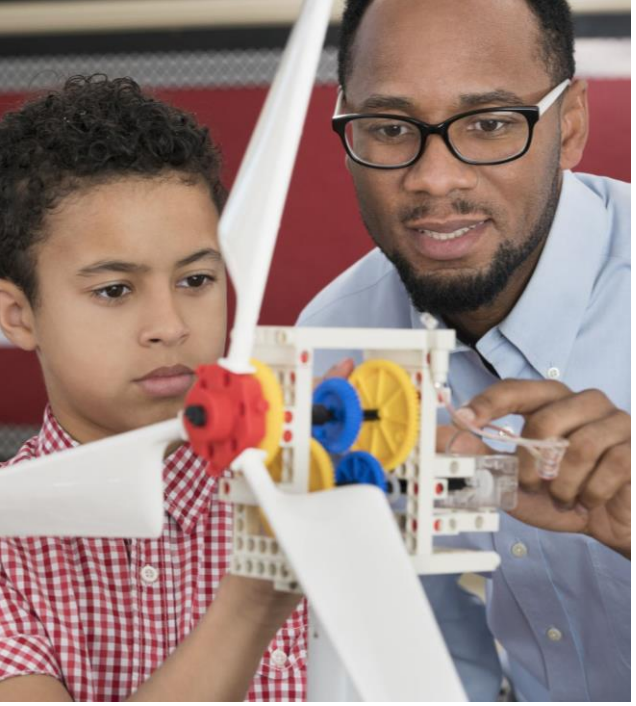
Creating the Next Generation of Problem Solvers

David Coronado
Senior Program Officer
Founder, InventEd
davidc@lemelson.org

The Lemelson Foundation
improving lives through invention



What's the Issue?

- The grand challenges of today and tomorrow need a diversity of inventive problem solvers with the creative ideas, and robust experiences needed to address complex problems.

- Young people need the skills and mindsets to thrive in a future yet to be determined, in industries yet to be imagined, and in jobs yet to be created.

Invention and Innovation Pathway

VENTUREWELL™
idea to impact

K-12 → Higher Education → Entrepreneurship

The Lemelson Foundation
improving lives through invention

inventEd

Mindsets of Inventors

- Empathy
- Creativity
- Curiosity
- Resilience
- Passion
- Resourcefulness
- Tolerance for Ambiguity and Complexity
- Calculated Risk-Taking

Smithsonian. Report of the Committee for Study of Invention, 2004

The Lemelson Foundation
improving lives through invention

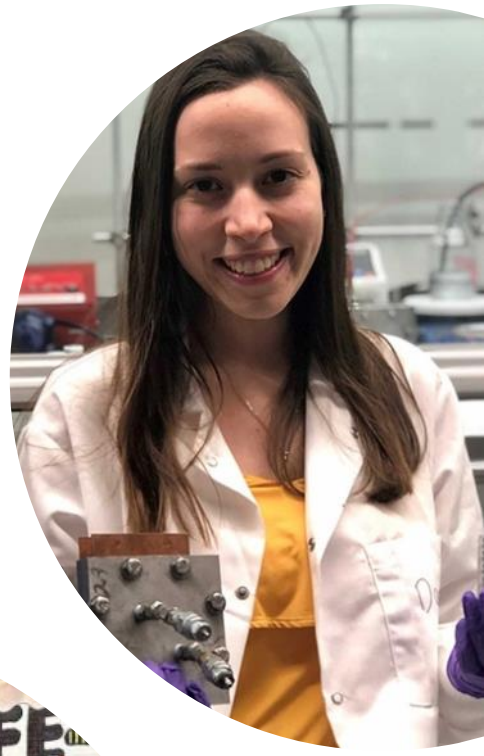
inventEd

Our Current Education Practices Focus on Passive Learning

But We Need Real-World Learning Across the K-16 Continuum

Invention Education

Facilitation of educational engagement in which people find and define problems and design and build new, novel, useful, and unique solutions that contribute to the betterment of society



InventEd. (2020a, October 20). Researching Invention Education | InventEd. InventEd | Invention Education Research, Resources & Curricula.

Common Elements of Invention Education Efforts

- A problem-finding or defining stage
- Open-ended inquiry to solve real-world problems
- Teamwork and collaboration within and beyond the team
- Mentors and others from the larger community
- Iterative and recursive learning and design cycles
- Embracing learning from failure and uncertainty
- Educators as guides, mentors, or coaches who learn alongside students

Teachers' Reasons for Engaging in Invention Education

- Connecting students to real world experiences
- Opportunities to help students integrate and apply knowledge
- Excitement
- Connecting with community
- Interest in problem solving of real-world challenges
- Equity and social justice
- Process of learning

The Lemelson Foundation
improving lives through invention

inventEd

Transdisciplinary Learning

White House. (2022, November). *Convergence Education: A Guide to Transdisciplinary Learning and Teaching*. The White House. https://www.whitehouse.gov/wp-content/uploads/2022/11/Convergence_Public-Report_Final.pdf

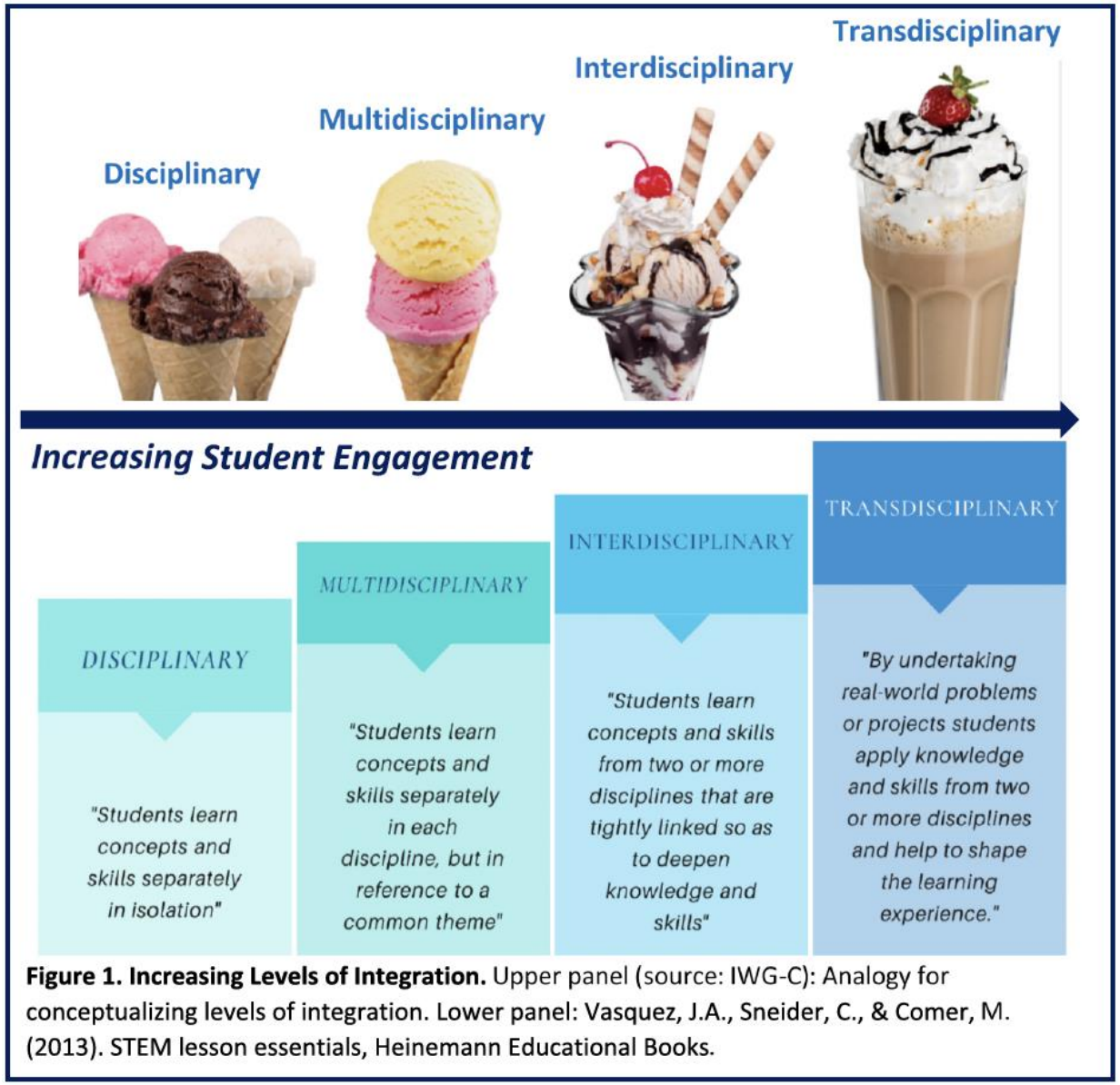


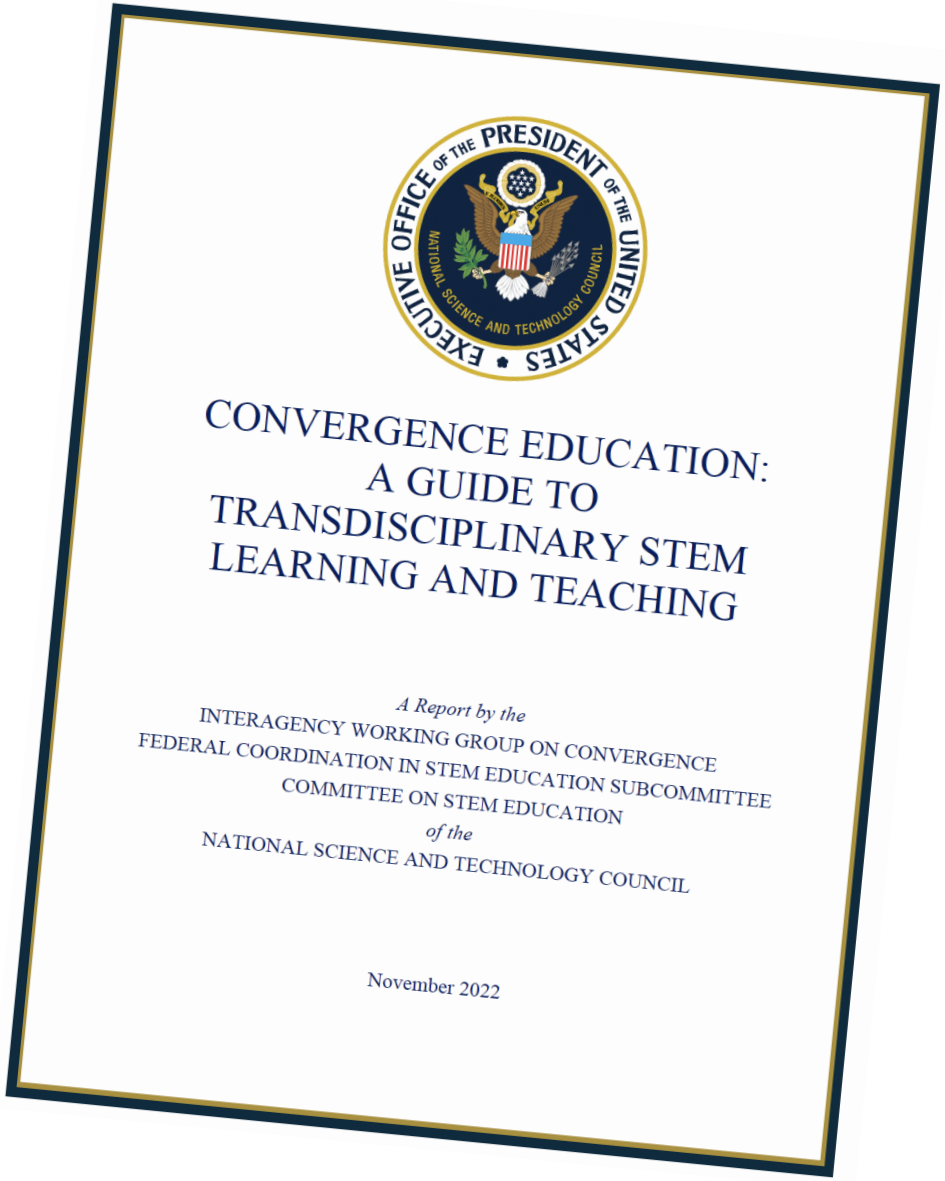
Figure 1. Increasing Levels of Integration. Upper panel (source: IWG-C): Analogy for conceptualizing levels of integration. Lower panel: Vasquez, J.A., Sneider, C., & Comer, M. (2013). STEM lesson essentials, Heinemann Educational Books.

The Lemelson Foundation
improving lives through invention

inventED

Invention Education cited as an Established Method

"Invention Education has demonstrated increased student engagement in STEM while contributing to the development of characteristics, skills and mindsets needed for student pathways to innovation and entrepreneurship."



White House. (2022, November). *Convergence Education: A Guide to Transdisciplinary Learning and Teaching*. The White House. https://www.whitehouse.gov/wp-content/uploads/2022/11/Convergence_Public-Report_Final.pdf

Conceptualizing the Pathway to Invention

- Students need a pathway of rich and multiple transdisciplinary experiences, such as invention education to prepare them for the future K-20
- The development of the pathway must intentionally address the need for diversity, equity and inclusion in the education and invention ecosystem.
- Educators will more deeply engage diverse sets of student's interest in learning and skills development through transdisciplinary learning, demonstrating a commitment to belonging and social justice.

Join Us to Help Build this Field of Teaching & Learning

The InventEd Network is a coalition of K-12 educators, nonprofit leaders, researchers, government agencies, funders, and others who are building and supporting the field of Invention Education. We commit to the power of ***collective action*** to bring Invention Education to all students.

The Lemelson Foundation
improving lives through invention

Inventioneducation.org

inventEd