

**Studio STEM:
Engaging Middle School Students
in Networked Science and
Engineering Projects**

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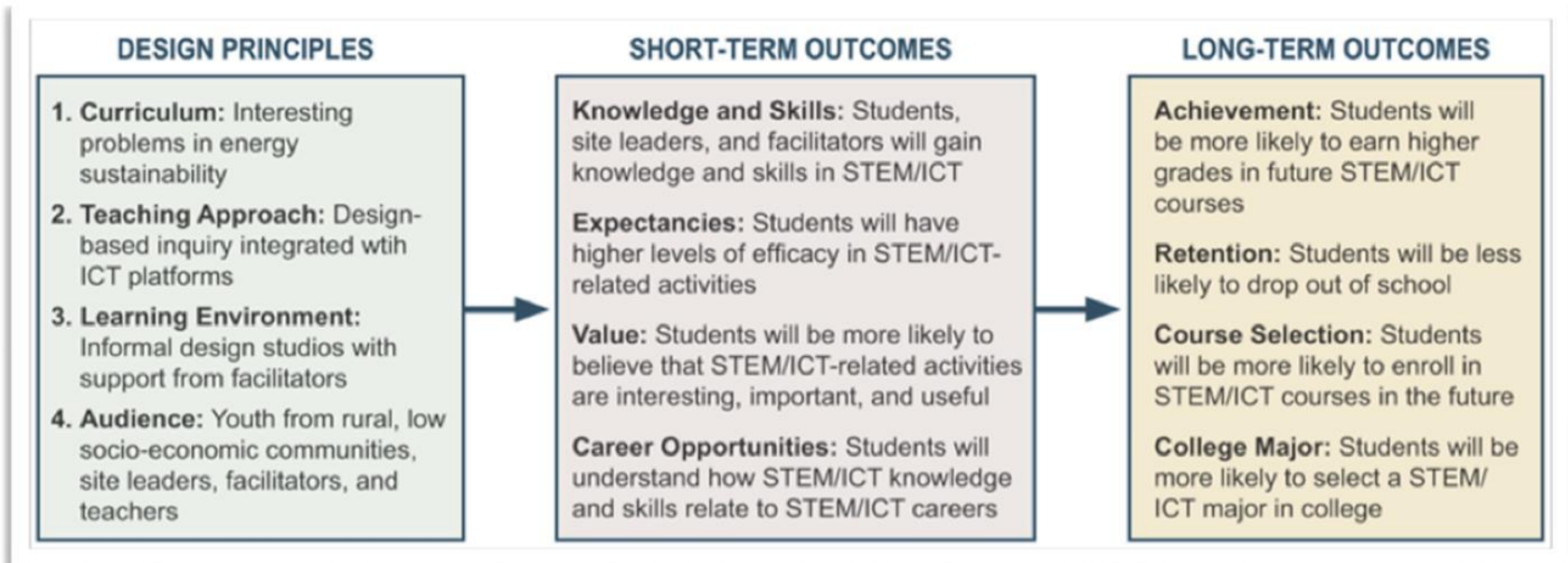
Studio STEM

PROJECT PRINCIPLES

The principal goal of Studio STEM is to:

- engage high needs middle school rural youth in design-based projects related to the science of energy
- that allow them to acquire critical knowledge, skills, and dispositions in STEM,
- while enhancing and extending the learning setting via social media and digital technologies.

Theory of Action



Basics of the Program

- After school program + summer camp
- Teams w/STEM undergrad facilitator + technology
- Six weeks of self-directed inquiry + collaboration
- Culmination w/community night + showcase



Working with youth from Roanoke and New River Valleys

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STRATEGIES FOR INCREASING DIVERSITY

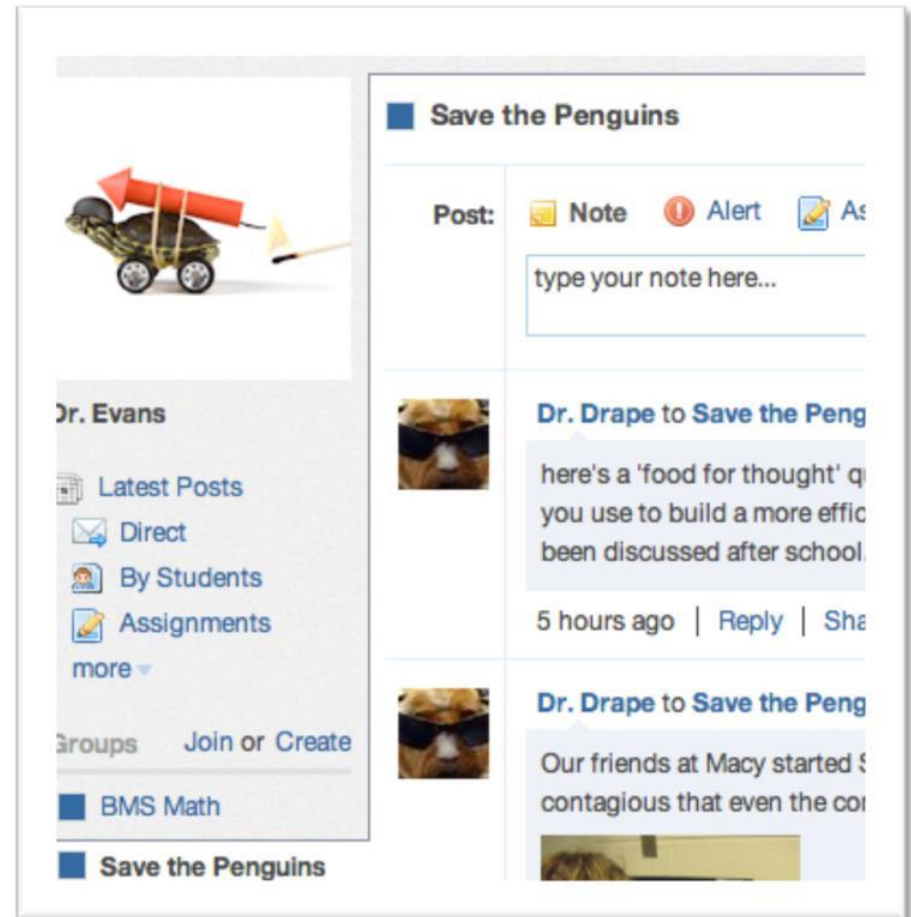
Recruitment Strategies for Rural Settings

- Work closely with school boards, principals, community orgs (4H), teachers & parents
- Understand local needs as well as hindrances (e.g., transportation, household norms, education expectations)
- Sculpt programming to increase likelihood that participants identify with goals & activities
- Leverage existing programs w/mutual goals, e.g., Center to Enhance Engineering Diversity (VT)



Technologies for Engagement

- Webquests that allow freedom to explore beyond school grounds
- Social networking forum, *Edmodo*, that allows for exchanges within and across sites
- Social media to keep stakeholders connected



Lessons Learned

- Facilitation by site leaders & mentors is critical to retainment
- Norms & values of rural communities must be expected at all times
- Resource constraints can *never* be overestimated

Types of Questioning	Pedagogical Features	Example
Socratic	To prompt and guide one's thinking	"What should we do to improve your next design?"
Challenge	To elicit a defense or line of argument	"Why are you putting it together like that?"
Semantic Tapestry	To help "weave" together different ideas; questions from many angles that promote multimodal thinking	"What's in your storyboard that tells me about your design?" "Why do you think it worked?"

Studio STEM

Michael A. Evans, Tiffany Drape, Megan Lopez, Donna Maddox

Web: <http://studiostem.org/>

Facebook: Studio STEM

Twitter: @StudioSTEM

Saving
Animals

Through
STEM

Social
Media

The main goal of Studio STEM is to engage middle school students in interesting projects related to environmental issues through STEM with the use of social media.

Save the Seabirds



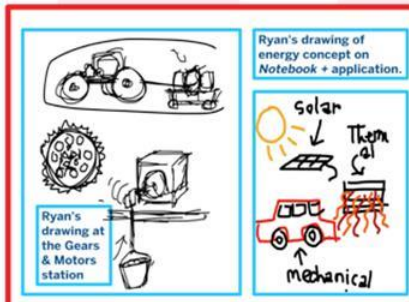
STEM Processes



iPads & Edmodo



Save the Penguins



Studio STEM Team

- Dr. Brett Jones, Educational Psychology, Virginia Tech
- Dr. Carol Brandt, Science Education, Temple University
- Dr. Christine Schnittka, STEM Education, Auburn University
- Dr. Tiffany Drape, Project Director, Virginia Tech