where in any given point in time...

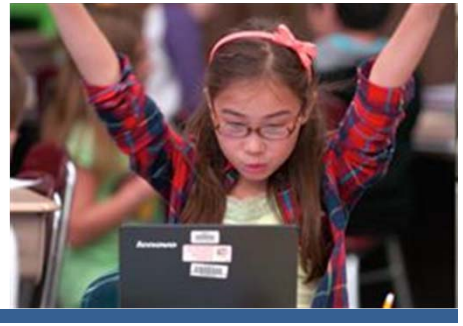
Personalized Learning



Personalized Learning

"If you assign a project and get back 30 of the exact same thing, that's not a project, that's a recipe." -Chris Lehmann

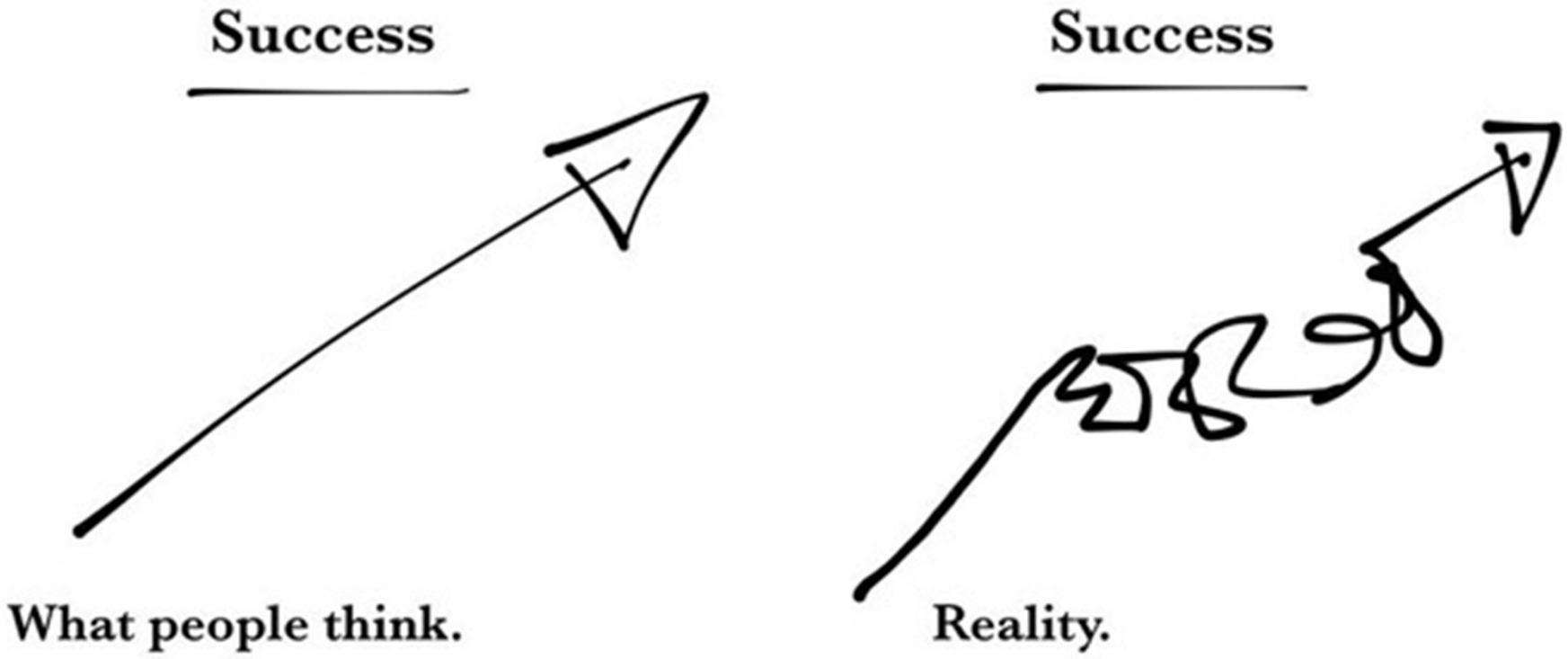
Personalized Learning



Gradual Release of Responsibility

- I Do - Modeling, Direct Instruction
- We Do - Guided Practice
- You Do Together - Collaboration
- You Do - Independent Practice

Personalized Learning



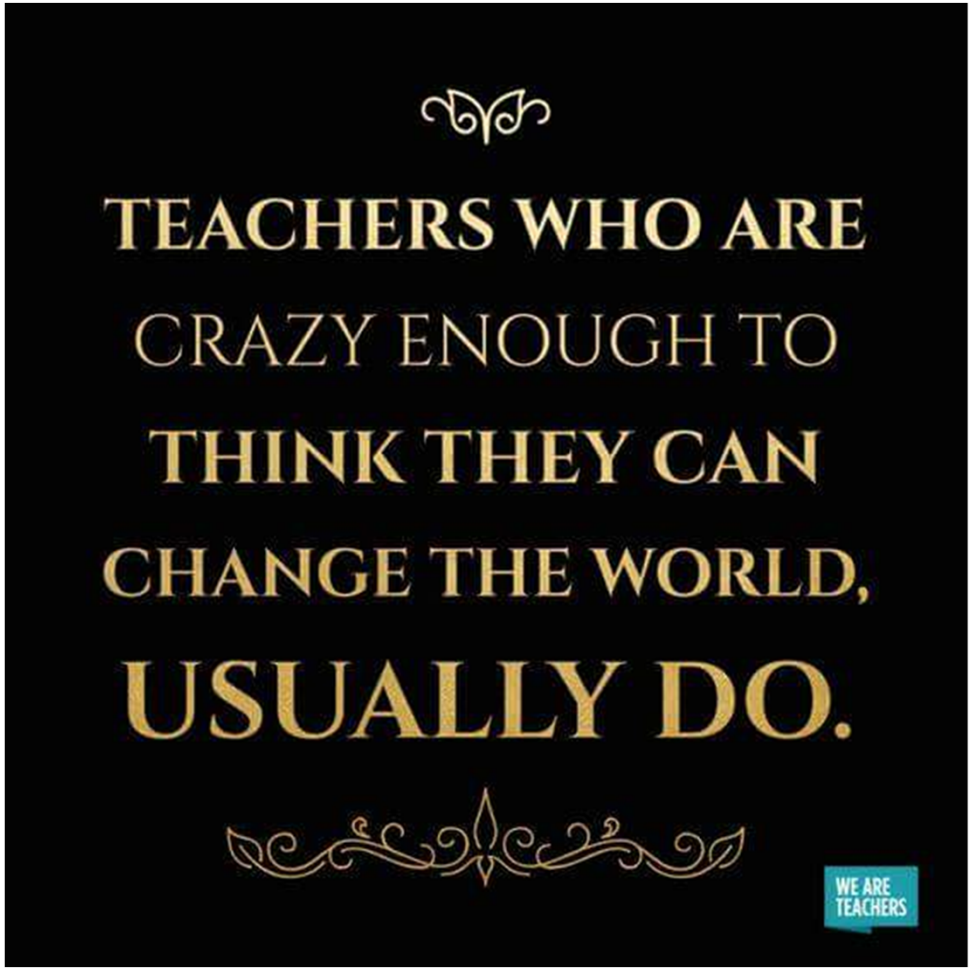
Personalized Learning

Education, for most people, means trying to lead the child to resemble the typical adult of his society... But for me, education means making creators... You have to make inventors, innovators, not conformists.

(Jean Piaget)

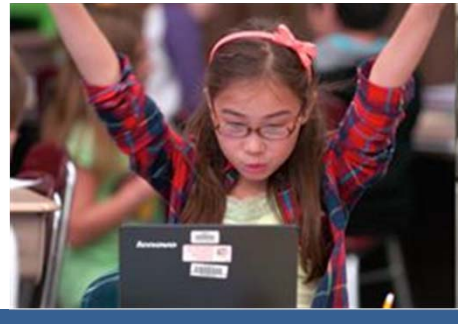
izquotes.com

Personalized Learning

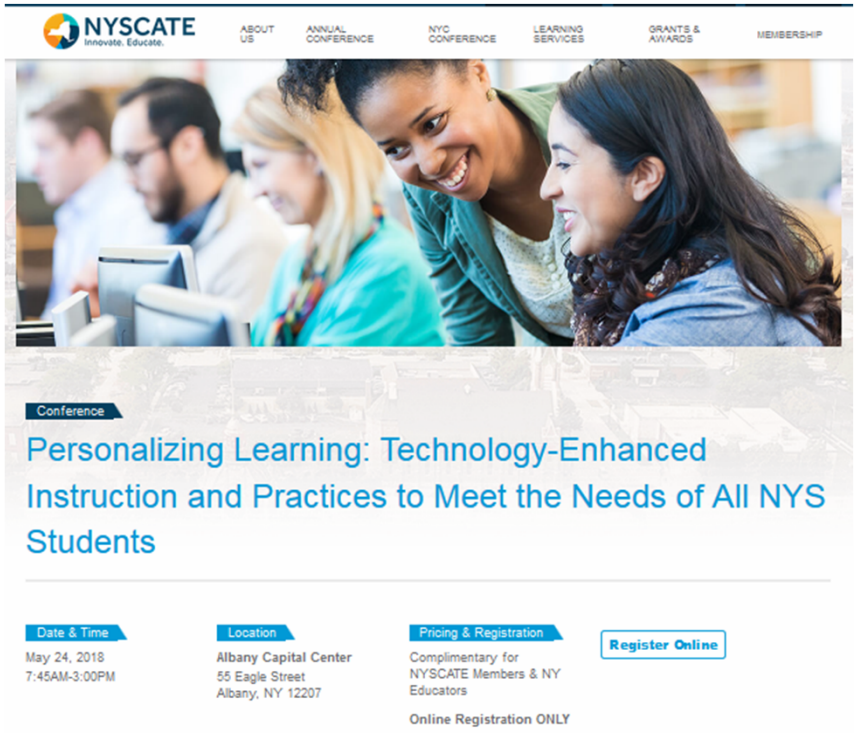


Questions?

Technology Conference



- May 24, 2018
- Albany City Center
- Free for educators
- Strands:
  - ELLs/MLLs
  - Students with Disabilities
  - Next Gen Learning Standards
  - Data Driven Decision Making
  - Culturally-Responsive Learning Environments
  - Personalized Learning



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