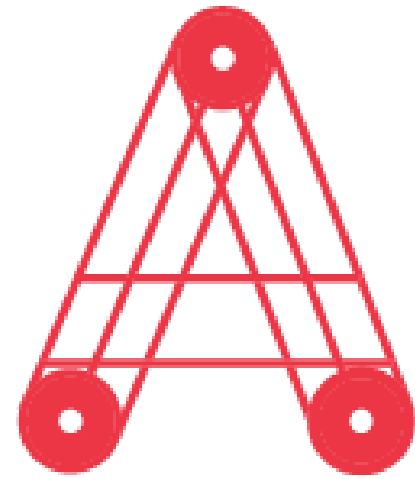
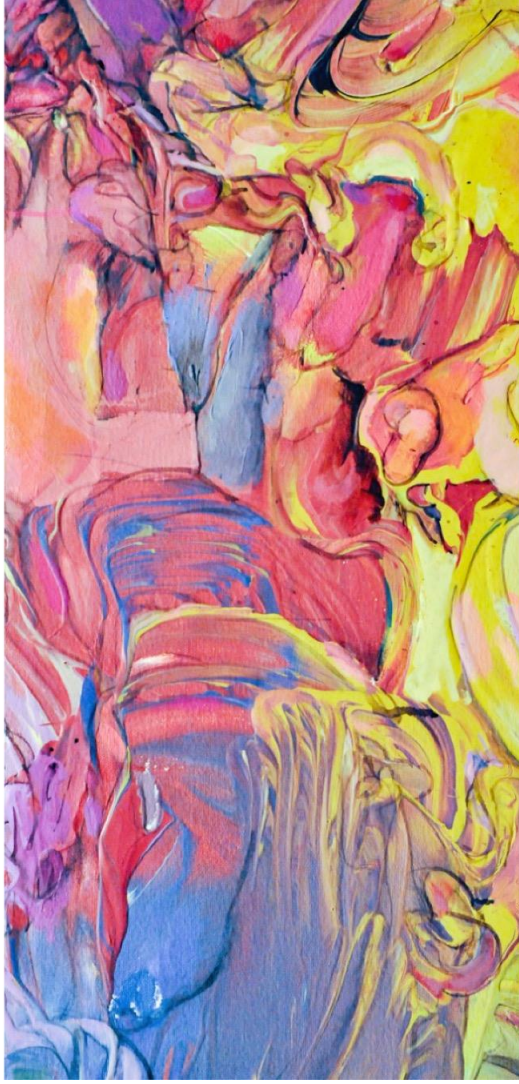


# S T E A M



STEM to STEAM at Rhode Island School of Design

# first-year foundation studies











**LIVE**

**10:30 am ET**

**SCIENCE & TECHNOLOGY ENTERPRISE**

**REP. SUZANNE BONAMICI**

**D-Oregon, 1st District**

**Hillsboro, Astoria, McMinnville**

**C-SPAN 3**  
c-span.org

**NEXT** ▶ **"NO LABELS" NATIONAL MEETING AFTER THIS EVENT**

*“(vi) integrating other academic subjects, including the arts into STEM programs to increase participation in STEM, improve attainment of STEM related skills, and promote well-rounded education;”*





**“Since most environmental problems are complicated, our goal as educators is to teach, not preach, and to present students with a range of ways to understand a problem and devise a solution.”**

*Damian White, Liberal Arts*

# BHAG

US Economic Competitiveness  
Legitimacy

## GOVT POLICY IMPLEMENTATION

Caucus  
Resolution  
Inter Agency Committee

### LIST OF TARGETS

Outreach Plan:  
Alumni  
Trustees  
Etc.

### TOOLS

Open STEAM Map  
Website  
Petition

STEAM ADVISORY GROUP



# STEAM

**2010**

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
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**2011**

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**2012**

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
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**2013**

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
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**2014**

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
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# STEAM

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2012

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2013

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2014

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# STEAM

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# STEAM

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113TH CONGRESS  
1ST SESSION

# H. RES. 51

Expressing the sense of the House of Representatives that adding art and design into Federal programs that target the Science, Technology, Engineering, and Mathematics (STEM) fields encourages innovation and economic growth in the United States.

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## IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 4, 2013

Mr. LANGEVIN (for himself, Ms. BONAMICI, Mr. CICILLINE, Mr. SCHOCK, Mr. HOLT, and Mr. POLIS) submitted the following resolution; which was referred to the Committee on Education and the Workforce, and in addition to the Committee on Science, Space, and Technology, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

---

A woman with blonde hair tied back, wearing a colorful patterned dress, is operating a large industrial textile machine. The machine is green and has a large roll of fabric with a colorful geometric pattern (red, yellow, blue, and white) being processed. The background shows a factory environment with shelves and other equipment.

**“Bringing students into local factories allows me to introduce artists and designers to the process of manufacturing. Seeing a skilled machine operator at work opens the door for students to question their own making process.”**

*Meg DeCubellis, Apparel Design*



# STEAM by Region

## Northeast

Selected Examples of STEAM in Action



Annual R&D investment

IBM

\$6B

As top US patent recipient

20 yrs

CEOs who identified creativity as the number one leadership competency of the future (2010 IBM Global CEO Study)

1,500



Partnership for 21st Century Skills

Crayola

P21

Creativity, Critical Thinking, Communication, Collaboration

4Cs

Champion Creatively Alive Children, a program designed to empower school leaders, teachers and communities with inspiration, knowledge and tools that can unleash the imagination and develop the originality in every child.



Blue School

Blue School's educational model integrates a progressive approach to education that balances academic rigor and academic enchantment. Students approach learning through a project-based curriculum that puts inquiry, play, art and creative thinking at its core.

"The promise of Blue School is to face the changing global landscape with a vision for education, ... to launch our next generation's change-makers, innovators, artists, thinkers and inventors." – Allison Gaines Pell, Head of School

STEAM represents the economic progress and breakthrough innovation that comes from adding art and design to STEM (Science, Technology, Engineering and Math) education and research: STEM + Art = STEAM. The tools and methods of design offer new models for creative problem-solving and interdisciplinary partnership, introducing innovative practices of design thinking into STEM education and research. To realize this potential, scientists, artists

and designers must develop new ways of working together and new modes of research and education. This will keep America at the forefront of innovation, ensuring our sustained global leadership and cultural prosperity in the 21st century.

Income statistics from 2011 marketwatch.com reports. Unmarked statistics from respective organization websites.

United Technologies Corporation



16th

Largest U.S. manufacturer

\$3.9B

Annual R&D investment

"We are a company founded on innovation and believe the arts, like science and engineering, both inspire us and challenge our notions of impossibility."

– George David, CEO (psychologytoday.com)

Rhode Island School of Design

General Electric



301,000

Employees

\$66.7B

Gross income

"What designers do is to integrate, they are the ultimate integrators and I think that's a critical part of innovation, and that's why more designers are becoming part of innovation teams." – Beth Comstock, CMO (forbes.com)

RISD Office of Government Relations  
Carly Ayres (BFA ID '13)  
Sarah Pease (BFA FRN '13)  
Ryan Murphy (BFA ID '15)

[www.stemtosteam.org](http://www.stemtosteam.org)



# STEAM by Region

## West

Selected Examples of STEAM in Action



### Adobe Systems Incorporated

Survey participants who wish they had more exposure to creative thinking as students  
(Adobe's "Creativity and Education: Why it Matters" Study)

82%

Funds to invest in companies that leverage Adobe technologies

\$100M

"Around the world, educators are already fostering creative thinking with their students. Creativity is a critical competency that should be taught within all disciplines. This will drive the global economy and the career success of the next generation." – Jon Perera, VP of Education, Adobe



### California College of the Arts

Students

2,000

CCA is at the institutional forefront of integrating Art + Design into environmental sustainability issues.

"Designers can create objects, machines, and aesthetics that make a difference in people's lives and in our environment." – Christine Metzger, faculty ([stemtosteam.org](http://stemtosteam.org))



### High-Tech High

Students

4,500

Graduate and attend higher education

100%

The High Tech High Media Arts school implements the High-Tech High design principles supported through a strong science foundation.

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### Apple Inc.

25+

Years dedicated to developing products that engage all students

\$156B

Sales/revenue (2012)

Business leaders recognize that the new competitive frontier in the world of work is place-based innovation—the ability to innovate again and again within one environment. What this means for education is that learning, creativity and innovation skills are critical to future success in life and work and should be an integral part of a 21st century curriculum.

### Intel

82,500

Employees

\$54B

Net revenue

Host of the SciArt Series, a collection of art that celebrates the scientific breakthroughs at the Intel International Science and Engineering Fair.

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# STEAM by Region

## Midwest

Selected Examples of STEAM in Action



U.S. researchers

Time that employees are encouraged to spend working on their own projects

*"Design brings innovation to life with arresting beauty, captivating stories, and exceptional attention to detail. We search for unexpected solutions that create passion: stepping beyond function towards the iconic." – Kevin Gilboe, Head of 3M Global Design*



Americans for the Arts Best Companies Supporting Arts in America top 10 winner

Artists-in-residence at Kohler Arts/Industry Program since 1974

*"We try in each of our businesses to live on the leading edge in the design and technology of product and process."*



### Art Institute of Chicago

Science, Art, and Technology began as a year-long course offered by The Art Institute of Chicago to Chicago Public School science teachers interested in exploring the relationship between science and art within a museum setting.

*"Science and art naturally overlap. Both are a means of investigation. Both involve ideas, theories, and hypotheses that are tested in places where mind and hand come together—the laboratory and studio." – Robert Eskridge*

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3M

3,800

15%

### Kohler Co.

2011

400+

### Boeing

200,000

Employees

\$17B

Gross income

*"At Boeing, Innovation is our lifeblood. The arts inspire innovation by leading us to open our minds and think in new ways about our lives - including the work we do, the way we work, and the customers we serve." – W. James McNerney, President & CEO*

The Boeing Company has supported 32 grants through the Boeing/Arts and Education Council Collaborative Grant program since 2008, giving approximately \$12 million each year.

### Proctor & Gamble

#25

"World's Most Innovative Companies" ranking by Bloomberg Businessweek

4.6B

People in the world using P&G products

*"I want P&G to become the number-one consumer-design company in the world, so we need to be able to make it part of our strategy. We need to make it part of our innovation process." – A.G. Lafley, P&G CEO (fastcompany.com)*

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# STEAM by Region

## Northwest

Selected Examples of STEAM in Action



### Wieden + Kennedy

Collaborator/sponsor of the Portland Incubator Experiment

**P.I.E.**

Creativity's Agency of the Year

**2012**

At the launch of W+K Garage, Partner and Global Coexecutive Creative Director John C. Jay described the intersection of technology, culture, arts, science and business in our everyday lives, and noted the importance of being able to think, communicate and act globally.



### Nike

Gross income

**\$10.5B**

Collaborators with Oregon College of Art and Craft

**OCAC**

Number of Nike designers to work with OCAC as of June 2012 ([oregonlive.com](http://oregonlive.com))

**260**

"At NIKE, Inc. we run a complete offense, and it's based on a core commitment to innovation." – Mark Parker, CEO

### Right Brain Initiative



**11,000** Students affected by RBI programming

**44** Schools are expressing, exploring, imagining, creating, and using the full measure of their minds

The RBI program doesn't replace existing arts education. Instead, the arts are woven into core curriculum, giving teachers new tools to engage students in a creative process that connects back to other subjects.

### Quatama Elementary



**1 of 4** Hillsboro District STEM schools

"We're trying to reach all different kinds of learners, trying to engage students in stuff that matters so that they will be excited about learning, reading and math."

– Janis Hill, Principal ([portlandtribune.com](http://portlandtribune.com))

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# STEAM by Region

## South

Selected Examples of STEAM in Action



### Sesame Street

Children influenced by programming

80M

Season dedicated to STEAM

43rd

*"As STEM topics continue to be a critical area of a preschooler's early education, it is important to allow children to explore these concepts through various channels, especially the arts. Incorporating the arts into our STEM curriculum was an exciting and natural addition, as Sesame Street has always used music, visual and performing arts as tools to educate and entertain children." – Dr. Rosemarie Truglio, SVP of Education and Research at Sesame Workshop*

### Reading Is Fundamental



400M

Books distributed since 1966

35M

Children impacted by RIF since 1966

*"This initiative is about inspiring the innovators of tomorrow early with engaging books and resources that connect the dots between science, technology and the arts from broad-ranging cultural perspectives. From DaVinci to Madame C.J. Walker to Steve Jobs, our greatest innovators are those who are as creative as they are precise, as imaginative as they are methodical. STEAM-based learning aims to nurture every facet of innovation." – Carol H. Rasco, president and CEO of RIF*

### Texas Instruments



\$5M

Committed to launch STEAM academy in Plano, TX ([plisd.edu](http://plisd.edu))

\$150M

Invested to support education in the past five years

In the U.S., TI actively advocates at the local, state and national levels for legislation to improve STEM education, assessment and accountability, and to support a range of initiatives at all points in the education pipeline.

### Drew Charter School



880+

K-8 students

2012

Georgia Charter School of the Year

The STEAM model challenges students to excel through a rigorous academic curriculum based on the five core focus areas – Science, Technology, Engineering, Arts and Mathematics – balanced by enrichment opportunities that support classroom learning.

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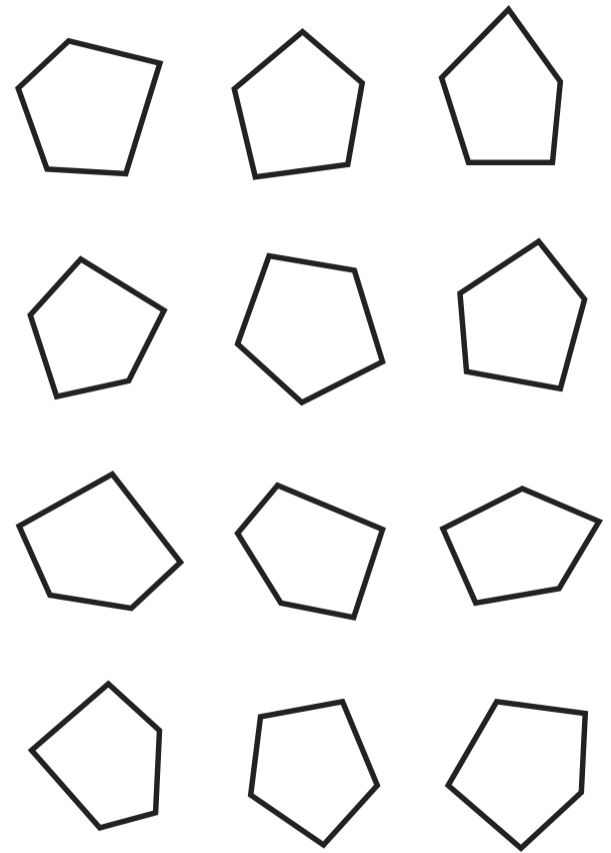
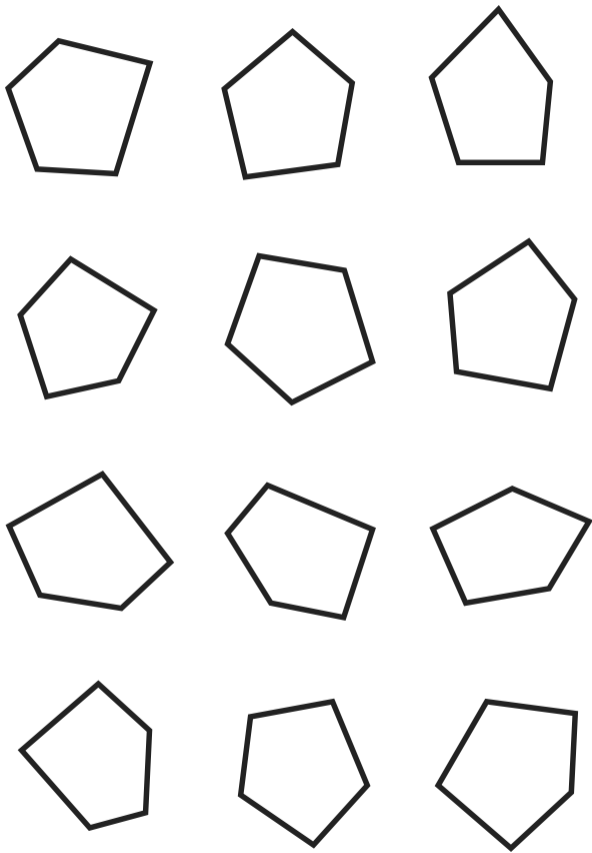
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A group of adults and children are gathered around a large wooden mechanical structure on a light-colored wooden floor. The structure appears to be a complex assembly of wooden beams, pulleys, and ropes, possibly a model of a machine or a large-scale toy. Several people are kneeling or sitting on the floor, focused on their work. One woman in a light green shirt is standing on the left, holding a red book. Another woman in a light blue shirt is standing in the center, looking at the structure. A man in a light blue shirt is standing on the right, looking at the structure. A woman in a teal dress is kneeling on the right, looking at the structure. A woman in a white shirt is kneeling on the right, looking at the structure. A child in a yellow shirt is kneeling on the right, looking at the structure. A child in a blue shirt is kneeling in the foreground, looking at the structure. A child in a white shirt is kneeling in the foreground, looking at the structure. The background is dark and out of focus, showing some shelves and equipment.

**“Kids are generating their own identity of what they are making and working on creating their own story, not working from a story we are giving them. It has to have the ability to transform.”**

*Cas Holman, Industrial Design*





ARCADE

DISCUSS ON DESIGN

\$6 SPRING 2013

# STEAM

Putting Art and Design at the Center of STEM

FEATURE EDITOR: RISD STEAM CLUB

ISSUE

31.2

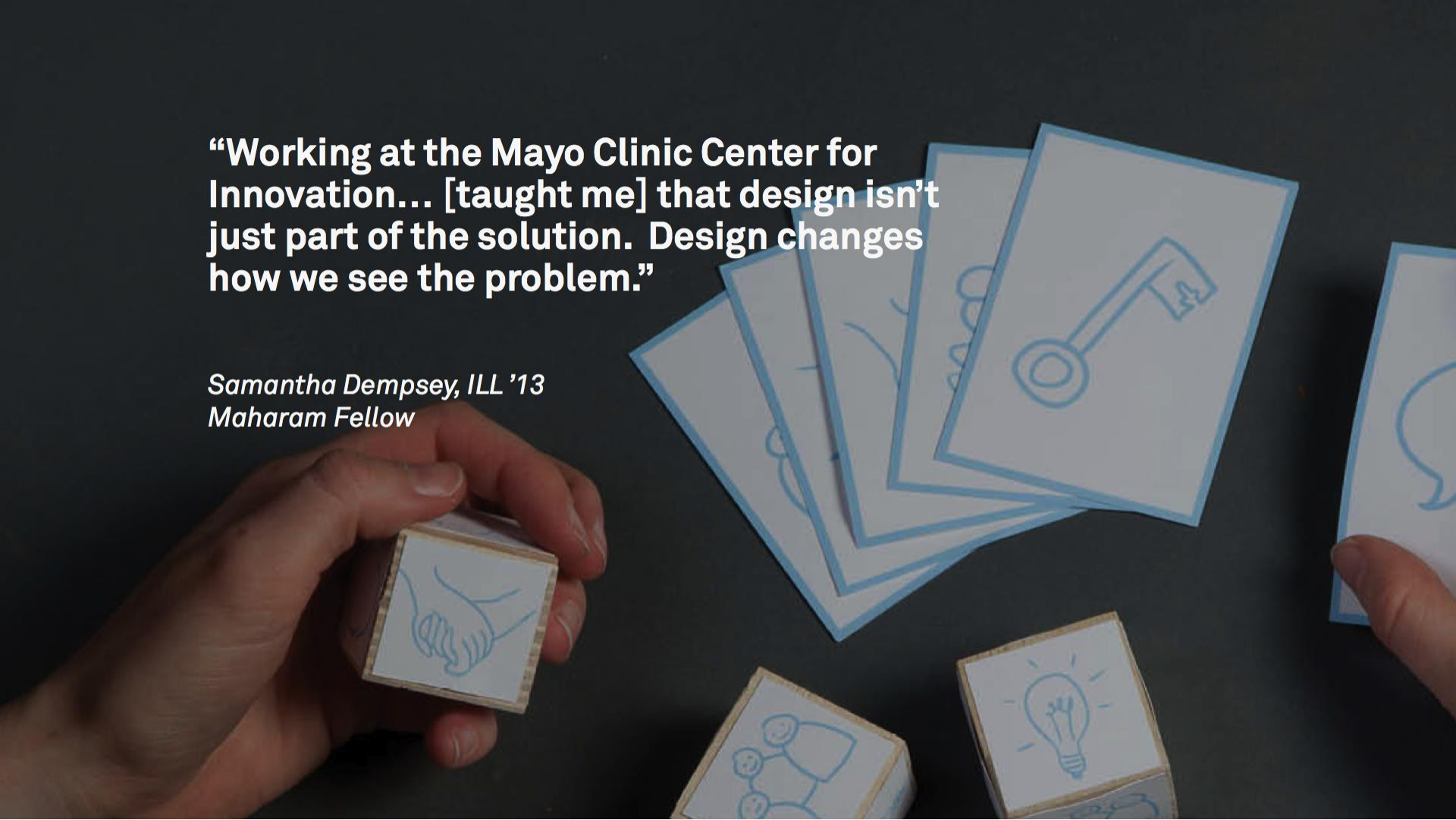
ART MATTERS ZOOM, ITALIAN DESIGN AND THE PHOTOGRAPHY  
OF ALDO AND MARIROSA BALLO: AN ITALIAN POINT OF VIEW  
by Pierluigi Serraino PRACTICE MAKE (IT) IN AMERICA by  
Sallyann Corn and Joseph Kent PERSPECTIVE MAKE WAY FOR  
THE CARBON ACCOUNTANTS: SEEING BUILDING MATERIALS  
IN A NEW LIGHT by Hans-Erik Blomgren PERSPECTIVE  
RESTAURANT SERVICE AS NON-LINEAR RHYTHM by Peter Lewis  
SIDE YARD BAD ASS WITH A MUSTACHE... I GREW ONE THIS  
WINTER by Ron van der Veen

Artists and designers  
making a difference  
in government and  
non-profits.



**“Working at the Mayo Clinic Center for Innovation... [taught me] that design isn’t just part of the solution. Design changes how we see the problem.”**

*Samantha Dempsey, ILL '13  
Maharam Fellow*





## INSIDE HIGHER ED

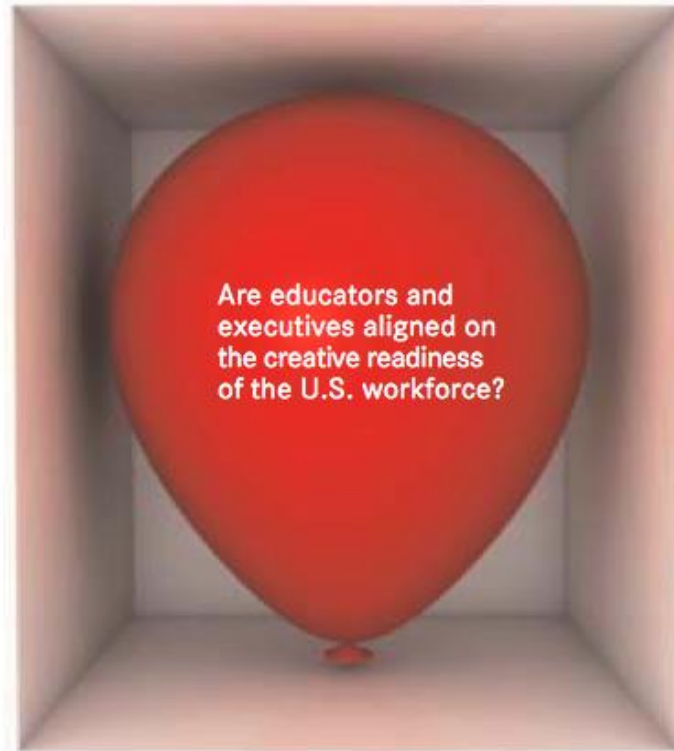
Sustained childhood exposure to and participation in the arts appears linked to college students majoring in science and technology fields, and to later going on to patent inventions, Michigan State University researchers have found.

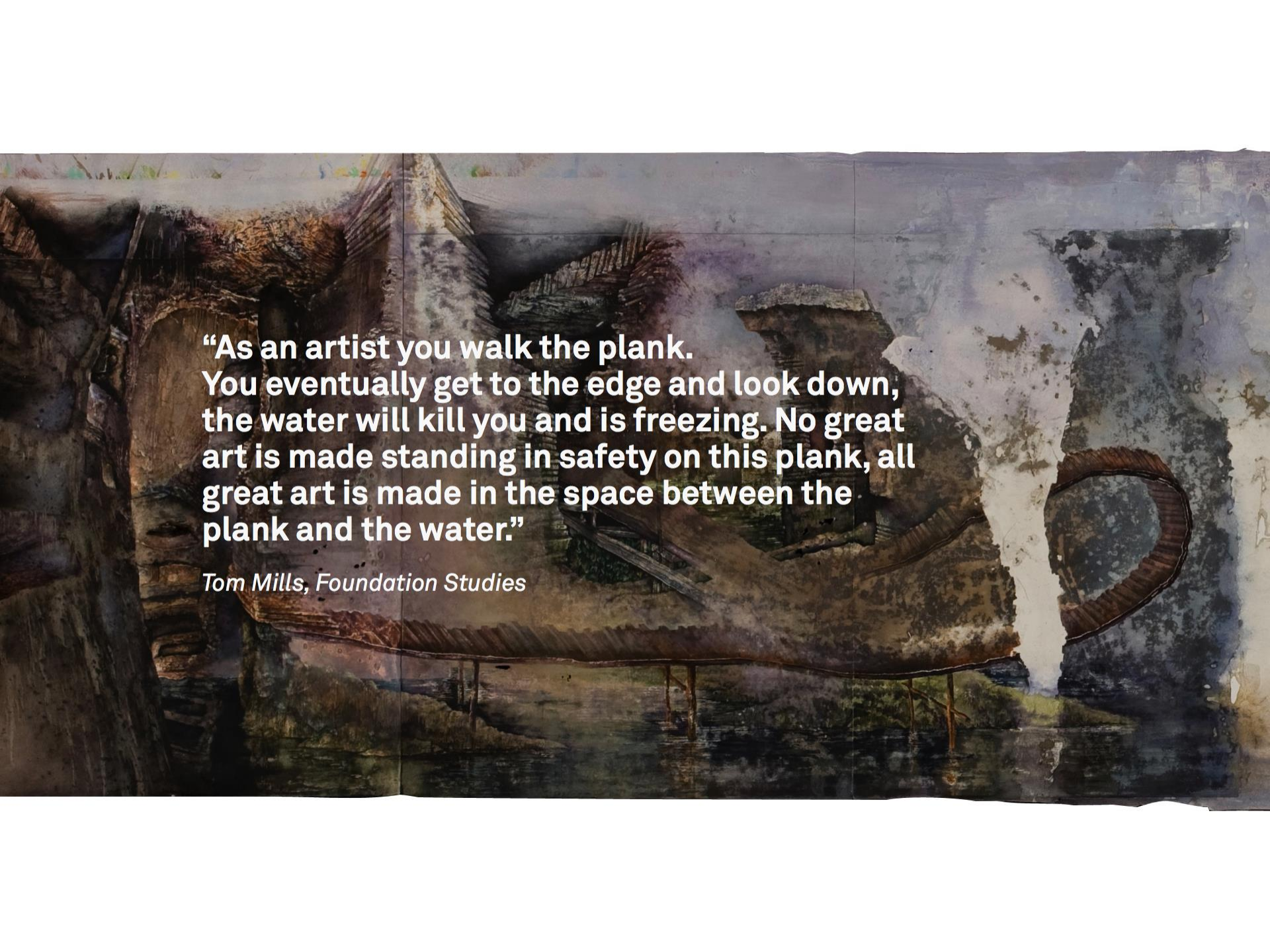
In **a study** published in the journal Economic Development Quarterly and based on STEM graduates of Michigan State's honors college, the researchers found that 93 percent of the STEM graduates reported musical training at some point, compared to 34 percent of adults on average.

Further, those who owned businesses or patents received up to eight times more childhood exposure to the arts than did adults on average.

## Ready to Innovate

### Key Findings



The background is a dark, atmospheric painting. It depicts a narrow wooden plank bridge or walkway that curves across a body of water. The water is dark and turbulent, with some lighter patches suggesting ice or foam. The sky and surrounding landscape are rendered in dark, moody tones of blue, grey, and brown, with some lighter areas suggesting mist or light reflecting off the water. The overall mood is somber and contemplative.

**“As an artist you walk the plank.  
You eventually get to the edge and look down,  
the water will kill you and is freezing. No great  
art is made standing in safety on this plank, all  
great art is made in the space between the  
plank and the water.”**

*Tom Mills, Foundation Studies*







