XQ The Super School Project

Teaching & Learning

What's essential for effective learning today?

2 EDITION

Students need opportunities to learn deeply, so they can gain knowledge and the ability to apply what they know, make inferences, and solve problems.

Learning is most effective and meaningful when young people are able to relate what they've learned to their real lives.

Students need meaningful, student-centered learning experiences that enable them to build toward mastery.

THINGS TO THINK ABOUT

01

What kinds of learning experiences will enable students to gain the knowledge and skills they need to attain mastery and prepare for the future?

02

How will students demonstrate their learning, and how should their progress be measured and assessed?

03

How should differences in students' interests, skills, and learning preferences be accommodated? How can schools help students who are significantly behind catch up and keep up?

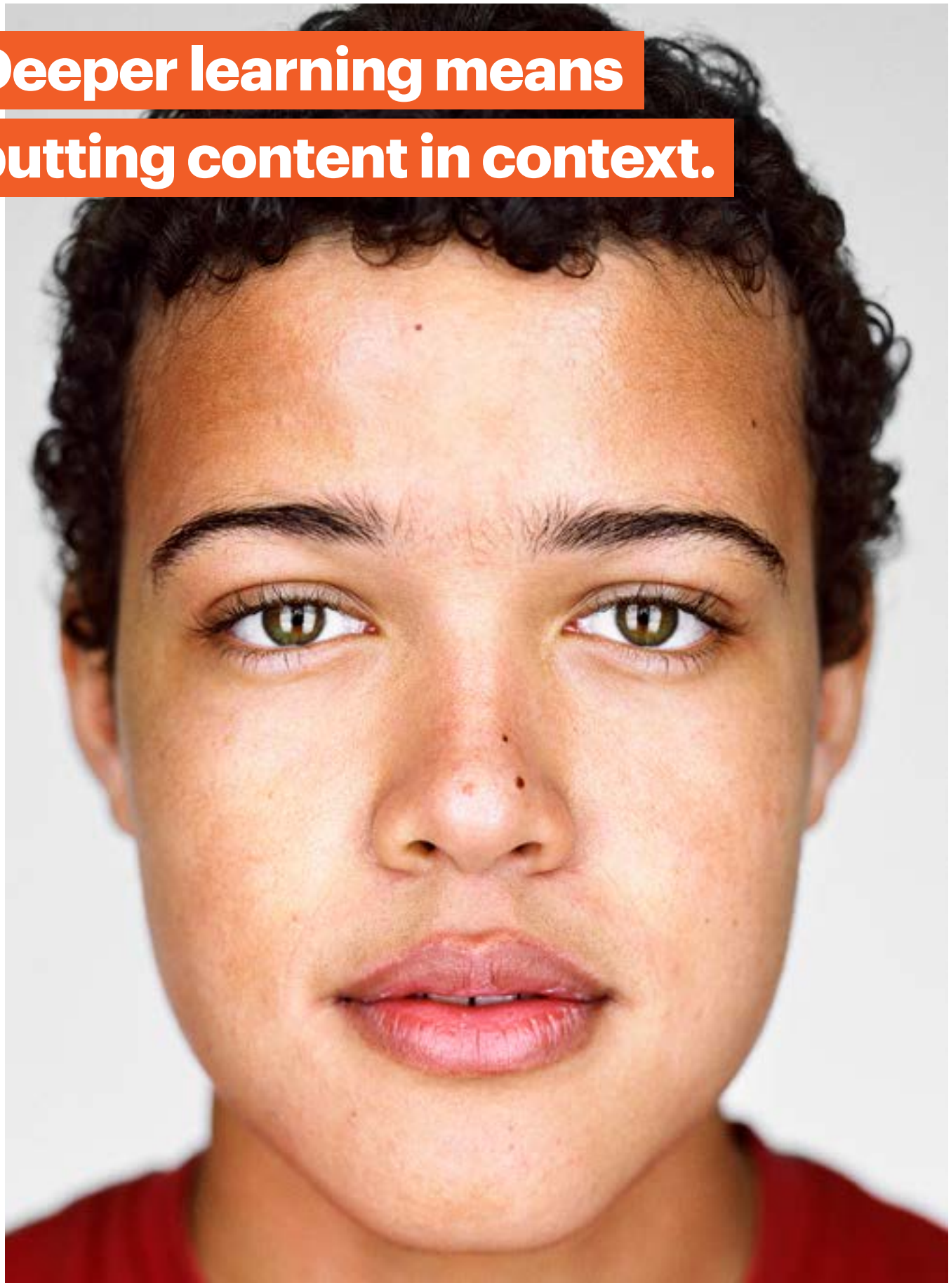
04

New kinds of learning often require new modes of instruction. How will teachers learn about and try new instructional practices in their classrooms? How can schools support teachers with technology, access to off-campus spaces, and other resources?

TEACHING FOR REAL-WORLD LEARNING

FACT 13

Deeper learning means putting content in context.



Stop rote memorizing and start applying knowledge.

Young people today need to learn demanding content in the core academic disciplines. Equally important, they must learn to use that content both in class and in the context of their daily lives. Deeper learning is different from conventional learning. The core distinction lies in the difference between knowing (i.e., acquiring facts and mastering subject matter) and understanding (i.e., internalizing knowledge so it can be applied in new and unexpected situations).

A student may be able to figure out the answer to a math problem, but does he or she understand the logic behind the process of solving it? And how might those concepts and principles be applied to dozens of other problems?

Teaching has to be innovative, but merely bringing in new technologies or the hottest theoretical approach into the classroom will not inevitably lead to better outcomes. Rigor and depth of learning are achieved when teachers integrate new learning methods and tools into their curriculum thoughtfully and mindfully, to meet students' needs and interests. Leading with any one innovation without clear learning goals runs the risk of producing shallow results.

The ability to transfer knowledge to the real world is vitally important today. As Grant Wiggins and Jay McTighe say in *Understanding by Design*, transferring knowledge effectively involves "the capacity to take what we know and use it creatively, flexibly, fluently, in different settings or problems, on our own." Schools need to provide experiences that develop the practice of reflexively and independently transferring knowledge to real-world contexts.

Think About →

What helps students go from knowing to understanding? How can schools accommodate for differences in how students learn?

Standards-based instruction requires students to demonstrate understanding of the knowledge and mastery of the skills they're expected to learn as they progress through their education.

In schools that effectively use standards-based approaches, learning standards—concise expectations for specific stages of education—determine the goals of a lesson or course. Teachers then determine the best methods and materials to teach students so they achieve the learning expectations described in the standards.

Understanding by Design

How do educators plan so students are more likely to deeply understand what they're asked to learn? This question is at the heart of the book *Understanding by Design*. Read an excerpt from the book here.

Common Core Standards

How do we know whether students are really learning? Common Core standards are the best shared guideposts we have for measuring the effectiveness of learning. Explore how they can help set high expectations for all students.

Next-Generation Science Standard

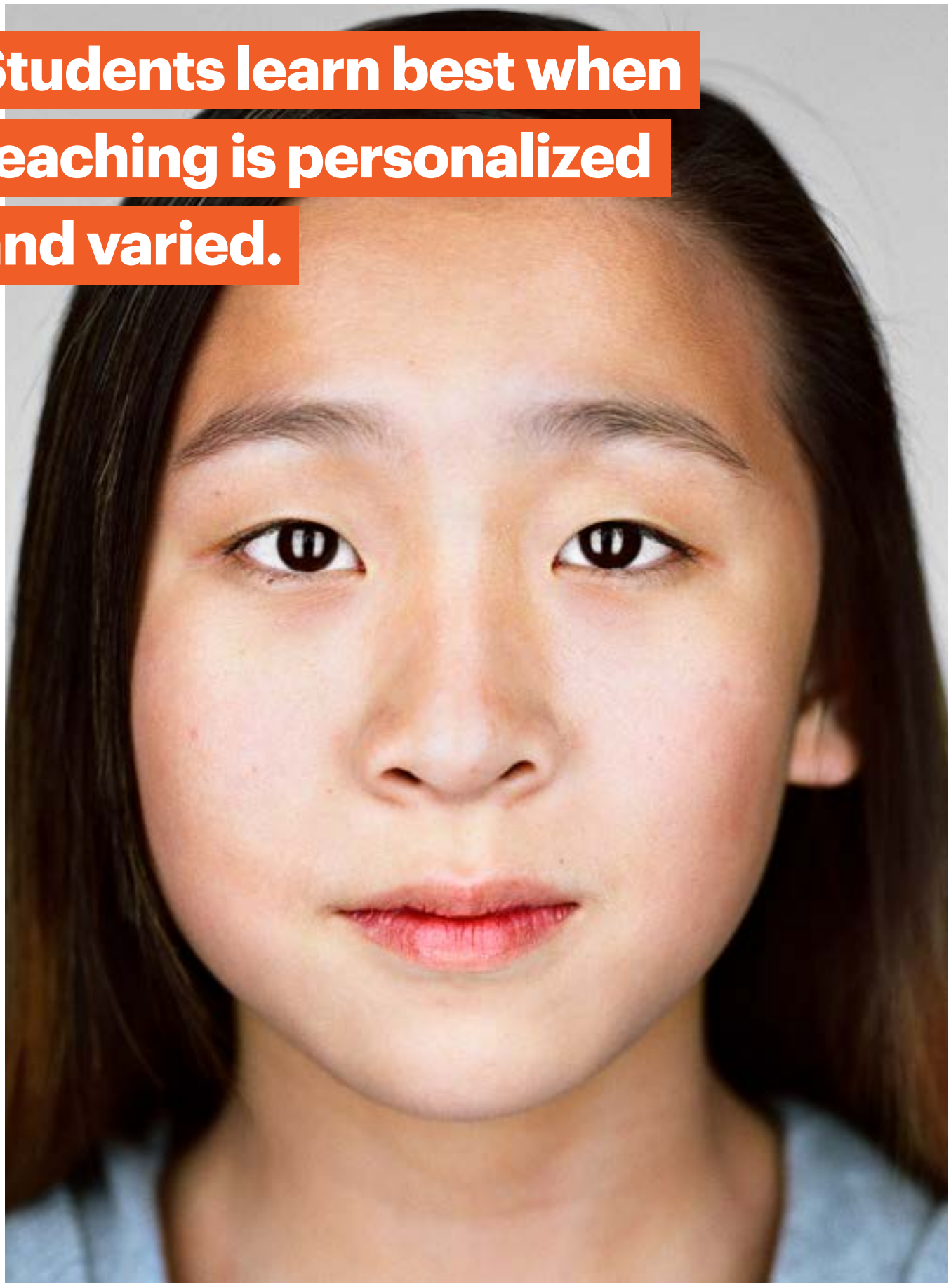
New standards, developed cooperatively by scientists and teams of science teachers, take science learning in a dynamic new direction. The National Science Teachers Association describes how the standards are organized.

Tackling New Topics

In this video, a 10th grade teacher at High Tech High uses Think-Pair-Share to help her students access prior knowledge and generate ideas.

FACT 14

Students learn best when teaching is personalized and varied.



Student-centered learning is deep learning.

Student-centered learning means guiding students toward mastery by customizing instruction in response to students' individual strengths, needs, and interests.

Student-centered learning requires deep and respectful relationships between students and teachers—and, in many cases, parents and guardians. The role of the teacher shifts from disseminator of information to facilitator or coach as they guide students to take ownership of their own learning journeys. For students, student-centered learning usually means more choice about when and where to learn, more projects and authentic tasks, and more collaborative work with peers. It also accommodates learning in real-world settings—through work experiences, internships, community projects, and service learning.

MONICA MARTINEZ
Presidential Appointee to the White House Commission of Educational Excellence for Hispanics

Think About →

When has personalized learning worked for you? Think of examples in your life, such as learning to play a musical instrument, being coached in a sport, training for specific work, or others.

According to Students at the Center, student-centered learning embodies four core tenets.

1. Personalized learning, or learning that is **individualized** for each student as much as possible.
2. Anytime, anywhere learning, which includes options to **learn outside the regular school day** in a variety of locations, including online.
3. Competency education, or learning in which students move ahead in the curriculum primarily because they can **demonstrate that they have achieved certain milestones**, not spent a certain amount of time in class.
4. Student-owned learning, which **builds students' sense of responsibility for their own learning** by making choices about what and how they will learn.

"Contrary to a curricular focus on teaching and assessing for content knowledge, authentic schoolwork places student meaning-making at the center. Teachers who know their students give them opportunities to 'use their minds well' in ways that scaffold them toward higher-order thinking. Drawing on individual students' skills, interests, and choices, they require students to manipulate and transform discrete information into synthesized understandings that have applicability to the larger community."

SUSAN YONEZAWA, LARRY MCCLURE, & MAKEBA JONES
Authors, Personalization in Schools (Students at the Center Series)

Students at the Center

Dive into Jobs for the Future's resource collection, which includes a wide range of materials on the four tenets of student-centered learning.

Mean What You Say

Personalized? Mastery-based? Competency-based? Inacol's literature review and glossary will help define all the key terms floating around the world of personalized learning.

XQ Learner Goals

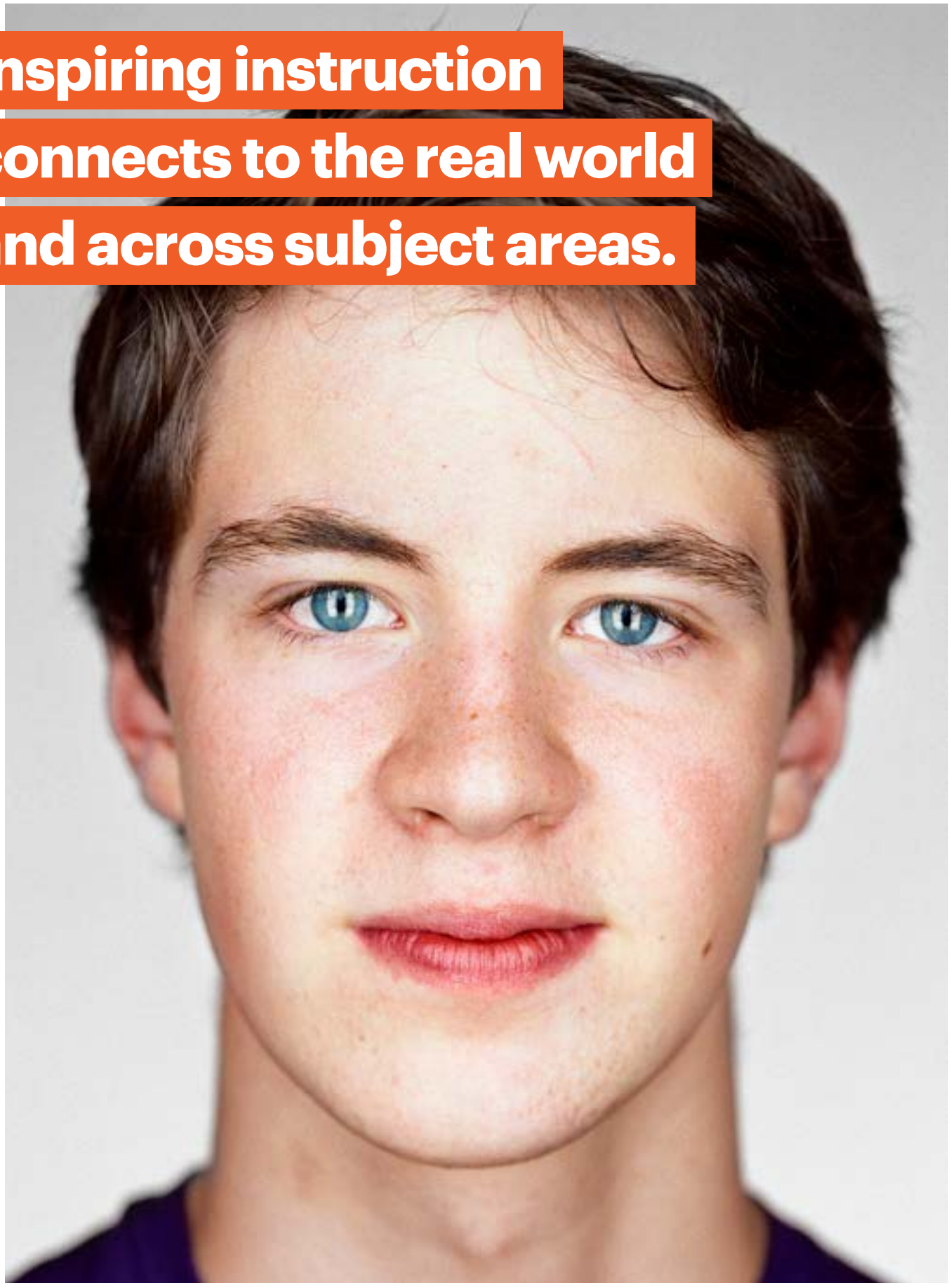
The XQ Learner Goals cover rigorous academic knowledge and skills, along with the capacities and dispositions young people need for the future, all in an integrated way.

Student-Centered Learning in the Classroom

See how Maloney High School in Meriden, CT, is giving students more opportunities to explore and prove their own learning.

FACT 15

Inspiring instruction connects to the real world and across subject areas.



Let's make learning something that young people want to do.

How can school become an authentic part of a young person's real life and not just a place for passive learning? A school's calendar is a good place to start. The real world isn't divided into time periods, so why is the school day? Free from the bounds of a rigid schedule, students and teachers can create more engaging learning experiences, shift fluidly between individual and group work, and take on interdisciplinary projects where teachers collaborate with each other. Students can venture out into the community for projects, expeditions, portfolio-building, and in-depth research. These activities can give students a chance to immerse themselves in academic content, grapple with complex ideas, and develop skills as they demonstrate their learning.

Seymour Papert, a renowned mathematician and educator from MIT, built the Logo programming language to engage young people in project-based learning. He believes critical thinking and identity formation are best taught through hands-on, real-world projects. A growing number of today's educators agree. Project-based learning tends to span several subject areas—after all, real-world problems don't usually fit into distinct categories. For example, a school project could ask students to build a concept for sustainable housing solutions. Through this, students explore history, science, technology, engineering, and design, while fostering collaborative skills.

Think About →

What opportunities do you see to incorporate project-based learning into your school?

"Learning takes place not only in school but also in the multiple contexts and valued practices of everyday lives across the life span... [These] are vibrant, continuous spaces for learning. These contexts include family settings, community settings, neighborhood and neighborhood-based organizational settings, church and other religious settings, work settings, sports and other recreational settings, music in its range of venues, gangs and street activities, and the digitally mediated settings of the media and popular culture."

JAMES BANKS, et al.
Authors, Learning In and Out of School in Diverse Environments

Rules to Break for Deeper Learning

On the Edutopia blog, Monica Martinez shares six classroom rules worth breaking in order to get to deeper learning.

Learning In and Out of School

Humans are learning constantly, not just in school, but in every environment and from every interaction they experience. James Banks discusses how we can capitalize on the inherent drive to learn in a way that is "life-long, life-wide, and life-deep."

Time for Deeper Learning

Learn how five innovative high schools have used time in creative ways. This report includes an actual student schedule from each school.

Teach Engineering

A wealth of ideas for curriculum that immerses students deeply in real-life engineering challenges, including many that involve a beginning-to-end design process.

Students need to engage with content and experiences that build mastery of knowledge and skills

To accomplish this, schools need to address fundamental challenges.

+ How can schools provide powerful teaching and learning experiences that help students build toward mastery of fundamental communications, and numerical and digital literacies? How can they build foundational knowledge by applying subject matter to real-world challenges? How can schools enable student-centered, personalized learning?
+ How can schools integrate innovative uses of technology and remote learning?
+ How can schools connect with resources and people from across the community to enrich student learning?

GET INSPIRED

Calculus that Excites

Jonathan Winn did the impossible: he made his AP Calculus class the most popular course at the Crawford High Educational Complex. See how in this blog post and video.

The Science of the Individual

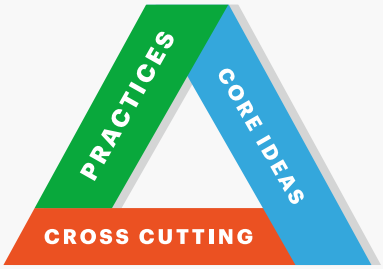
How do you go from high school dropout to Harvard professor? L. Todd Rose, the president of Project Variability, talks about the emerging science of the individual and its implications for education.

TEDx Talk

CHRISTOPHER EMDIN

Classroom Magic

Learn how former teacher and science advocate Christopher Emdin connects the magic of teaching with the real lives of students in this engaging TED Talk.

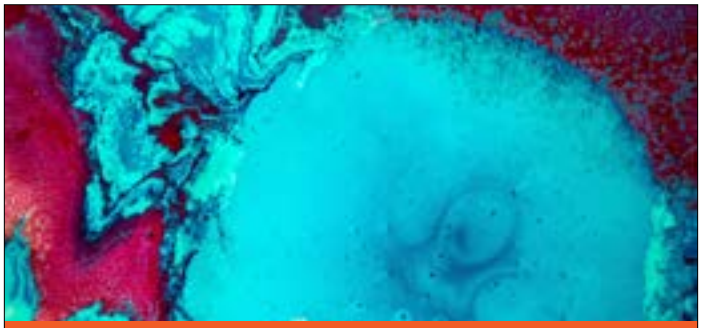


3-D Science Learning

University of Michigan professor Joseph Krajcik and science teacher Kristin Mayer explain how the Next Generation Science Standards enable 3-D learning, or learning by making sense of phenomena and solving problems.

Student-Engaged Assessment

Can students be authentically engaged in assessing their own work and giving constructive feedback to their peers? This video from Expeditionary Learning shows how they can.



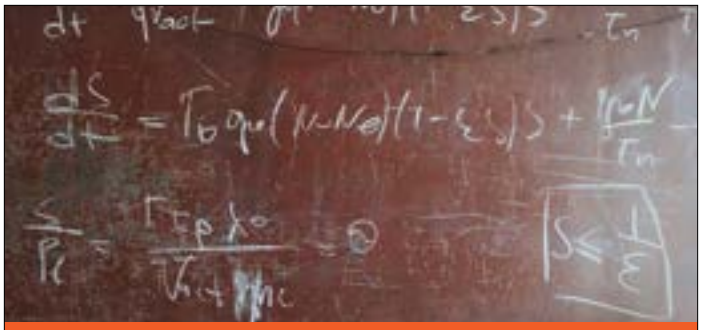
Big History

Check out this totally unique course supported by Bill Gates, which spans history, physics, astronomy, and other disparate fields to weave one coherent narrative about the history of the earth.

GET INSPIRED

Cyberflora at the MIT Media Lab

See how the MIT Media Lab gets kids excited about coding in this Boston Business Journal slideshow.



Inspiration from the Museum of Math

How does a museum make math really engaging? Read this *New Yorker* article about the journey of creating the Museum of Math in New York City, which was designed to make math fun for kids.

LET'S COMMIT TO DEEP, STUDENT-CENTERED LEARNING