



STEM Learning Studios



Nevada STEM Smart Workshop
September 19, 2012

Learn more at nctaf.org



We Are Living in the Learning Age

Learning is no longer preparation for a job

... learning *is* the job

– *teamwork* is the way the job gets done.

Learning Studios

Team Up for

Deeper Learning



STEM Learning Studios

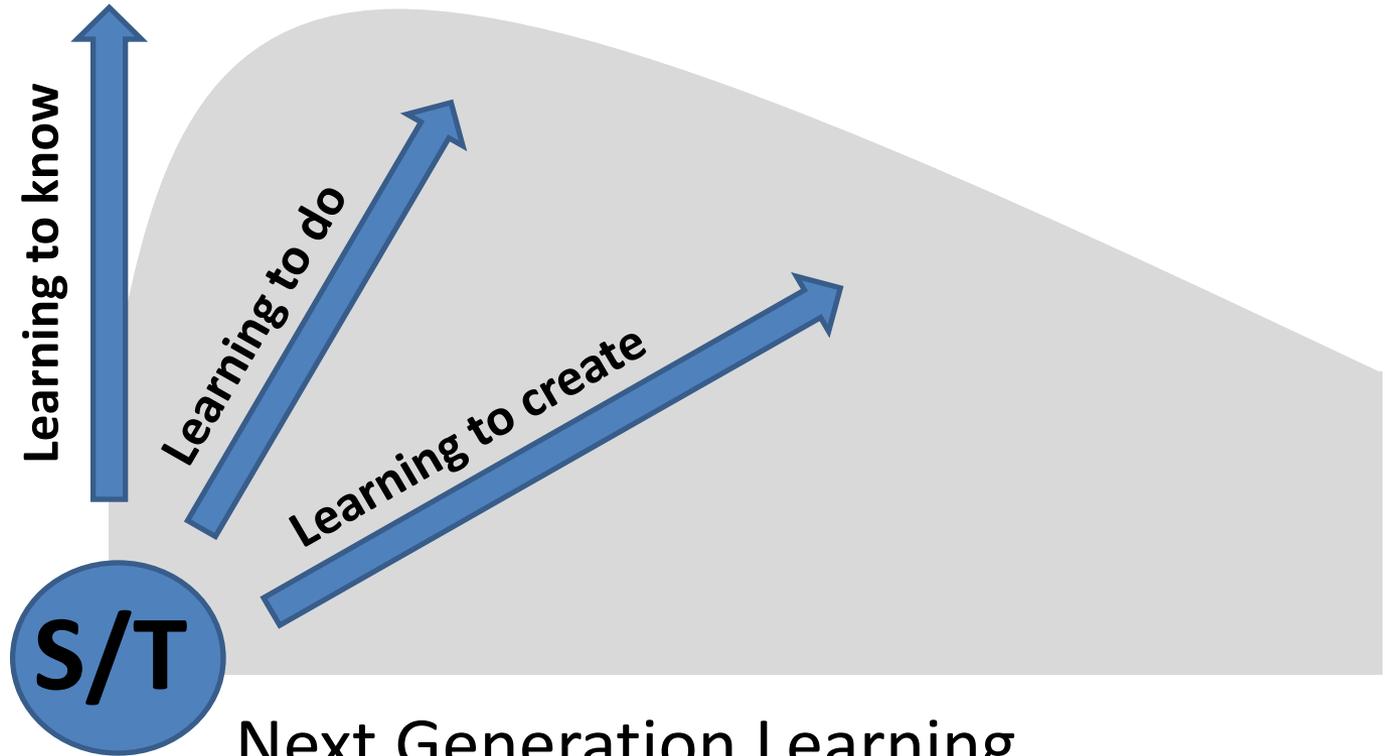




Prepare for 21st Century Learning College, Careers, and Civic Engagement

Expert

Knowledge & Skill



Next Generation Learning

Novice

Learning Studios: Deeper Learning for Students and Teachers with meaningful Community Engagement



Studio Goals & Outcomes

- **Deeper Student Learning:** learning that matters and work that makes a difference – genuine preparation for college, careers, and citizenship.
- **Deeper Teaching:** from good teachers to great teaching.
- **Deeper Community Engagement:** skilled volunteers team up with teachers and students to develop innovative solutions to complex learning challenges.



STEM Learning Studios





Studios Support Learning Teams

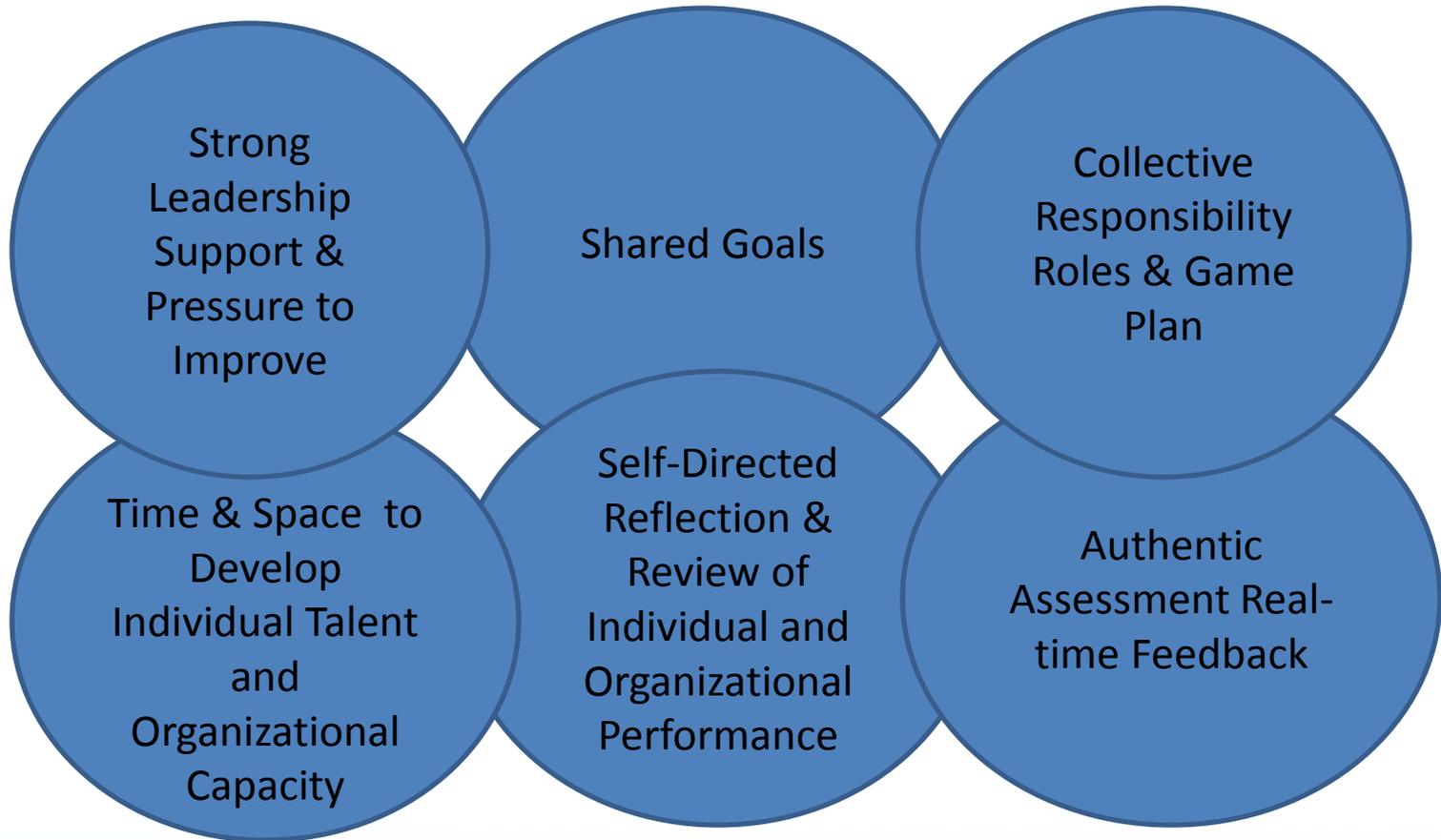
- **Artisan Teacher:** Solo Professionals.
- **Professional Learning Communities:** (Guilds and Independent Teams) Artisan Teachers Collaborate to Improve Individual Capacity & Professional Performance.
- **Learning Teams:** Interdependent Teams of Teachers, Students, and STEM Experts Orchestrate their Diverse Knowledge and Skill to Achieve Well-Defined Learning Objectives. Individual and Organizational Capacity Develop in Tandem.



Learning Studio Principles

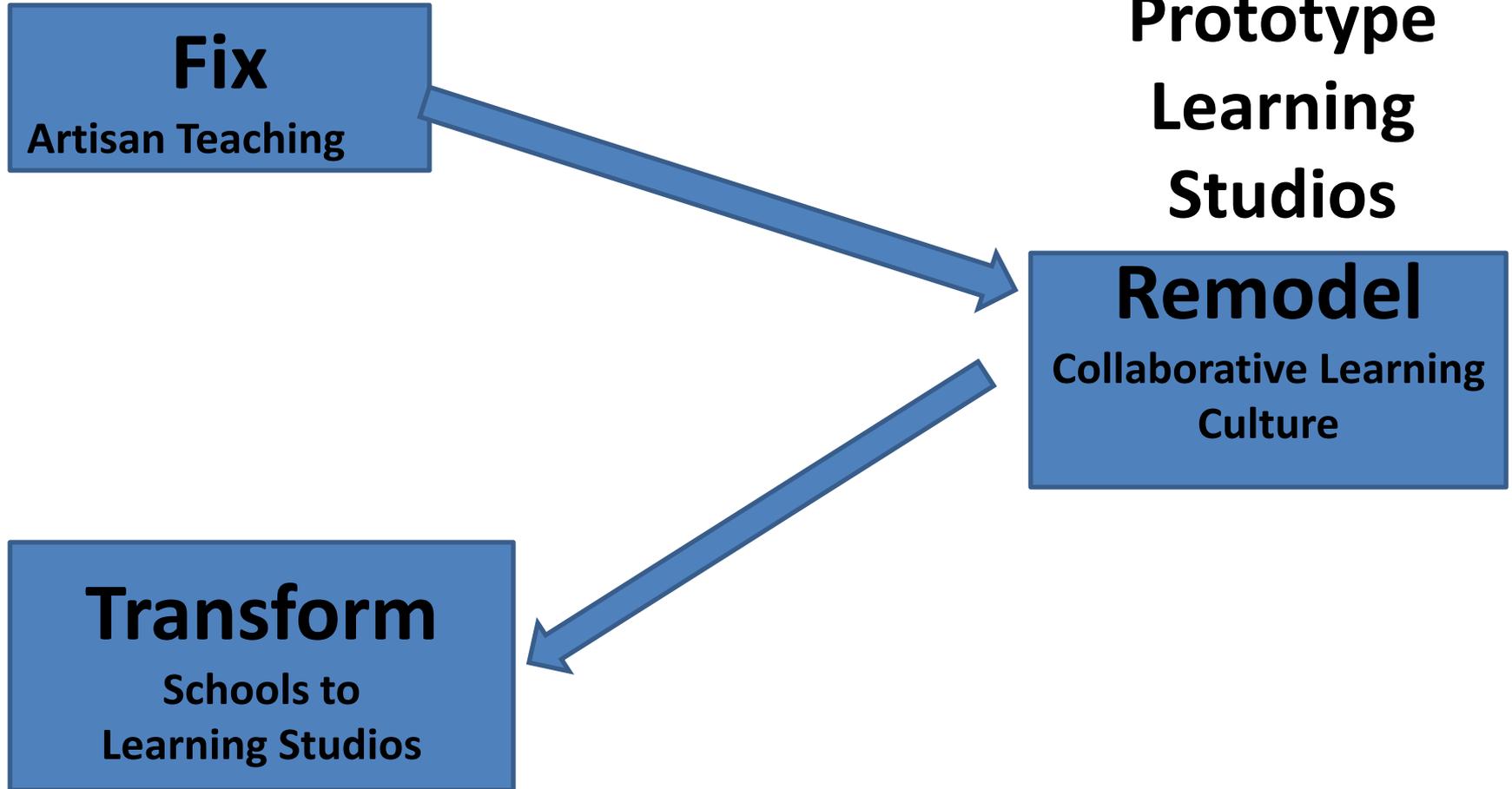
Team Up for 21st Century Teaching and Learning
STEM Teachers in Professional Learning Communities

www.NCTAF.org





Studio Teams are Redesigning Education





Patuxent Valley MS, Howard County MD

How does land use impact the environment?



- The Learning Studios classes visited the construction site outside their school to discuss with engineers how they approach the issue of human impact on the environment.



- The students and engineers worked together to solve math problems as related to the slope and erosion occurring at the construction site.



Central MS, Anne Arundel

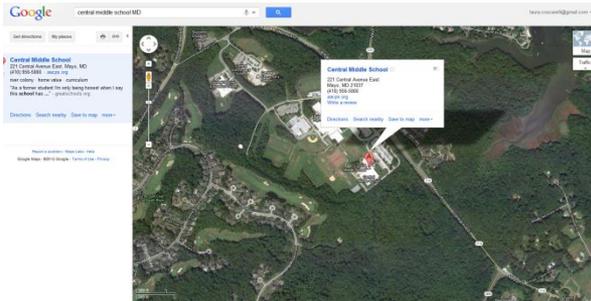
How do humans impact the Chesapeake Bay watershed?

Central Middle School Tree Data, 2012
Name: _____ Date: _____ Period: _____

We will be taking qualitative and quantitative data from the trees and shrubs that we planted. How much do you think the trees will grow from now until the end of the school year?

1. Measure the height of your tree or shrub and record in your data chart.
2. Measure the circumference of the trunk of your tree/shrub and record in your data chart.
3. Count the number of branches on your tree/shrub and record in your data chart.
4. Count the number of leaves on your tree/shrub, if possible, or estimate the number of leaves.
5. Describe the appearance of your tree/shrub. Include colors, leaves, bark, buds, flowers.

Week	Tree/shrub height	Tree circumference	Number of branches	Number of leaves	General appearance
1					
2					
3					
4					
5					
6					
7					



Centennial HS, Howard County Website Project

Climate Change Website Project

Purpose: You will be working with students from Mrs. Holt's Introduction to Biology class to create a website on Climate Change. You will be developing skills on organizing content using 21st century communication technology and presenting information in a logical and aesthetically pleasing manner.

Theme: Climate Change and You

Content: Your partner from Mrs. Holt's Intro to Bio class and yourself will collect data and research information about climate change using given appropriate resources and scholarly articles. The content you will be providing in your website should be dividing into these sections:

Section	Details	Format
Climate Change Background	Give specific details in your own words about the main topics <ul style="list-style-type: none"> • What is Climate Change? • What are the causes? • Is it the same as Global Warming? • What are greenhouse gases and the greenhouse effect? How is related? 	A minimum of one page in your website. Include: <ul style="list-style-type: none"> • Diagrams • Charts • Pictures • Text (paragraphs & bullet points)
What We Believe	Write an argumentative claim on your beliefs about Climate Change. <ul style="list-style-type: none"> • Do you believe climate change is just a natural cycle? or is real? Do humans effect climate? • You must have a one-sentence clear and concise claim and at least 3 scholarly resources to back your claim 	A minimum of one page in your website. Include: <ul style="list-style-type: none"> • Diagrams • Charts • Pictures • Text (paragraphs & bullet points) • Minimum of 3 scholarly resources cited
Personal Effects	Each student in the group will complete a carbon footprint test and report back their findings. Also, each student will write a paragraph on several ways that they personally effect the environment. Include relevant pictures.	A minimum of one page in your website. Include: <ul style="list-style-type: none"> • Pictures • Text (paragraphs & bullet points) • Carbon footprint results
Vocabulary/Terminology	Write in your own words the definitions of the attached vocabulary/terminology related to Climate Change	A minimum of one page in your website. Include: <ul style="list-style-type: none"> • Vocab/Term • Definition (written in your own words) • Pictures when possible
(Your choice)	Be creative! Choose one other section to add to your website that has to do with Climate Change. You can make a video and embed it. You can make an animation. You can make a collection of links and resources about climate change. The possibilities are endless!	Varies.



Climate Change

Home Background Viewpoint Personal Effects Terminology Slideshow



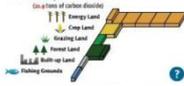


Personal Effects

Paul

My carbon footprint is a fairly large one. My lifestyle would take up 4.8 Earths if everyone lived as I do. By completing this quiz, I was able to put my effect on climate change in to perspective. It is almost upsetting to know that I use so many of the Earth's resources. This would lead one to believe that climate change is man-made, although we believe it is also part of a natural cycle. I try to be eco-conscious in my life, by recycling and turning off lights when I leave a room. My contributions to reducing the expedition of climate change will require less energy and waste than I currently use/produce.

To support your lifestyle, it takes 20.5 global acres of the Earth's productive area.



Many activities impact our Footprint. If everyone lived like you, we'd need 4.8 Planet Earths to provide enough resources.



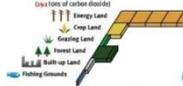
Holly

When taking the Carbon Footprint Test, I noticed that I am making an impact on the Earths climate change. I noticed, shamefully, that if everyone lived like me, it would take 4.2 Planet Earths to provide enough resources. My Ecological Footprint breaks down into 5 things. Services take up the majority. Following is shelter, food, goods, and mobility. To support my lifestyle, it takes 18.7 global acres on the Earths productive area. By cutting down on some of my activities, I can cut down on the resources I use as well.

Many activities impact our Footprint. If everyone lived like you, we'd need 4.2 Planet Earths to provide enough resources.



To support your lifestyle, it takes 18.7 global acres of the Earth's productive area.



Centennial HS Energy Audit



Conserve Energy
Pamphlets





Central HS, Prince George's County

Is solar energy economical for our school?

- The team held a STEM day to model a scientific conference where students conducted investigations related to their solar energy challenge.
- Scientists from the Department of Energy worked with the groups of students and provided expert knowledge.
- Students worked in groups at stations, then compared results with other groups doing the same experiment, and then defended their findings to the entire audience at the end of the day.





Gwynn Park HS, Prince George's County

How do humans impact the environment?

As students in the ecology club worked to restore the greenhouse on their campus, they discovered broken glass had contaminated the compost pile.

They challenged the Tech Ed class via video to build a device to filter the glass from the soil.

A local business owner donated the materials and helped guide the students through the design process.





Old Mill MS, Anne Arundel County, Water, Water Everywhere, What is it? Why do we Care?



Lebanon HS, New Hampshire

What is Wellness?

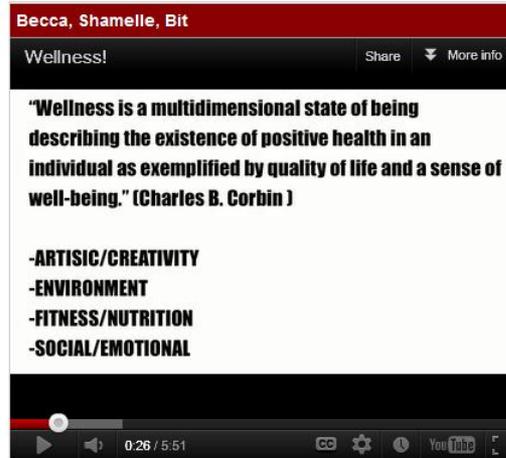
Community Partner Visits

Arts - Presentation- Friday, March 2
Kathy Parsonnet - artist

Social & Emotional Well-Being Presentation- Monday, March 5
Abigail Jarvis - Headrest
Nicole Carriere – Yoga Instructor
Todd Heatherton – Dartmouth Psych Professor

Nutrition & Fitness - Presentation- Wednesday, March 7
Dianne Estes – nutrition, fitness, wellness
Kristine Flythe - Lebanon Parks and Recreation

Environment Presentation- Monday, March 12
Andrew Gast-Bray
Larry Danyluk - CRREL
Chrissy Morely





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Howard County Educators Develop Authentic Learning Opportunities for Their Students

Posted by NCTAF on August 24, 2012 in *Featured, Learning Studios* | [0 comments](#)



Teachers from Centennial High School discuss their plans for the year that explore "How does climate impact you?" with Ann Stroyzk (left) from the Howard County Conservancy.

Teachers across the country are gearing up for another school year by reviewing content, aligning lessons to standards, and chipping away at the other tasks required before they return to their classrooms. What many teachers do not do, however, is meet as a trans-disciplinary team with a representative from the workforce who acts as a co-collaborator in developing projects for students.