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Interdisciplinary STEM Teaching & Learning Conference (2012-2019)

2019 Interdisciplinary STEM Conference (March 21-23, 2019)

Mar 22nd, 2:45 PM - 3:30 PM

Building a Culture for STEM/ STEAM Success

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Recommended Citation

Morgan, Allyson L. and Brown, Rontra, "Building a Culture for STEM/ STEAM Success" (2019). *Interdisciplinary STEM Teaching & Learning Conference (2012-2019)*. 22.
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Creating a Culture for STEM & STEAM

Rontra Brown

Allyson Morgan

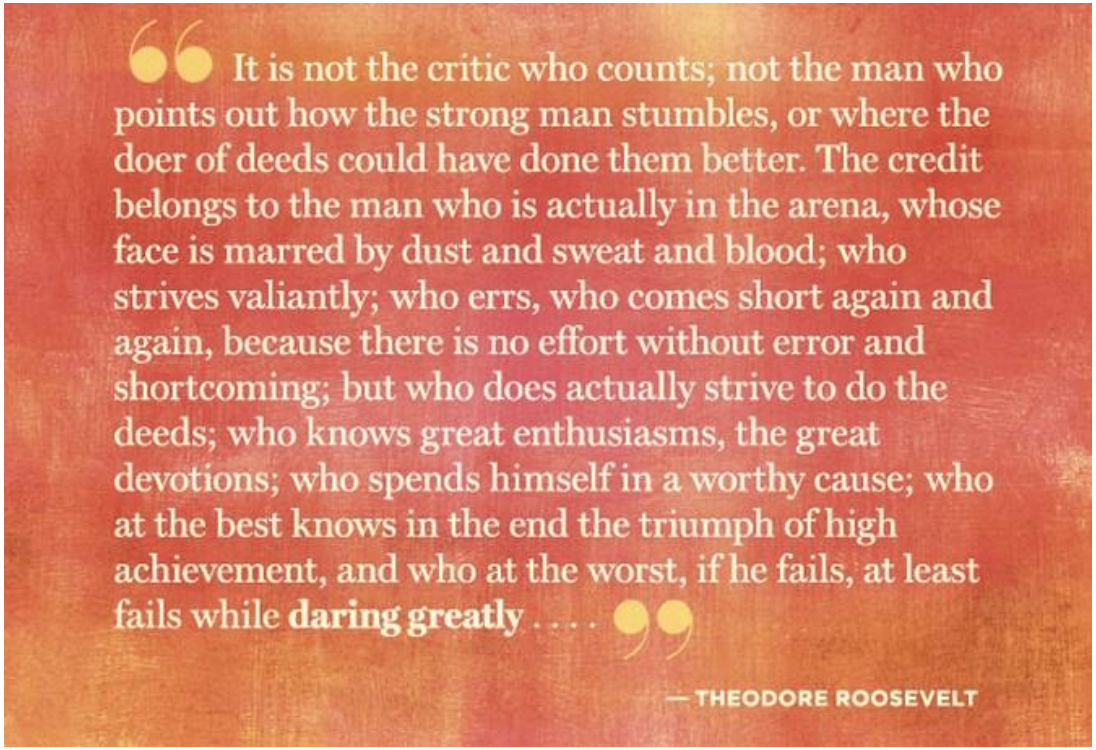
STEM / STEAM Program Specialist, GADOE

Session Opener : Graffitti Board

Read the quote / and "mark it up" considering this question:

How does the quote relate to a STEM / STEAM culture?

Adapted from: Graffitti Board Strategy



Why STEM and STEAM?

- STEM careers will grow by 77,000 new jobs between now and 2026
  - Biggest areas of growth: software developers, nurses, computer customer support, EMTs
  - More than half of the job growth in GA between now and 2026 will be in the healthcare and film industry.
  - GA Long Term Workforce Trends Report

Why STEM and STEAM?

- Not just about STEM / STEAM jobs, but the STEM and STEAM in the jobs.
  - Collaboration
  - Problem-solving
  - Innovation / Risk Taking
  - Independent Work / Thinking
- Example: Less data processing & more decision making with data (Great Forbes article!)
- How are we building learning opportunities that support STEM / STEAM thinking with our content standards?

How : Instructional Practices

- Starts with a change in pedagogy that impacts classroom and school culture.
- Three Types of Engagement
  - Emotional
    - Safety
    - Relevance
  - Cognitive
    - Content / Standard / Concept
  - Behavioral
    - Most observable type of engagement
    - Action – on task / off task

  - Article Source: 8 ways to Ensure Engagement

How : Instructional Practices

- How to leverage those types of engagement?
- 8 characteristics of engagement:
  - Personal Response
  - Clear and Modeled Expectations
  - Audience
  - Social Interaction
  - Emotional Safety
  - Choice
  - Authenticity
  - Novelty

Hattie / Almarode / Antonetti

Let's Discuss

- Snowball Discussion
- Discuss one or more of the following questions:
  - How do these instructional practices relate to STEM / STEAM education?
  - How are you already using or supporting the use these instructional practices in the classroom?
  - How can you increase your use or support of these instructional practices?
  - List of classroom discussion protocols: Here
  - Second great list of strategies: Here

Closing Exercise

- Ranked the listed practices from 1 (most) impactful to 13 (least) impactful on student achievement.
- Once you've completed it, compare your answers to the following slides.

Answers

1. Providing formative evaluation to teachers
2. Reciprocal teaching
3. Feedback
4. Teacher-student relationships
5. Professional development
6. Cooperative vs. Individualistic learning
7. Direct instruction
8. Providing worked examples
9. Classroom management
10. Parental involvement
11. Small group learning
12. Using simulations and gaming
13. Homework

John Hattie Visible Learning and Teaching

- www.visible-learning.org

To join our listserv to receive email notices and updates from the GADOE STEM/STEAM program, please send an email with no message to the email address listed below.

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Enables users to find STEM resources, materials, links to STEM schools, grants, competitions, lesson plans, and more.

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@stemgeorgia enables users to receive tweets about STEM updates, grants, scholarships, workshops, information, articles, resources, and more.

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