Making Science Count in your Schools-Increasing Academic Performance through Integration across the Curriculum

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Making Science Count in your schools-
Increasing academic performance through integration across the curriculum

Dr. Bertina Banks
Elevated Thinking Educational Services
About me

- Undergraduate studies - Florida A & M University (B.S Biology)
- Doctoral work on the cellular basis of learning and memory - Purdue University
- Teach for America Corp Member - Atlanta, GA
- Middle grade & College Science Instructor
- Science Instructional Coach
- Educational Consultant
Objectives:

- By the end of today’s workshop, participants will have tangible strategies for cross curriculum integration to increase student achievement.

- Educators will be provided with resources to begin and continue collaboration with all colleagues.

- School level leaders will be provided with methods of engaging and motivating staff to collaborate cooperatively and conceptually.
All students need the knowledge and skills that make up what we call "science literacy" – the ability to make sense of the world around them.

By helping students learn how to observe, collect evidence, and draw conclusions, science helps students sharpen their thinking about the ideas and events they encounter in everyday life.

The skills learned in science are easily transferable to other classes.
Why use cross curriculum integration?

- A deeper learning can be accelerated by consolidating teacher efforts and combining relevant contents. http://www.edutopia.org/blog/cross-curricular-teaching-deeper-learning-ben-johnson

- Students are encouraged to see the interconnectedness and interrelationship among disciplines.

- Students are motivated when experiencing meaningful connections.
Ways to leverage science skills to increase achievement in other content areas

- Inquiry practices and citing evidence from informational text can increase achievement in Language Arts and Social Studies.
- Scientific analysis skills can enhance conceptual understanding of mathematical principles.
- Activation of prior scientific knowledge explaining natural phenomenon can deepen the understanding of diversity, culture and world issues. (Social Studies and Foreign Language).
- Utilization of scientific imagery can reinforce principles of color and design in art classes.
True Integration is shared not imposed!

Interdisciplinary/cross-curricular teaching involves a conscious effort to apply knowledge, principles, and/or values to more than one academic discipline simultaneously.

The disciplines may be related through a central theme, issue, problem, process, topic, or experience (Jacobs, 1989).
How will it work?

- Start with relevant questions about everyday life that can be infused in all content areas.
- Essential science questions - Common thread (Refer to the Next generation science standards, or state website)
  - Why is the sky blue?
  - Why is water so vital to life?

- Teachers will experience the three general phases of interdisciplinary teaching and collaboration - Aligned, Cooperative and Conceptual
Aligned collaboration

For example, after the Social Studies and English department agrees that DBQ’s (Document Based Questions) can count for both subject areas, teachers plan the year so that topics of study in history are taught concurrently with literary eras.
An art teacher works closely with the science teacher and they both help students understand the effect of pigments and light by teaching together the science of wavelengths, the electromagnetic spectrum, and the dual nature of light.
Cooperative Collaboration

- fellow teachers are synchronized your strokes to match your pace.

- For example, a math and science teacher get together and decide on the best way and the best time to teach *motion* and cooperatively agree to help each other teach it, either separately or jointly.

- When the math teacher needs models to show students what the math is good for, he obtains them from the science teacher, and when the science teacher needs the students to perform mathematical calculations, she utilizes the same process the math teacher used just a week before.
Let’s jump in!-Gallery Walk

There are three exhibits in this gallery walk.

The purpose of this gallery walk is for you to get a sense of what the students will experience as they travel to their classes. Each exhibit has a sample task the student will complete to further explore

Why is water vital to life?
What did you experience?

- **Social Studies task-** You are graphic social scientists charged with creating a visual representation of the available fresh water available on earth. Your representation will help to demonstrate why there is a greater chance for water scarcity in some areas of the world.

- **Art-** Watch the following video on the Suminagashi technique and jot down your observations. Explain why you think this is possible. Remember to include what you know about water’s characteristics in your explanation. [https://www.youtube.com/watch?v=B5LQpXn3DEc](https://www.youtube.com/watch?v=B5LQpXn3DEc)

- **Physical Education-** Water is vital for life. As the majority of the earth is water (~70%) so is the human body (57-65% avg). You will explain how the right levels of water influences one heart and lung endurance, muscular endurance and flexibility. Remember to use your knowledge about the circulatory system.

2. Using the obstacle course, demonstrate how a student who is properly hydrated will perform the various tasks.

What would a math or ELA lesson look like for this unit?
Let’s move full STEAM ahead! Next steps

- **PRIME FELLOW 2014-Georgia Tech-Using Music and Theater to demonstrate the phases of boiling**
- **Here is the link to the video that I created to coincide with a boiling experiment.**
  - [https://www.youtube.com/watch?v=GA9MBdePwmo](https://www.youtube.com/watch?v=GA9MBdePwmo)
- **Students can similarly create a soundtrack to narrate a scientific principle while incorporating relevant music vocabulary.**
Today’s Take-aways

- Take a point to jot down your three things that you will remember about today’s workshop.
Let’s stay connected

- Visit http://elevatedthinkingservices.com for important resources
- Contact me
  - bertina@elevatedthinkingservices.com or
  - bsbanks@atlanta.k12.ga.us
Resources

Website for Science & Social studies task

http://thewaterproject.org/resources/lesson-plans/

Website for Science & Art task

Thank you for your time!

This is one of my original art pieces called Jazzigashi Time, using the Suminagashi technique featured in this presentation. For more information: bertinabanksartistry.webs.com