

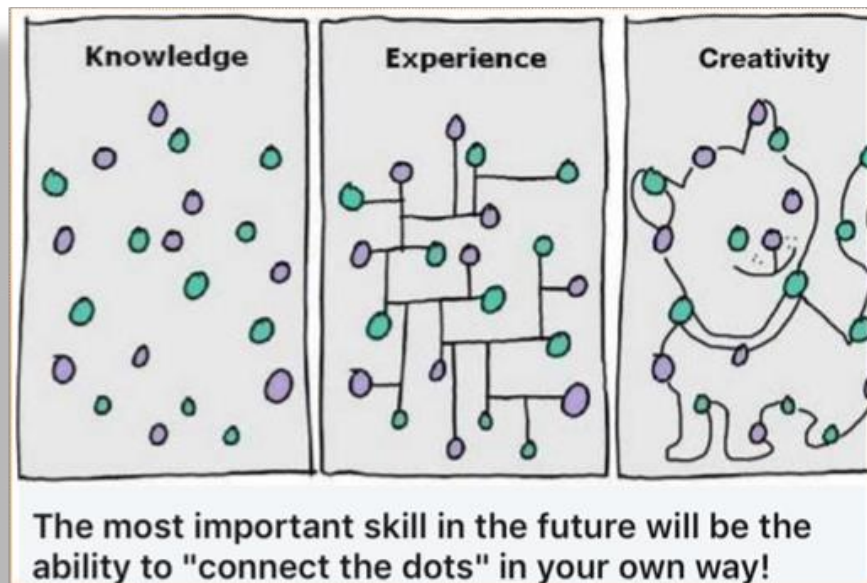


STEAM Education for a Reality Oriented and Fun Learning Environment

Alessandro Pumpo

**euro
pass** teacher
academy

- By integrating Art and Design with STEM subjects, schools can strengthen students' abilities:
 - to be creative and flexible problem-solvers;
 - to explore different ideas;
 - to recognize failures as opportunities for discovery;
 - to communicate well with others.
- The arts challenge students:
 - to explore the human condition;
 - to attune to the emotional, social and cultural world around them;
 - to learn to feel empathy toward others.
- Inspired by arts, problem-solving requires to learn:
 - to collaborate with others;
 - to feel the drive to developing solutions the world needs.
- In STEAM projects, students learn by inventing, creating and designing, i.e., by understanding the true meaning of design.



“Design is not just what it looks like and feels like. Design is how it works.”

Steve Jobs
Former CEO Of Apple, Inc.

- The approach to STEAM varies from school to school.
 - Some schools fully immerse the arts in STEM subjects, developing a full year's STEAM curriculum.
 - Other schools pick and choose projects to integrate throughout the year.
- Many schools create physical spaces, called "makerspaces," as a home base for STEAM.
 - Makerspaces are often converted storage closets or computer labs — similarly to a lab or studio.
 - Students can work in makerspaces on STEAM projects independently, in small groups or with a whole class.

THE STUDY OF CRAFTSMANSHIP DURING COLONIAL TIMES

- Fourth-graders at Fox Meadow Elementary School in Scarsdale, New York studied the ultimate maker period of American history—colonial times.
- “If you didn’t make it back then, you didn’t have it,” Principal Duncan Wilson says.
- The students examined objects from the time period, such as wooden tools and twists of tobacco, questioning the design of the objects and the materials used to build them.
- They then used balsa wood, Model Magic and paint to design their own models of colonial items, such as public stocks and spinning wheels, to gain a better understanding of the craftsmanship required of Americans during that point in history.

PROTECTING THE JEWELS AND LEARNING LOGIC

- Second-graders at Fox Meadow Elementary School in Scarsdale, New York are learning about sequencing and logic through creating jewelry boxes with theft detectors built in.
- The students are designing the jewelry boxes and using littleBits electronic building blocks to install sensors and alarms in the boxes.
- “What I like about littleBits is that it teaches them basic logic around circuitry, and makes it really easy for them to join the Bits together themselves,” says computer teacher Peter McKenna.

- Sixth-graders at the Marymount School in New York City combined their studies of recycling and fashion design by creating dresses out of recycled or repurposed materials.
- One student designed a dress made only of old subway MetroCards; another used just airline boarding passes.
- The students modeled their creations at a fashion show attended by designer Betsey Johnson.

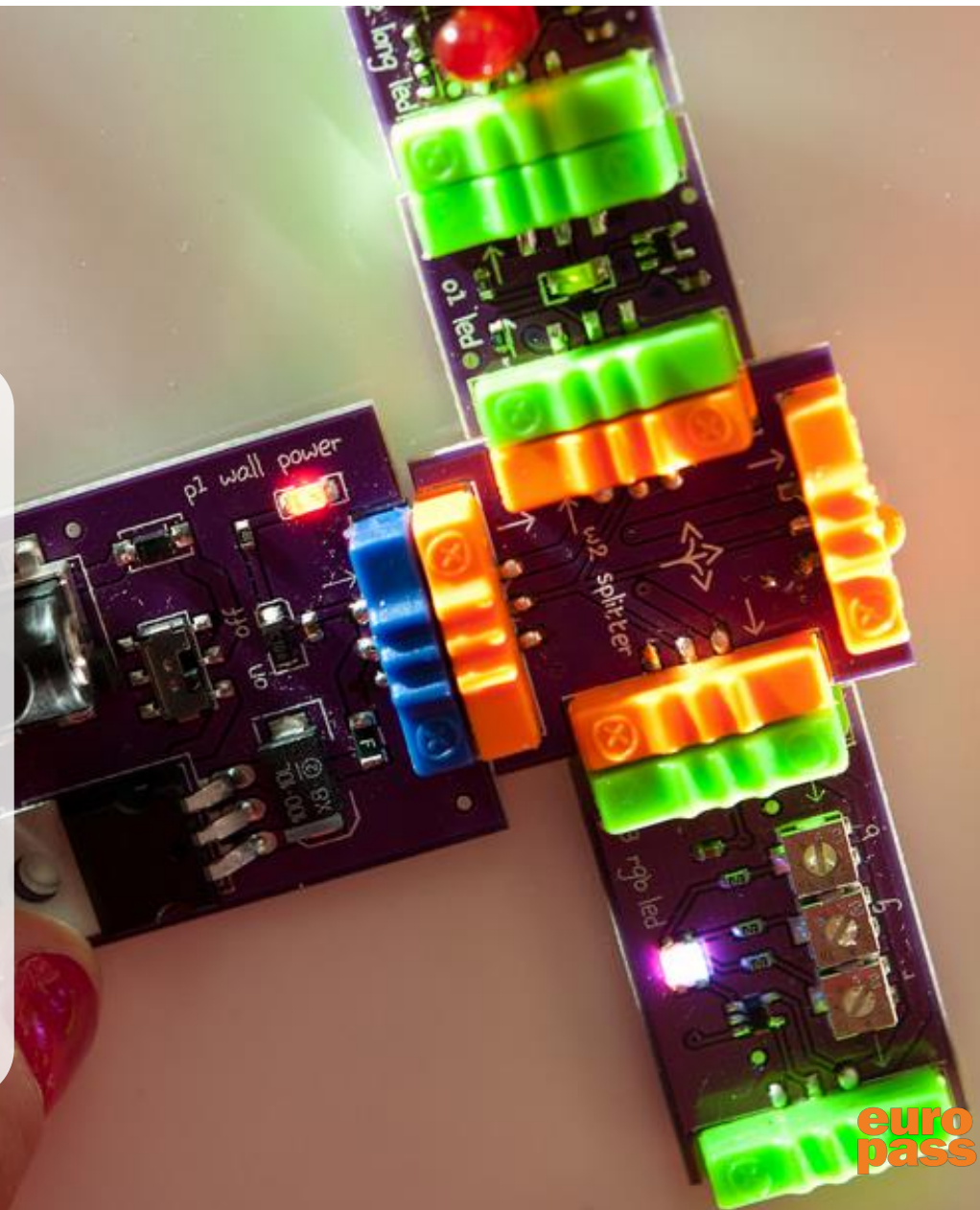
FASHION DESIGN WITH A GREEN TWIST

- Also at Marymount School in New York, teachers used littleBits electronic building blocks to show the school's board of directors the importance of STEAM education.
- A language arts teacher
 - broke down a poem into fragments, then sequenced the words together to reveal the beauty of the words when placed together
 - sequenced littleBits modules together to create a machine
- The symmetry of the words and modules helped the board members and teachers grasp the benefits of intertwining disciplines.

POETRY AND CIRCUITRY, SIDE BY SIDE

- For the past three years, students from 50 K–12 schools gather at the campus of Florida Southwestern College for Collier County Public Schools' iSTEM competition.
- High school teams compete in a geocaching event.
- Middle-school teams compete by building and racing solar cars.
- Elementary student teams participate in a littleBits competition, using the electronic building blocks to build a device with multiple functions.

CELEBRATING INVENTION WITH THE COMMUNITY



euro teacher
pass academy