

2019 STEM Leadership Alliance Summit

July 7-11, 2019 - Orlando, FL

STEM⁴: The Power of Collaboration for Change

Steven Barbato, Executive Director/CEO

Engaging All students through Active Learning in a Design-Driven Integrative STEM Education Classroom!

- **Integrative STEM Education (I-STEM Education)**
- **Why ALL students?**
- **What Does I-STEM Education Look Like?**
- **A Call To Action!**



Integrative STEM Education



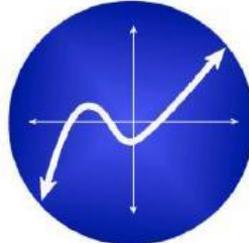
Science



Technology



Engineering



Mathematics



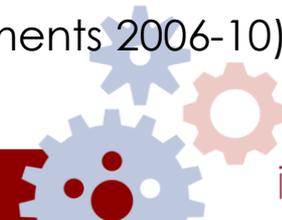
WHY I-STEM EDUCATION? WHY NOW?



Integrative STEM Education is operationally defined as:

"the application of technological/engineering **design based** pedagogical approaches to **intentionally teach content and practices of science and mathematics education through the content and practices of technology/engineering education**. Integrative STEM Education is **equally applicable** at the natural **intersections** of learning within the continuum of **content areas, educational environments, and academic levels**" (Wells & Ernst, 2012/2015)

(as adapted from Wells/Sanders VA Tech program documents 2006-10).

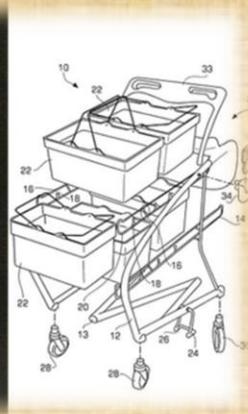


What “STEM” Looks Like

- Ted Talk Video of Jane Chen’s Project!
 - “A Warm Embrace That Saves Lives!”



IDEO and Shark Tank





I-STEM Education = STEM Literacy

- **Connects Learning**
- **Engages ALL students**
- **Motivating**
- **Authentic/Contextual**
- **Increases rigor**



education

Engineering

STEM

curriculum

Science

Technology

Mathematics teaching

mathematics

engineering

part science program

Technology

revolutionize
time
solve
transform
applications
engage
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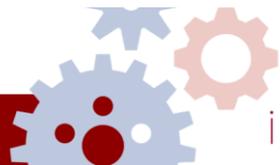
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STEM⁴: The power of collaboration for change

A joint document authored by Advance CTE,
Association of State Supervisors of Mathematics,
Council of State Science Supervisors, and
International Technology and Engineering Educators Association

STEM Education Policy Collaborative

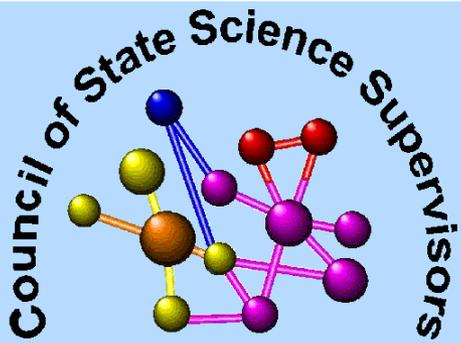
Cooperatition! = Gracious Professionalism

The power of collaboration for change

ADVANCE >>> CTE

 ASSOCIATION OF STATE SUPERVISORS OF
MATHEMATICS

CCSSO 
Council of Chief State School Officers


Council of State Science Supervisors

 **ITEEA**
Technology and Engineering bring STEM to Life!

 | **NEXT GEN
EDUCATION, LLC**

 **TEXAS
INSTRUMENTS**

The Major Issues

- » Lack of STEM preparedness
- » Many STEM careers have not yet been envisioned
- » Lack of Equity

Three Main Principles

Principle 1.

STEM education should advance the learning of each individual STEM discipline.

Three Main Principles

Principle 2.

STEM education should provide logical and authentic connections between and across the individual STEM disciplines.

Three Main Principles

Principle 3.

STEM education should serve as a bridge to STEM careers.

Why does this matter?

» Student engagement

» Relevance

» Funding opportunities

Recommended Actions

- » Ensure high-quality STEM learning
- » Increase access and equity for students
 - » Provide professional learning opportunities for teachers.

ITEEA Reach Challenge!

Brainstorming STEM PROJECTS for next school year?

- ✓ MUST: Bring STEM skills to life in a real-world, meaningful way.
- ✓ MUST: Inspire students to innovate ways to help their community .
- ✓ MUST: Include pre-made lesson plans, activities, worksheets + slides.
- ✓ BONUS: Earns your school grant opportunities and awards.

Found it!



ITEEA Reach Challenge!

Reach Challenge



Bringing STEM to Life
through an Impactful
Adaptive/Assistive
Technology Challenge

Overview



Welcome to the REACH Challenge Toolkit! This toolkit provides educators and team leads with everything they need to complete this design-thinking project. Each section includes ready-made lesson plans, slide presentations, worksheets, hands-on activities and inspiring explorations aligned with Next Generation Science Standards (NGSS). The toolkit is designed bring technology and engineering to life for high school and college students, giving them the opportunity to use their STEM skills to help overcome human challenges for social good, making a real-world difference in the lives of those around them.





Submission Guidelines

Students will learn the details of the REACH Challenge, including a sample submission. This section provides teams with tips on finding a User-Expert, product discounts, templates, and tips on technical writing, photography and videography.

[DOWNLOAD](#)



Assistive Technology

Students will explore the world of adaptive and assistive technology, as well as why these technologies are critically important for those with ability challenges. The exploration will include case studies, resources, and an inspiring lesson on the power of inclusiveness.

[DOWNLOAD](#)



User-Centered Design

Students will create a piece of adaptive technology as they develop a high-level of understanding of User-Centered Design, where the engineer includes its end user throughout the design process, which is filled with iteration. This section includes a fun lesson on the importance of failure.

[DOWNLOAD](#)



Empathy + Safety

Students will learn how empathy and safety methods are applied to each step in the User-Centered Design process. This section includes an activity on listening, and how to conduct a good user interview to obtain qualitative and quantitative data.

[DOWNLOAD](#)



Engineering Prototypes

Students will build a working prototype of their idea, applying what they've learned about User-Centered Design. Tips, tricks and resources for prototyping will be taught through hands-on activities as well as explorations and slides on common mechanisms and control systems.

[DOWNLOAD](#)



Intellectual Property

Students will take on the role of an entrepreneur as they learn how to present their innovation to the world. This section includes information about open source options and the patent process, as well as tips on protecting intellectual property.

[DOWNLOAD](#)



**Be a part of ITEEA's STEM Showcase
Baltimore, MD March 11-14, 2020**

Preview of 2019 STEM Showcase

<https://tinyurl.com/yxpbma2j>



We hope to see you and ALL your colleagues at ITEEA's 82nd Annual Conference in Baltimore, MD

March 11-14, 2020

Students Who Study Technology and Engineering
"Bring STEM to Life!"





Website RESOURCE LINKS!

<http://www.ITEEA.ORG>



Request Preview Access to EbD courses



Or Google "EbD BUZZ Resources" and scroll down to [Request for EbD™ Course Review Access](#)

STEM⁴: The Power of Collaboration for Change



[ITEEA Reach Challenge for your students!](#)



[ITEEA STEM School of Excellence Program!](#)





INTERNATIONAL TECHNOLOGY AND ENGINEERING EDUCATORS ASSOCIATION

STEM CENTER™ FOR TEACHING AND LEARNING (STEM CTL™)

The Educator's Resource for Implementing Integrative STEM Education

GLOBAL STEM



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SCHOOLS
ORGANIZATIONS
STUDENTS

[MANAGE PROFILE](#) | [BENEFITS](#)

A STANDARDS-BASED MODEL PROGRAM



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UPCOMING CONFERENCE

MARCH
11-14 2020
BALTIMORE
MD

[LEARN MORE](#)



LATEST IN STEM

[+ MORE](#)



JULY 10, 2019

Be Part of the 2020 ITEEA STEM Showcase: It's Where All the COOL Ideas come to Hang Out!

ITEEA Brings Teachers and Ideas Together

[+ READ MORE](#)



JULY 10, 2019

We interrupt your summer with an important reminder from ITEEA!

NOW is the time to gather your thoughts and apply for the opportunity to shine a light on the excellent work that you and/or your colleagues are doing to bring technological and engineering literacy to ALL students!

[+ READ MORE](#)



JULY 8, 2019

ITEEA Presents on Empowering Educators to Implement Effective Integrative STEM Ed at STEM Leadership Alliance Summit

The STEM Leadership Alliance is a collaboration of five major STEM organizations including ITEEA that work collaboratively to disrupt the manner in which integrated STEM is implemented.



JULY 8, 2019

Veterans Make Great STEM Teachers: Scholarships for Veterans from ITEEA

Veterans who are currently enrolled as students pursuing either an undergraduate or graduate degree as a technology and engineering teacher are encouraged to apply for one of two available scholarships before the July 15 deadline.

STEM EVENTS

[+ MORE](#)

JUL 25 2019

VTEEA 2019 Summer Conference (Virginia)

[+ MORE INFO](#)

JUL 26 2019

STEM Forum & Expo

San Francisco, Ca
Moscone Center West
747 Howard Street

[+ MORE INFO](#)

JUL 26 2019

Kentucky Career and Technical Education (CTE) Summer Program

Louisville, KY
Galt House Hotel and Suites

[+ MORE INFO](#)

Connect with ITEEA



Engaging in Meaningful Partnerships

“After mutual respect and understanding are achieved, it is possible to establish real, sincere relationships, which is the foundation of a solid long-term collaboration.” - Ron Garan, NASA Astronaut

ITEEA BALTIMORE

MARCH 11-14, 2020



Be an active Participant! Bring STEM to Life!

The bottom line is we are here to support you and your colleagues!

Be ACTIVE PARTICIPANTS! :-)

Be ACTIVE LEADERS! :-)

FUTURE CONFERENCE DATES

Denver – March 24-27, 2021 • Orlando – March 9-12, 2022
 Minneapolis – April 12-15, 2023

www.iteea.org



Conference MotePad!

MAY 2019

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JULY 2019

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SEPTEMBER 2019

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MARCH 2020

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APRIL 2020

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