R. E. MCNAIR DISCOVERY LEARNING ACADEMY
2014-2015

Our Plane is Taxi-ing

Why S.T.E.M.?


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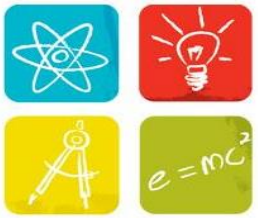
Why STEM?

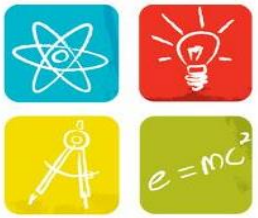


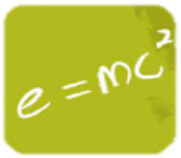
- Science, technology, engineering and math (STEM) are where the jobs are.
- STEM workers can expect higher salaries.
- The United States is failing to produce enough skilled STEM workers and thus is losing its competitive edge.
- American students aren't keeping up with students in other countries in math and science.
- The decline in STEM knowledge capital is reducing the basic scientific research that leads to growth and innovation
- Other nations are racing to establish dominance in STEM areas, costing Americans jobs and money.

WHAT DO YOU BRING TO THE TABLE?

Everyone here plays a part.

What does STEM mean?





Science

Technology

Engineering

Math

What is STEM?

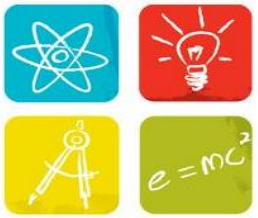
- A "**meta-discipline**" that infuses Science, Technology, Engineering, and Math
- STEM Education attempts to **transform the typical teacher-centered classroom** by encouraging curriculum that is driven by problem-solving, discovery,

exploratory learning, and **require students to actively engage** in a situation in order to find its solution

What STEM is not…

- Four separate and unrelated disciplines (silos)
- Merely adding technology to the classroom
- A passing trend

Why will Integration be important?



- It provides application to the learning
  - This applies to TKES –

    1: Professional knowledge, 3:Instructional Strategies,

    and 4: Differentiated Instruction

STEM in Georgia

STEM SKILLS ARE IN DEMAND

In Georgia, STEM skills have stayed in demand even through the economic downturn.

STEM:
2.0 jobs for every
1 unemployed person

Non-STEM:
4.5 unemployed people for every **1 job**

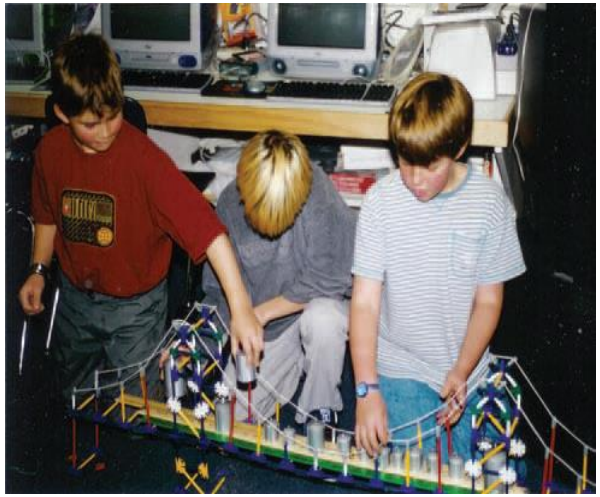
WHAT DOES A STEM CLASSROOM LOOK LIKE ?

STEM Classrooms

Engineering Balloon Cars

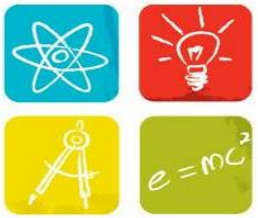
Building Robots

Constructing Bridges



Constructing Playground Equipment

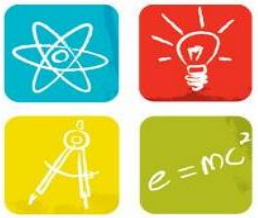
Teaching Practices around STEM Integration



Zemelman, Daniels, & Hyde (2005) list ten best practices for teaching math and science:

1. Use manipulatives and hands on learning;
2. Cooperative learning;
3. Discussion and inquiry;
4. Questioning and conjectures;
5. Use justification of thinking;
6. Writing for reflection and problem solving;
7. Use a problem solving approach;
8. Integrate technology;
9. Teacher as a facilitator;
10. Use assessment as a part of instruction.

Teaching Practices around STEM Integration



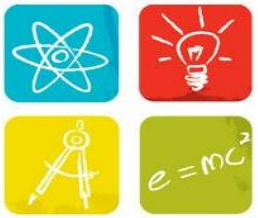
Berlin & White (1995) provide recommendations on how teachers should approach student knowledge:

- Build on students' prior knowledge;
- Organize knowledge around big ideas, concepts, or themes;
- Develop student knowledge to involve interrelationships of concepts and processes;
- Understand that knowledge is situation or context specific;
- Enable knowledge to be advanced through social discourse;
- Understand that knowledge is socially constructed over time.

DeKalb STEM Vision

To be a leader in rigorous K-12 Integrated STEM Education that prepares students to meet the challenges of a competitive global society through innovation, collaboration, and creative problem solving.

McNair D.L.A. STEM Goals



- **Create student-centered learning environments** that empower students to become innovators and technologically proficient problem solvers using an integrative STEM approach.

- **Engage partnerships with the community** that allow the school and businesses to connect with the goal of improving students' STEM-related career opportunities

- **Provide quality educational learning opportunities** via EIE kit experiences, field trips (out reach), and community partners and parental

Technology in a Bag

- What is the technology and what does it do?
- What material is it made of?
- What other materials could it be made of?

Time

Light

Dwellings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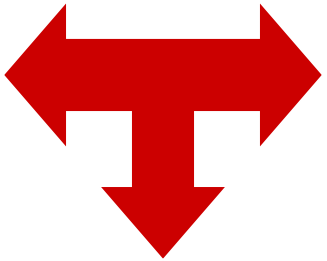
SECTION RABAIS

Establishing the foundation

Scientists seek to understand the natural world and often need new tools to help discover the answers.



Engineers use scientific discoveries to design products and processes to meet a need, satisfy a want , or solve a problem in society.

Technologies are the result of engineered designs. They are created by technicians. Technology is anything humans create or use to solve a problem or meet a need/want.

SCIENCE JOURNALS

Ms. Carter

Science, Technology, Engineering, & Mathematics

Save the Date:

September –

Tuesday 9/23 @ 2:45

Monday, 9/29 @ 2:45

October – 6th , 10th, and 14th –Digging Deeper Training

During Planning Periods

Our Departure?

WELCOME TO THE

R. E. MCNAIR DISCOVERY LEARNING ACADEMY

STEM IMPLEMENTATION TEAM

HAVE A STEM-TASTIC EVENING!