



TECH VALLEY HIGH SCHOOL

A Joint Venture of





CHALLENGE

To create a rigorous, relevant, student-centered learning environment that better prepares all students for the 21st century.

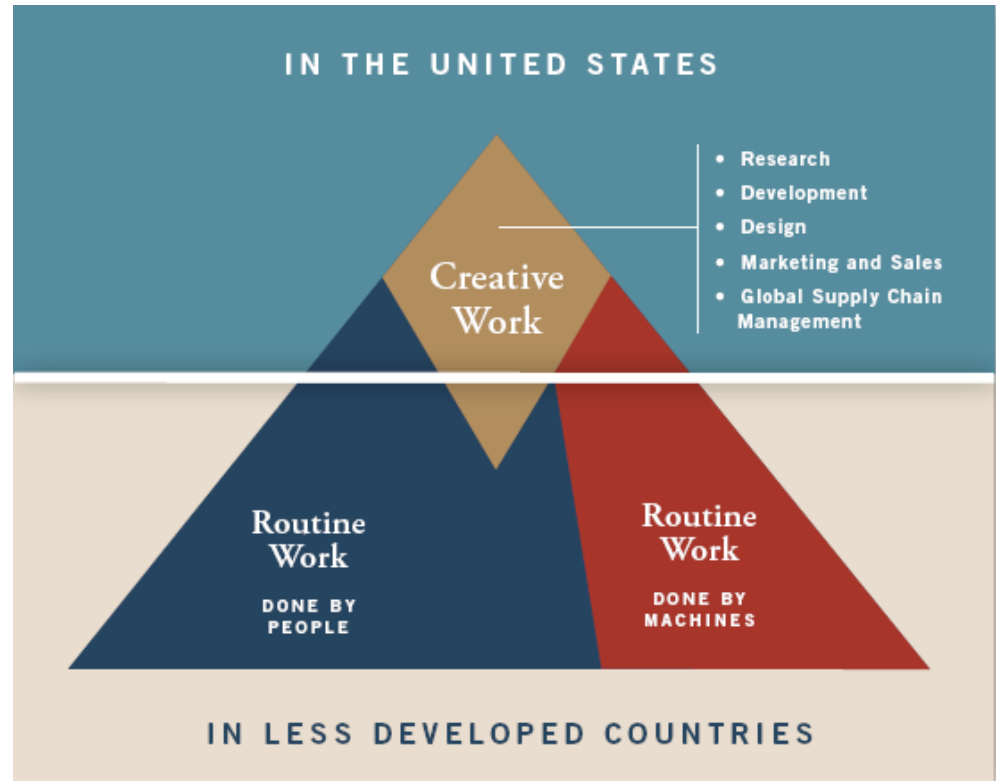




GLOBAL COMPETITION: requires a different kind of education.

In order for America to compete globally and secure its future, US workers must develop a high level of creativity and innovation that requires a new approach to education.

Tough Choices or Tough Times, National Center on Education and the Economy.



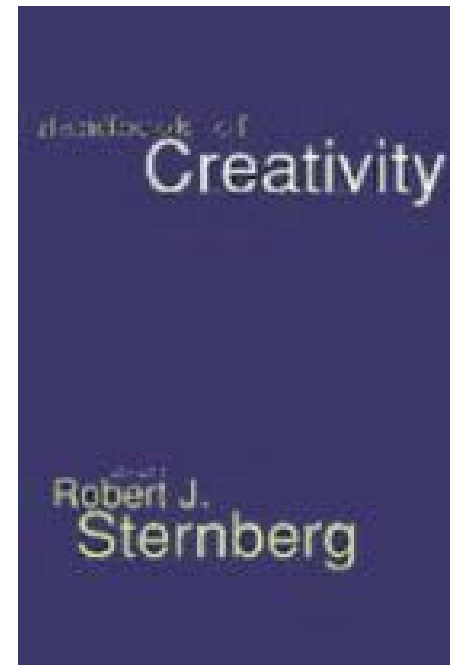


“Creativity Is a Habit”

By Robert J. Sternberg

“Creativity is a habit. The problem is that schools sometimes treat it as a bad habit. And the world of conventional standardized tests we have invented does just that. Try being creative on a standardized test, and you will get slapped down just as soon as you get your score. That will teach you not to do it again.”

Ed Week, February 26, 2006





VISION

Tech Valley High School serves as a model – in the region, the state and beyond – of **innovative** public education that is based in strong **partnerships** and focuses on educating and inspiring students to embrace the increasingly important world of math and science.

MISSION

Tech Valley High School provides a unique and innovative **student-centered** educational opportunity, engages students in current emerging technologies, and supports the growth and economy of the region.



CONTEXT

- Our current education system: *Built for another era.*
- American workers: *In direct competition with workers around the world.*
- Tech Valley's leaders agree: *Tomorrow's workforce must be able to collaborate, think critically, communicate & be self-directed.*
- **Newly adopted common core standards, teacher evaluation, and New York's RttT require new approaches to teaching and learning.**



A New Tech Network School

- Tech Valley High is based on teaching and learning practices developed by the New Tech Network (NTN)
 - *Established in 1996 – 14 years of success*
 - *Network of 80 schools across US*
 - *Technology tools, training, professional development, coaching support*
- Tech Valley High is a national NTN demonstration site
- Award winning curriculum
- Several TVHS teachers are certified NTN trainers
- TVHS students perform well (high percentage with distinction) on required NYS Regents exams



TECH VALLEY HIGH SCHOOL IN BRIEF:

- Regional public high school with STEM (math-technology-engineering-science) focus
- Joint venture of Questar III & Capital Region BOCES
- Launched in fall 2007; currently 120 students in grades 9-12
- Open to students in 47 school districts in seven counties
- Diverse student body – over 100 applicants each year
- Students selected by lottery; annual waiting list
- Located at University at Albany East Campus, East Greenbush



MODEL OF 21ST CENTURY TEACHING & LEARNING

Tech Valley High School Principles

1. Small school
2. Project-based & student-centered learning
3. Integrated curriculum
4. 21st century skills & NYS learning standards
5. Technology platform
6. Partnerships
7. Contributing to high school reform movement





Creativity & Innovation:

- Structural
 - TVHS built in conjunction with business & community partners. (hiring, curriculum, operations & policy)
- Instructional
 - PBL built in conjunction with business & community partners.
 - Design process integrated in all subjects. (TIES perspective.)
 - Integrated courses



PROJECT-BASED , STUDENT -CENTERED LEARNING:

- Integrates NYS Learning Standards & Key Ideas – students earn Regents or Advanced Regents diplomas
- Real-world challenges & implications
- Real-world assessment
- Students find solutions to unforeseen problems & unpredicted obstacles
- Immersed in teamwork
- Responsible for own learning & team learning
- Goes beyond state standards





STRONG PARTNERSHIPS: Partners Help Co-Design, Co-Teach & Co-Assess Projects

- ✓ 1st Playable Productions
- ✓ Applied Nano Works
- ✓ Beacon Institute
- ✓ Capital Reparatory Theater
- ✓ Center for Adv. Environmental Tech.
- ✓ Cornell Cooperative Extension
- ✓ Denison Farm
- ✓ EYP Architects
- ✓ NYSDEC
- ✓ Hudson Basin River Watch
- ✓ IBM
- ✓ Local #7 Plumbers & Steamfitters
- ✓ Mohawk Paper Company
- ✓ North Albany Wastewater Treatment
- ✓ Northeast Analytical
- ✓ Q-Drive
- ✓ Rensselaer County Soil & Water Dist.
- ✓ Rensselaer Polytechnic Institute
- ✓ US Geological Survey
- ✓ Thuillez Ford Gold Butler & Young, Attys
- ✓ UAlbany Cancer Research Center
- ✓ UAlbany School of Public Health
- ✓ Wadsworth Center
- ✓ WAMC
- ✓ WMHT
- ✓ X-ray Optical Systems



PROJECT-BASED LEARNING

- Project Briefcases
- Business/community connections
- Real-world applications





Sample Project: "Probing the Hudson"

Real-World Challenge: Determine if the Hudson River will be safe for swimming in 2009.

Project: Students develop river analysis plan, do field research, investigate data & publish a report.





“Probing the Hudson:” Meets NYS Learning Standards & Key Ideas

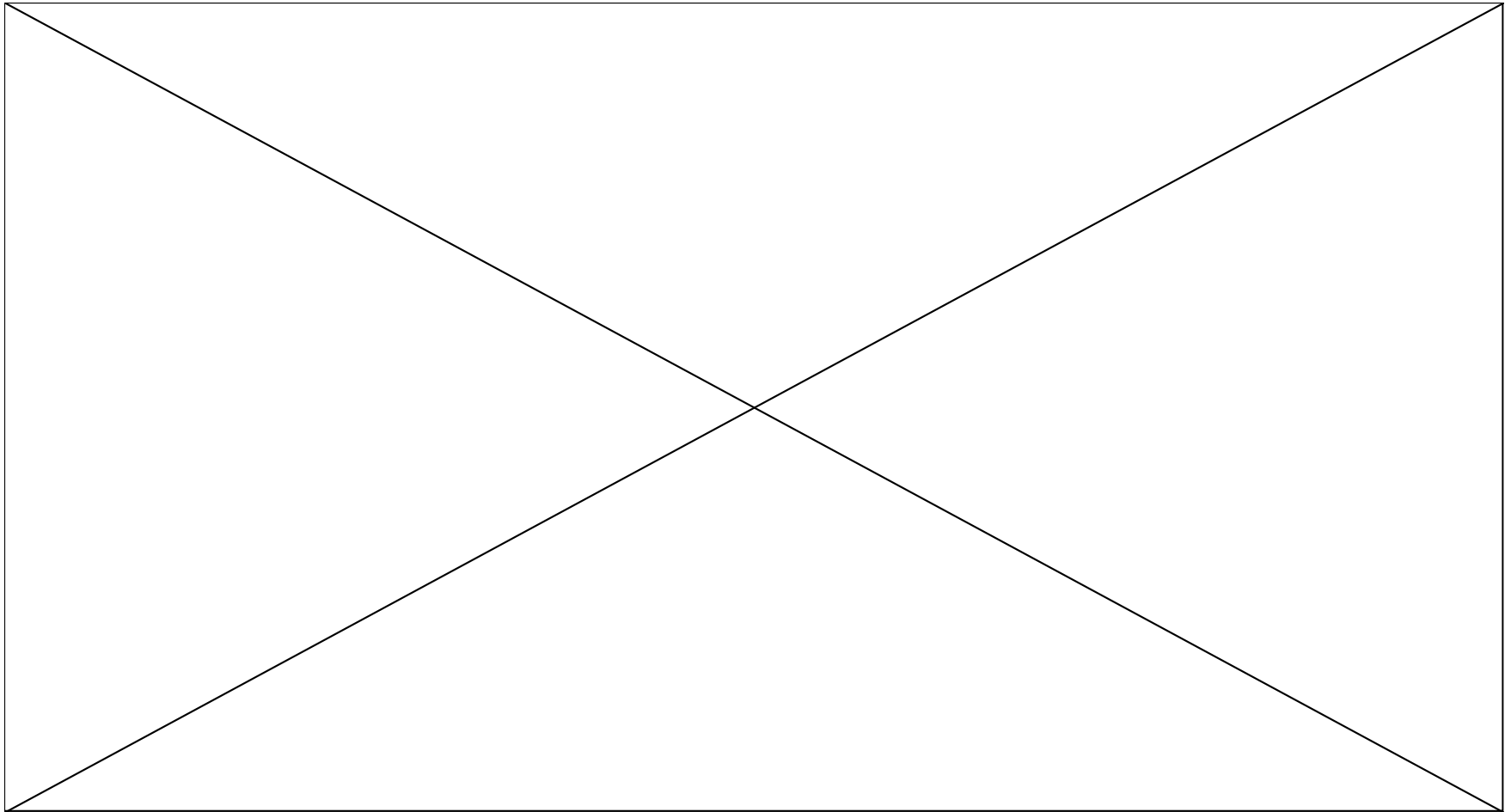
- **MST Standard 1:** Analysis, inquiry & design using scientific inquiry methods
- **MST Standard 2:** Use appropriate information technologies
- **MST Standard 3:** Applying mathematics in real world settings
- **MST Standard 7:** Applying mathematics, science & technology to address real-life problems



“Probing the Hudson:” Co-designed, co-taught & co-evaluated in conjunction with experts

- Beacon Institute Center for Advanced Environmental Technology
- Hudson River Basin Watch
- NYS Department of Environment Conservation







The story of a parabola: Algebra, solar ovens, the design process, STEM & technology literacy

- Environmental Science solar ovens, led to....
- Geometry furniture design, led to....
- American history, led to
- Chemistry, solar batteries.

http://www.youtube.com/watch?v=zoNlaACTcKg&feature=player_embedded





INTEGRATED CURRICULUM



Split (Spatial Literacy)

- Geometry & English

Environmental Analysis

- Environmental Science & Geography

PhA₂T

- Physics, Algebra II & Trigonometry

E3Q (senior capstone course)

- Economics, Entrepreneurship, Emerging Technologies, Quantitative Analysis (Statistics), & Government



21ST CENTURY SKILLS & NYS LEARNING STANDARDS

Assess both:

-Content acquisition: New York State Curriculum & Standards

-21ST century skills & school-wide learning outcomes

Collaboration

Information literacy

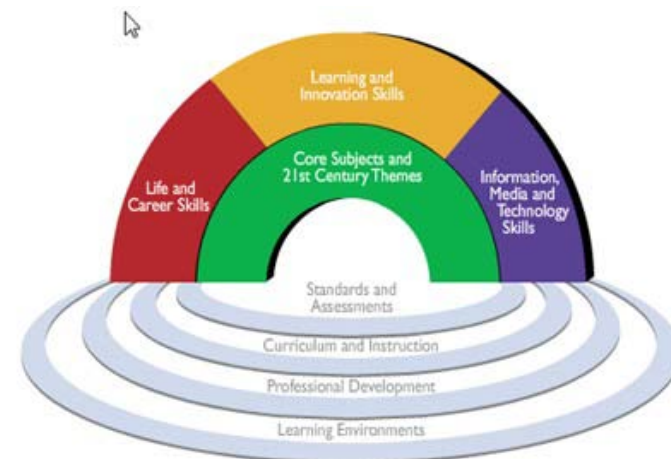
Critical thinking & innovation

*Communication: oral, written,
mathematical, graphic & artistic*

Citizenship

Technology literacy

Self-direction

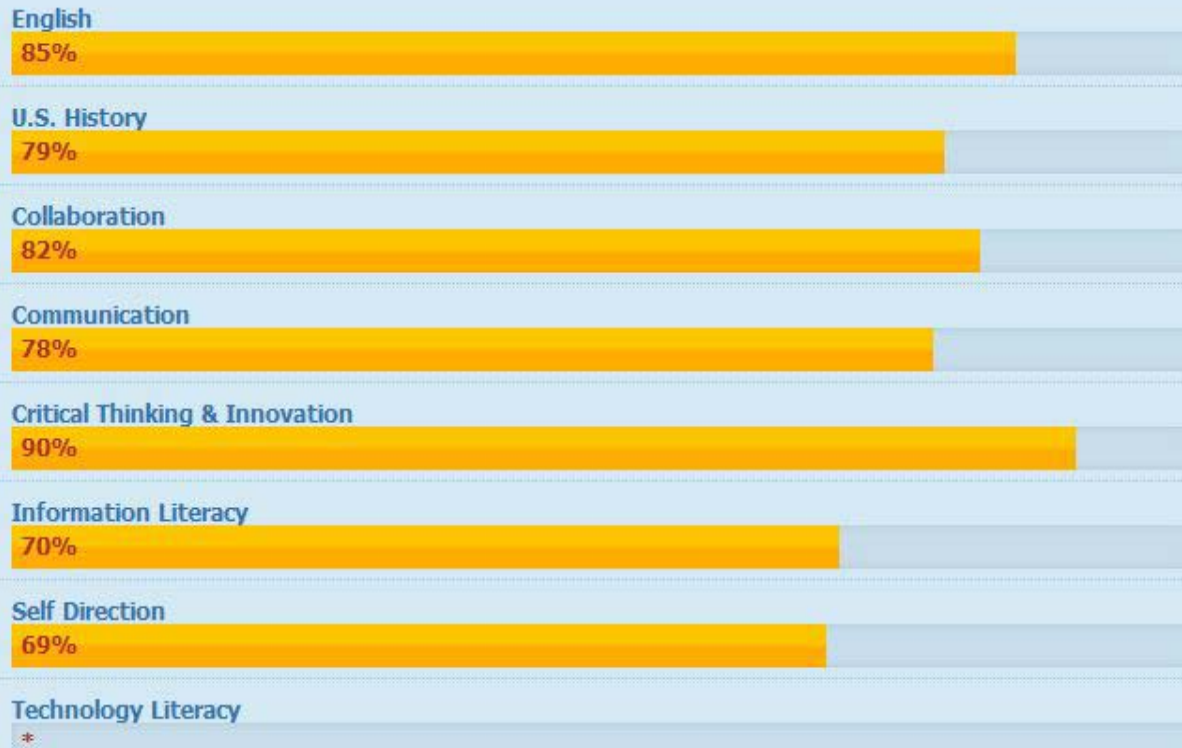


<http://www.21stcenturyskills.org/>



Class Stats

Enrolled Students
33
 Students Below 70%
10
 Grades Last Updated
10/15/2010





TECHNOLOGY PLATFORM: tools for communicating, collaborating & learning in 1:1 computer environment

Teachers:

- Build curriculum & store projects in digital briefcases
- Post daily course agendas & student grades to the Web

Students:

- Create digital portfolios of their work
- Performance is captured digitally
- Teams share work digitally, have their own email accounts & server space

