

# **Full STEAM Ahead...**

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*A Transformation of People, Places, and Pedagogy...  
Welcome to the 2015-2016 School Year!*

# BUZZ WORDS

- **21ST CENTURY LEARNING**
- **PROJECT-BASED LEARNING**
- **STEM**
- **STEAM**
- **THE MAKER MOVEMENT (MAKESHOP OR MAKERSPACE)**

**GLOGSTER**

# 21st Century Learning

## 20th Century

Curriculum

Time-Slotted

One-size-Fits-All

Competitive

Classroom

Text-based

Summative Tests

Learning For School

## 21st Century

Projects

On-Demand

Personalized

Collaborative

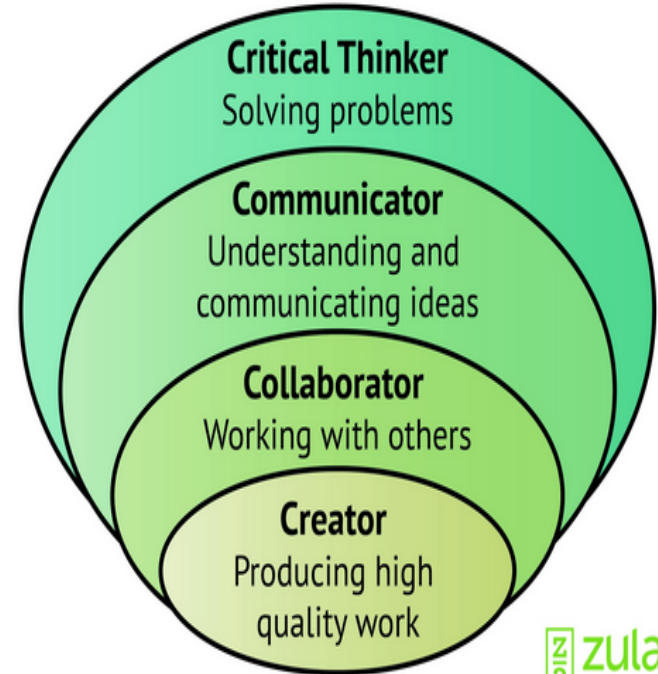
Global Community

Web Based

Formal Evaluations

Learning For Life

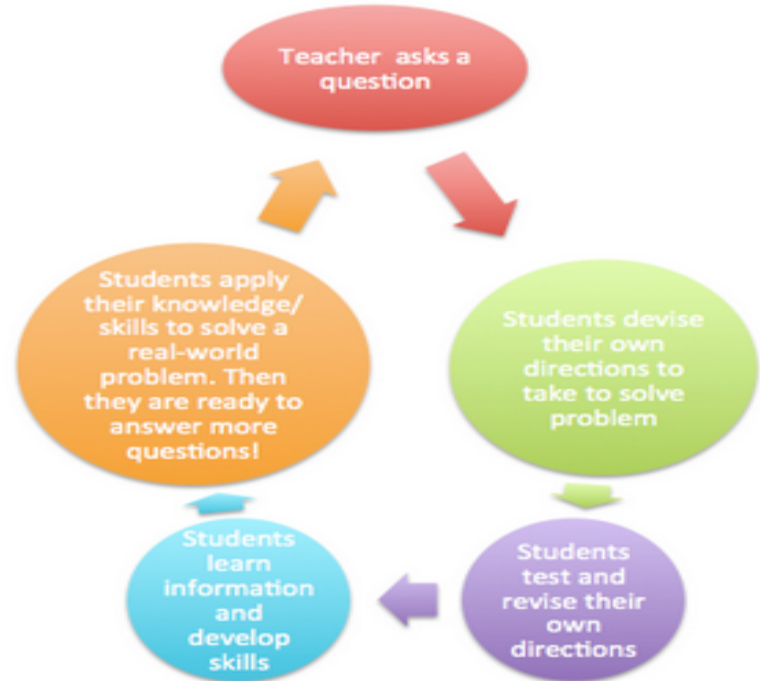
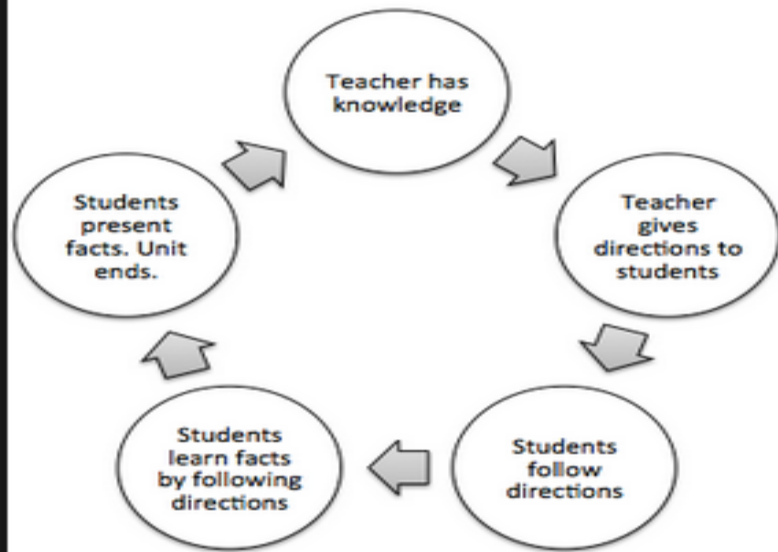
## The Four Cs of 21st Century Skills



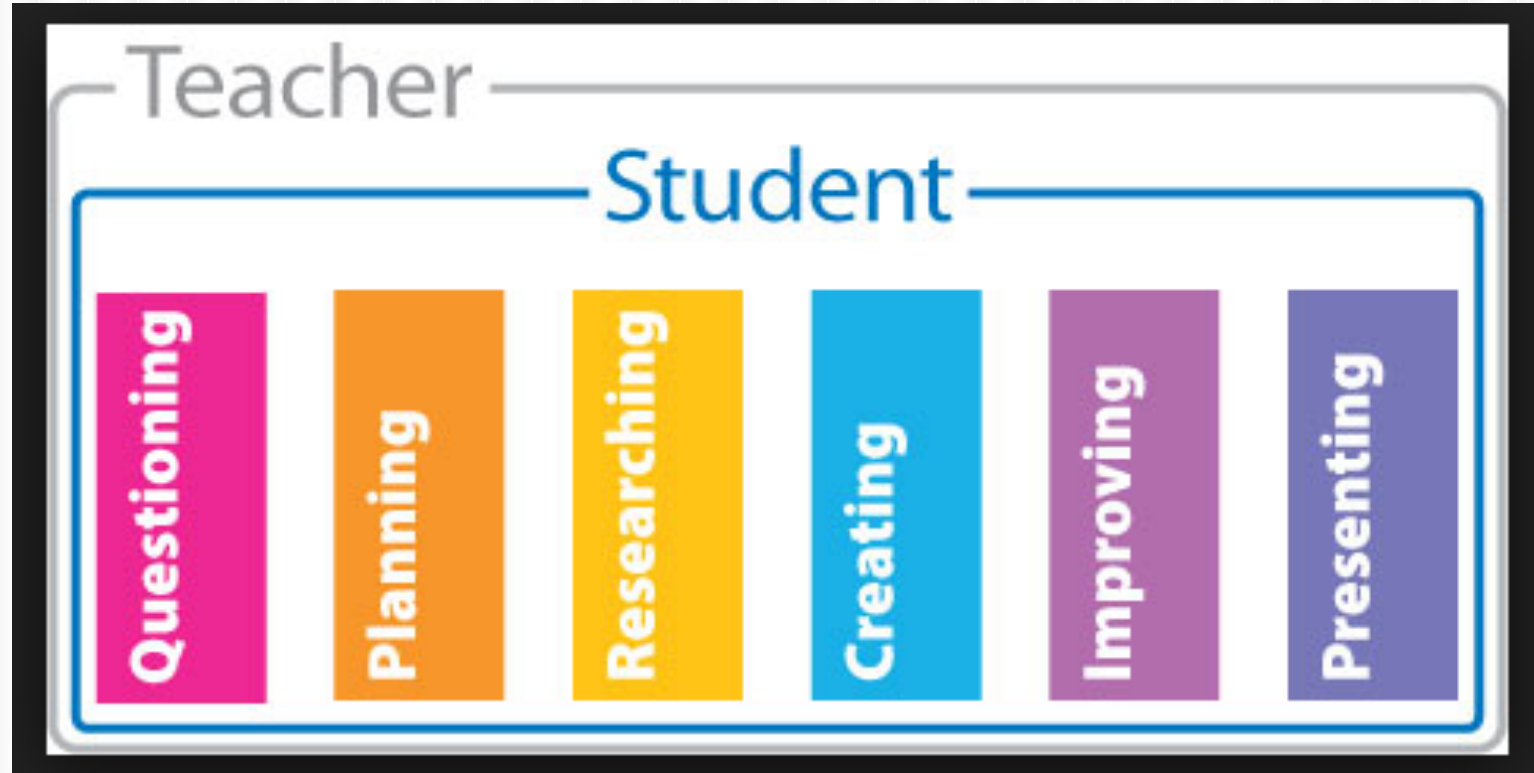
# Project-Based Learning

## “Doing Projects”

## vs. Project-Based Learning



# Project-Based Learning



# S.T.E.M.

“Science is more than a school subject, or the periodic table, or the properties of waves. It is an approach to the world, a critical way to understand and explore and engage with the world, and then have the capacity to change that world...”

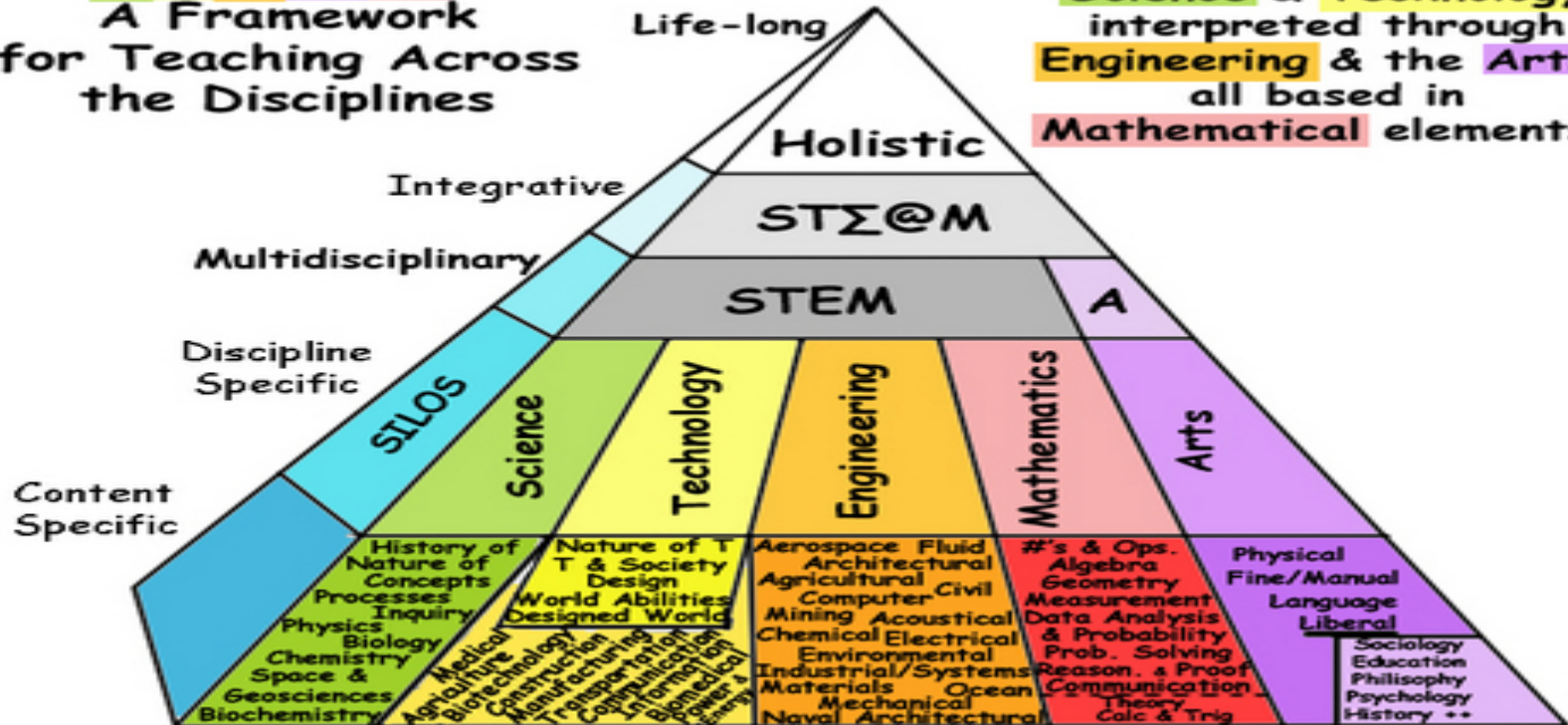
~President Barack Obama



# S.T.E.A.M.

**STΣ@M:**  
A Framework  
for Teaching Across  
the Disciplines

**STΣ@M =**  
Science & Technology  
interpreted through  
Engineering & the Arts  
all based in  
Mathematical elements



# S.T.E.A.M. with Integrity

- Intentional connection between standards, assessment, and lesson design/implementation
- Two or more standards from S.T.E.A.M.
- Inquiry, collaboration, and an emphasis on process-based learning
- Arts serve as a lever to explosive growth, social-emotional connections, and the foundations for the innovators of tomorrow
- Promotes risk-taking, experiential learning, problem-solving, persistence, collaboration, and creativity



# THE MAKER MOVEMENT

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- DESIGNING
- BUILDING
- CONSTRUCTING
- FIXING
- REPURPOSING
- TINKERING

If You  
Let Them  
**BUILD IT,**  
They Will  
**LEARN**

# MAKING

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## INSTRUCTIONAL STRATEGY:

- INTEREST DRIVEN, OPEN-ENDED
- CREATIVE PRODUCTION (I.E. TOOLS, MATERIALS, PROCESSES, IDEAS)
- INTERDISCIPLINARY (STEAM)
- INTUITIVE VS. INSTRUCTIONAL

# CHARACTERISTICS OF a MAKERSPACE

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- AESTHETICALLY STIMULATING & PLEASING
- ACCESSIBILITY
- EQUITY
- COLLABORATION
- VARIETY OF MEDIA



# THE MAKESHOP PRINCIPLES

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- **INQUIRE**- making experiences encourage exploration and inquiry through access to a variety of real materials, tools, and processes.
- **TINKER**- Maker experiences are process-oriented, and provide opportunities for extended purposeful play, testing, risk-taking and evaluating properties of materials, tools, and processes.
- **SEEK AND SHARE RESOURCES**- Making experiences encourage learners to value, seek out, contribute to, and share expertise with and among the community.
- **HACK AND REPURPOSE**- Making experiences inspire learners to identify and use familiar tools, materials, processes and ideas in new ways.

# THE MAKESHOP PRINCIPLES CONT.

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- **EXPRESS INTENTION**- Making experiences are learner-driven, choice-based and empower learners' development and refinement of interest, identity and personal learning pathways.
- **DEVELOP FLUENCY**- Making experiences develop comfort and competence with diverse tools, materials and processes by providing approachable, accessible, and supportive learning context.
- **SIMPLIFY TO COMPLEXIFY**- Making experiences enable learners to , expand, deepen, and challenge their understanding of materials, tools and processes, by providing opportunities to connect and combine component elements to make new meaning.

# S.T.R.E.A.M.

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- Literacy Across the Curriculum
- Integrate Speaking & Listening
- How can you “make” literacy?
- Library Media Specialist



# Why?

- Increase engagement
- Interchangeable roles
- Expand cross-curricular opportunities
- College and career readiness
- Process vs. product



# YOUR CHALLENGE...

You will be given 18 minutes and a set of supplies to build a “Spaghetti Tower.” The team with the highest FREE-STANDING structure will win the challenge.

## Spaghetti Tower STEM Challenge!

### ○ Supplies:

- 20 pieces of spaghetti
- one yard of tape
- one yard of string
- 1 large marshmallow · scissors

### ○ Directions:

- No extra supplies will be given.
- You do not need to use all of the supplies
- You will have exactly 18 minutes.
- The marshmallow must be the top of the tower.
- The tower must stand on its own to be measured.