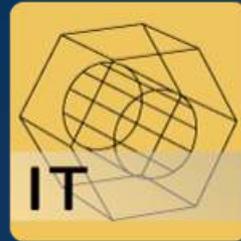


AMP UP Your 8th Grade Curriculum with Integrated Practices



Kassidy A. Bynoe
Shannon Thompson
Griffin-Spalding Schools

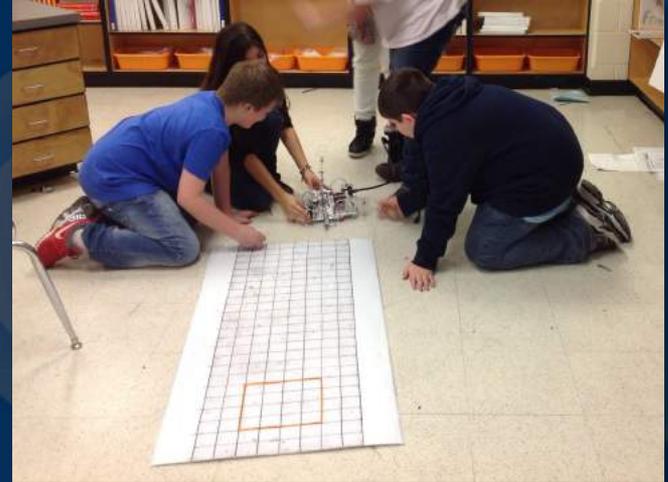


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Period: 10/1/2012--9/21/2017

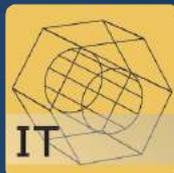
Georgia Tech Center for Education
Integrating Science,
Mathematics & Computing

Advanced Manufacturing and Prototyping Integrated to Unlock Potential (AMP-IT-UP)

- A National Science Foundation Math and Science Partnership to promote workforce development and to identify and cultivate the next generation of creative STEM innovators.
 - Partnership with the Griffin Spalding County School System
 - Impact: > 11,000 students over 5 years



Integrates middle school engineering, science and mathematics to promote STEM learning and entrepreneurship.



Advanced Manufacturing & Prototyping Integrated to Unlock Potential

Program Components

- Middle school math and science modules that promote inquiry and connect with Georgia Tech
- Middle school STEM Innovation and Design exploratory courses that enable students to explore their creativity using robotics and rapid prototyping
- High school engineering courses that focus on design-build challenges
- Extracurricular enrichment for students and teachers



Integrating Themes Emphasize NGSS Practices

Each module focuses on one of these themes:

- **Experimental**

- Planning

Students
answer

Students analyze data and situations that are intentionally murky, and to make decisions based on data, but where there isn't a simple solution and instead they need to address various trade-offs and then communicate and defend their decisions.

- **Data Visualization**

- Analyzing

Students
ex
inco
star
graph

- **Data-Driven**

- Construct

as procedures become standardized.

- Engaging in Argument from Evidence (Practice 7)

Grade Level Modules

Experimental Design: Ocean Blizzard

- Students have to write procedures to determine how to predict where oil from the Deepwater Horizon spill landed at the bottom of the ocean

Data Visualization: Helmet Challenge

- We will complete this today

Decision Making: Skate Park Challenge

- Students use the data gathered from multiple variables to determine which helmet is best for each skater

Exploring Helmet Challenge

Intentions

- One-to-One technology (one device per student)
- Student booklets: Pre-printed one per student
- Student handouts: one per person

Reality

- Small groups (2-3) mainly dependent on teaching style
- Student pages copied, teacher created presentation for material

Use your phone/computer/ipad and go to the following site:

www.tinyurl.com/ampitup8

Engage

Watch Skateboard videos

Talk with students about skating experiences

Explore

- Guide students through text and check for understanding
- Students complete simulations
- Class discussions

Explain

- Class discussion
 - Data trends
 - Simulations
 - Ethics
 - Trade Off

Elaborate

- Different ways to present data results
 - Targeting audience
 - Visual appeal
 - Persuasive writing
 - Matrix to determine weather
 - Which college to apply to

Evaluate

- Student question sheets
- Completed data tables
- Possible presentation over each helmet and protection and why a person should wear a helmet (PSA)

Want to learn more? Visit ampitup.gatech.edu

**New Math & Science
Curriculum is Now
Available for Download**

LEARN MORE AND DOWNLOAD HERE >



Middle School Science Curricula

Math and science curriculum materials are currently still being developed. Requests for curriculum materials will be held and fulfilled when applicable curriculum materials are finalized.

Grade Level: 6

Module / Curricula▲	Description	Supported Georgia Standards	Last Updated	
6th Grade - Science - Data Visualization: "Molten Madness" - Lava Challenge	During this 5 day module, students engage as earth scientists to help a small town that is adjacent to a volcano develop evacuation plans in the event of an eruption. Students develop a procedure to determine how long it takes lava to flow across the landscape, modeling with dish soap. The students use a scale model to investigate lava flow rate. They iteratively use histograms and work together to develop a procedure that controls variables and reduces error. The module covers some basic concepts regarding volcanoes, lava, and igneous rock formation, seeding further exploration of GPS standards later in the semester or year. Module features the work of Georgia Institute of Technology Earth & Atmospheric Sciences faculty working with volcanoes.	<ul style="list-style-type: none">• S6CS5.• S6CS6.• S6CS8.• S6CS9.• S6E5.	Monday, January 30, 2017	Request this Module
6th Grade - Science - Experimental Design: "Shake and Break" - Earthquake Challenge	During this 5 day module, students engage as earth scientists to help a company decide where to build it's new cell phone and tablet manufacturing plant in northern California. Students map 10-year earthquake data to see if the sites have significant activity. Then, they map 40-year data to see a surprising change in the data set within their assigned region and across the larger region their classmates are mapping. Students learn the importance of looking at data over a long time and across a wide geographic area. They create visualizations of these data to make a recommendation to the company about the plant's would be site. The module covers some basic concepts of seismology, plate tectonics, earth's structure, seeding further exploration of GPS standards later in the semester or year. Module features Dr. Andrew Newman's work in GT's Earth & Atmospheric Sciences on earthquake forecasting through land deformation mapping.	<ul style="list-style-type: none">• S6CS7.• S6CS9b.• S6CS9c.• S6E5.• S7CS6.	Monday, January 30, 2017	Request this Module

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