THE
K-12
inVenture ®
CHALLENGE

Dr. Roxanne Moore
G.W. Woodruff School of Mechanical Engineering
Center for Education Integrating Mathematics, Science,
and Computing (CEISMC)

Roxanne.moore@gatech.edu

What is the InVenture Challenge?

Invention

K-12

Recruiting

Engineering

STEM

Entrepreneurship

Curriculum

Teacher-facilitated

Diversity

Sales Pitch

Georgia Tech

Celebration

Project-based Learning

Student Engagement

Patents

Networking

Collaboration

Georgia Tech's InVenture Prize

- Faculty-led innovation competition for undergraduate students at Georgia Tech

- Annual contest that rewards students for big innovations that help society

- Students work independently or in teams to develop and present inventions which will be judged by experts

https://www.youtube.com/watch?v=lhLvqKmEVKs
InVenture 2014 Pitch

Origins

- 2 high school teachers + 1 summer internship
- Piloted in 2012-13
- Ten schools in 2013-14
- Twenty schools in 2014-15 (including elementary)
- About 40 schools 2015-16, all grade levels, reaching over 1800 students in GA.

So far…

- Curriculum materials for High School
- Curriculum materials for gifted 5th grade
- Field trip opportunities
- Online Pitch Day
- InVenture Challenge Expo
- Attendance at GT InVenture Prize

Student Projects
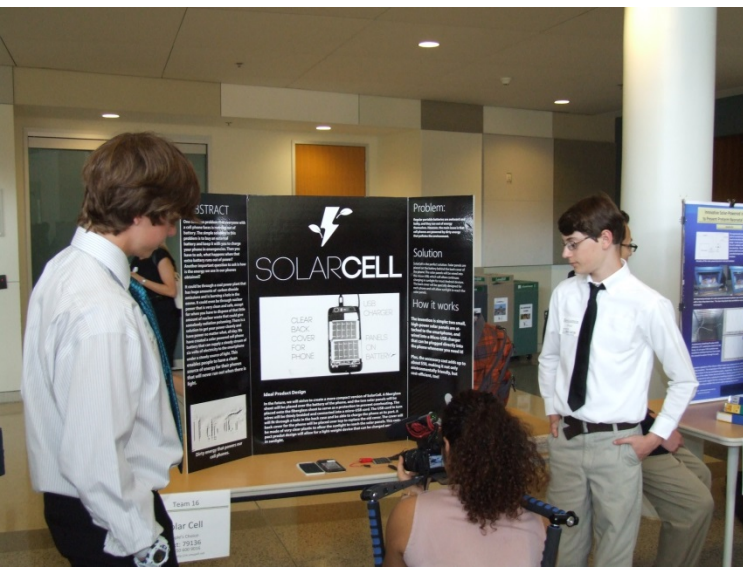
InVenture projects

Why InVenture Challenge?

- Authentic engineering and design
- Authentic entrepreneurial thinking
- Kids choose projects they like
- Empowers kids
- Taken seriously and treated like adults
- Developing teamwork and collaboration skills
- Promotes gender and ethnic diversity

Data Collection

- Teacher surveys
  - Engineering teaching self-efficacy
  - Entrepreneurship teaching self-efficacy
  - Perceptions of student learning
  - Implementation details
- Teacher focus groups
  - Involvement/ recruiting
  - Feedback about the process
  - Most important aspects

Themes from Focus Groups

- Students gained broader view of engineering; inspired by older students (high school students & undergrads) participating and succeeding in engineering, especially women

- Appreciate connection to Georgia Tech, beyond their classroom

- Students issues with prototypes; were more hypothetical versions of the products, rather than real, testable versions

- High-stakes mistakes and consequences were great learning experiences for students

- Students demonstrated empathy by working to solve problems that did not impact them directly

- Teachers would like more access to GT professors, via video clips, e-mails, campus/lab visits, etc.

Illustrative Quotes

"...with the cookie cutter labs we do, there's a right or a wrong. So having students see that they don't have to be focused on an answer but on the process has been really important."

"Failures are part of the process. Learning that has been tremendous for them—that it's okay if we keep trying."

Generally Cool Stuff

- Students at Expo were choosing their college (including GT)
- Students received internships at Expo
- Students were featured on TV during InVenture broadcast
- Some met the president of GT
- Some students (even in 5th grade) are pursuing their projects further

Future Plans

- More schools! All grade levels.
- Curriculum and website updates
  - E.g. Provisional Patent Filing and grants
- More sponsorship and partnership opportunities (funding plans)
- 2016 – InVenture Challenge winners eligible for national Invention Convention in Washington, DC
- STEMIE coalition is working to bring invention and entrepreneurship to all 50 states

Want to get involved?

- InVentureChallenge.gatech.edu
- Contact me: roxanne.moore@gatech.edu

Questions?