Today's seminar will begin shortly.

National Assembly of State Arts Agencies
KNOWLEDGE ★ REPRESENTATION ★ COMMUNITY

Please complete your phone connection now:

1. **Dial the toll free number:** 1-866-275-3495.
2. **Enter the meeting number** *4671867* on your phone keypad. Enter the star (*) key before and after the meeting number.
3. **Identify yourself.** Please complete your connection following the system prompts to synchronize your phone line and web identity.

National Assembly of State Arts Agencies

KNOWLEDGE ★ REPRESENTATION ★ COMMUNITY

Strategic Show and Tell: State Arts Agencies and STEM

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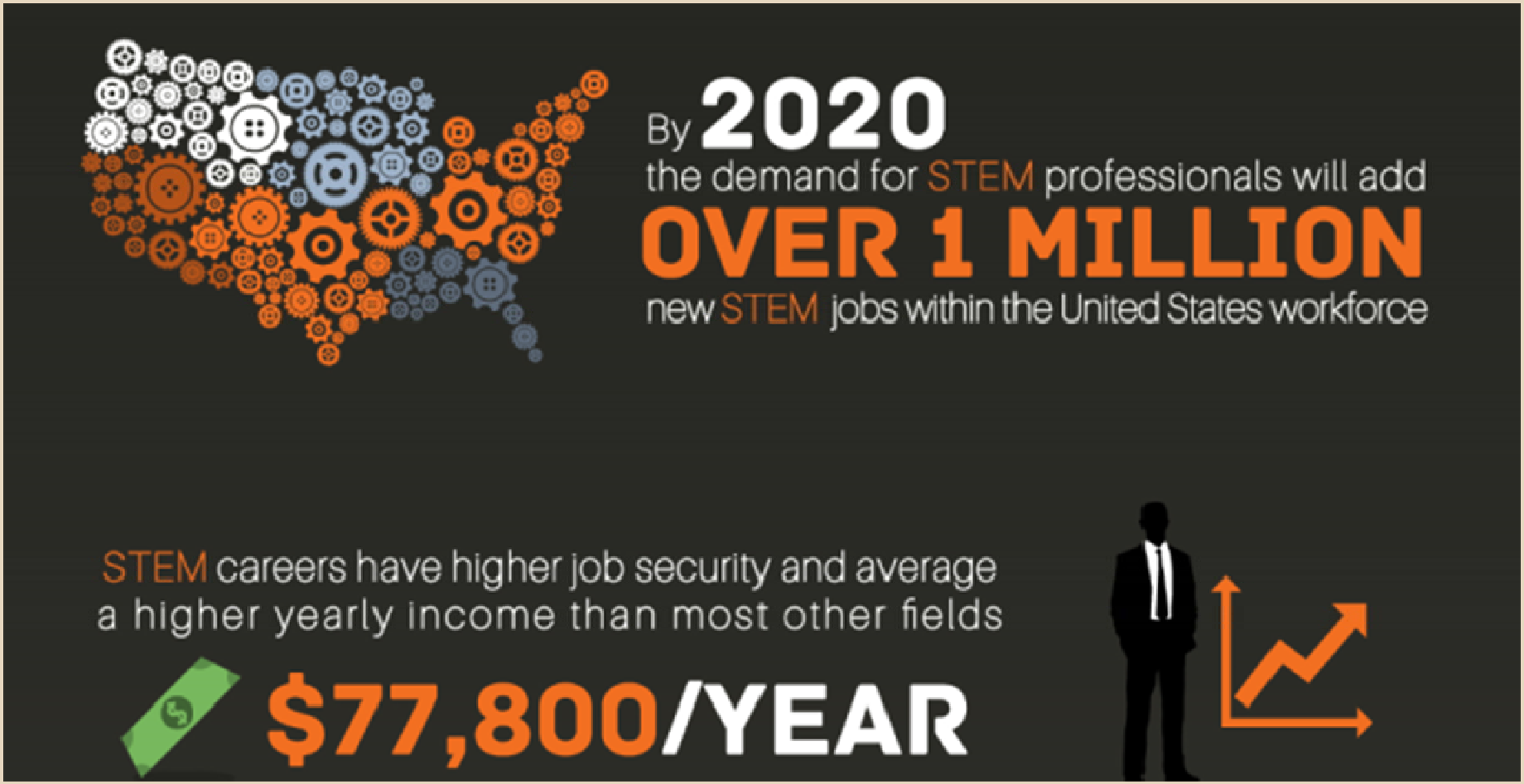
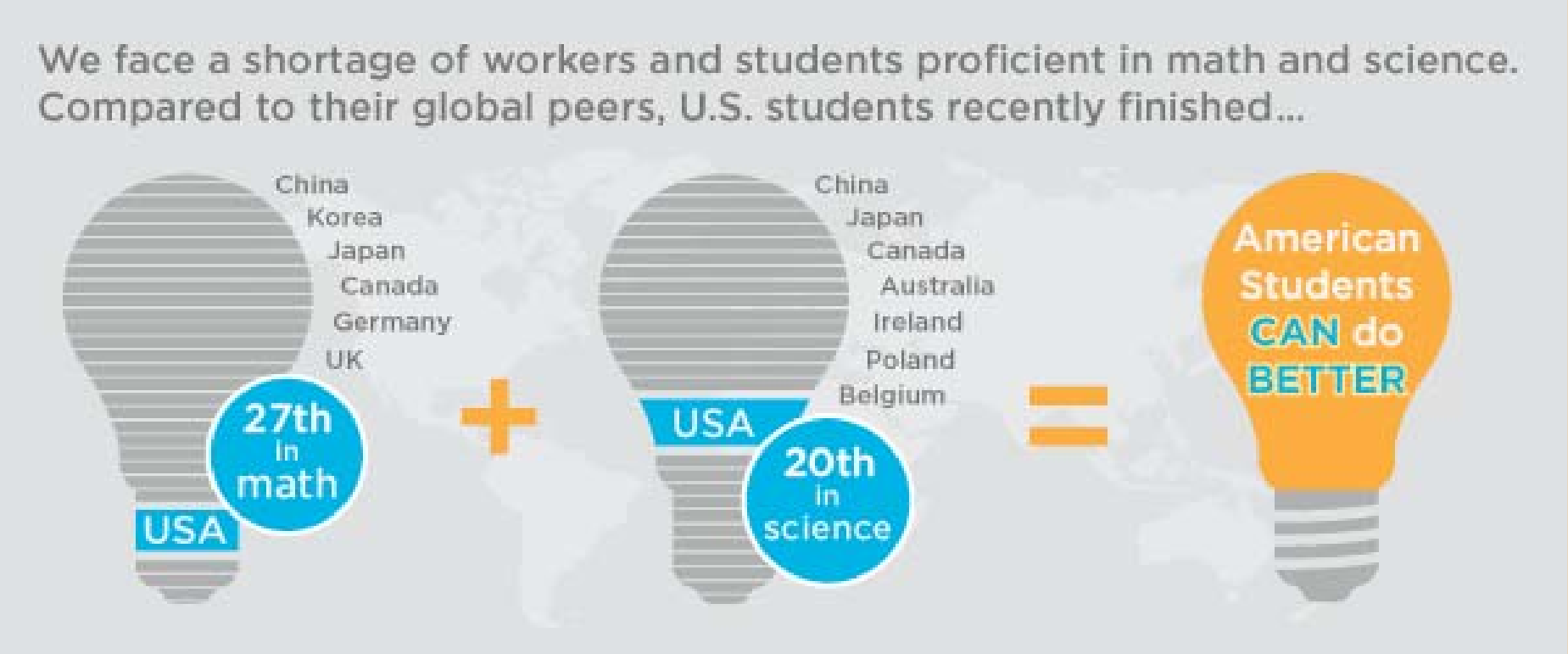
Pam Breaux

Chief Executive Officer

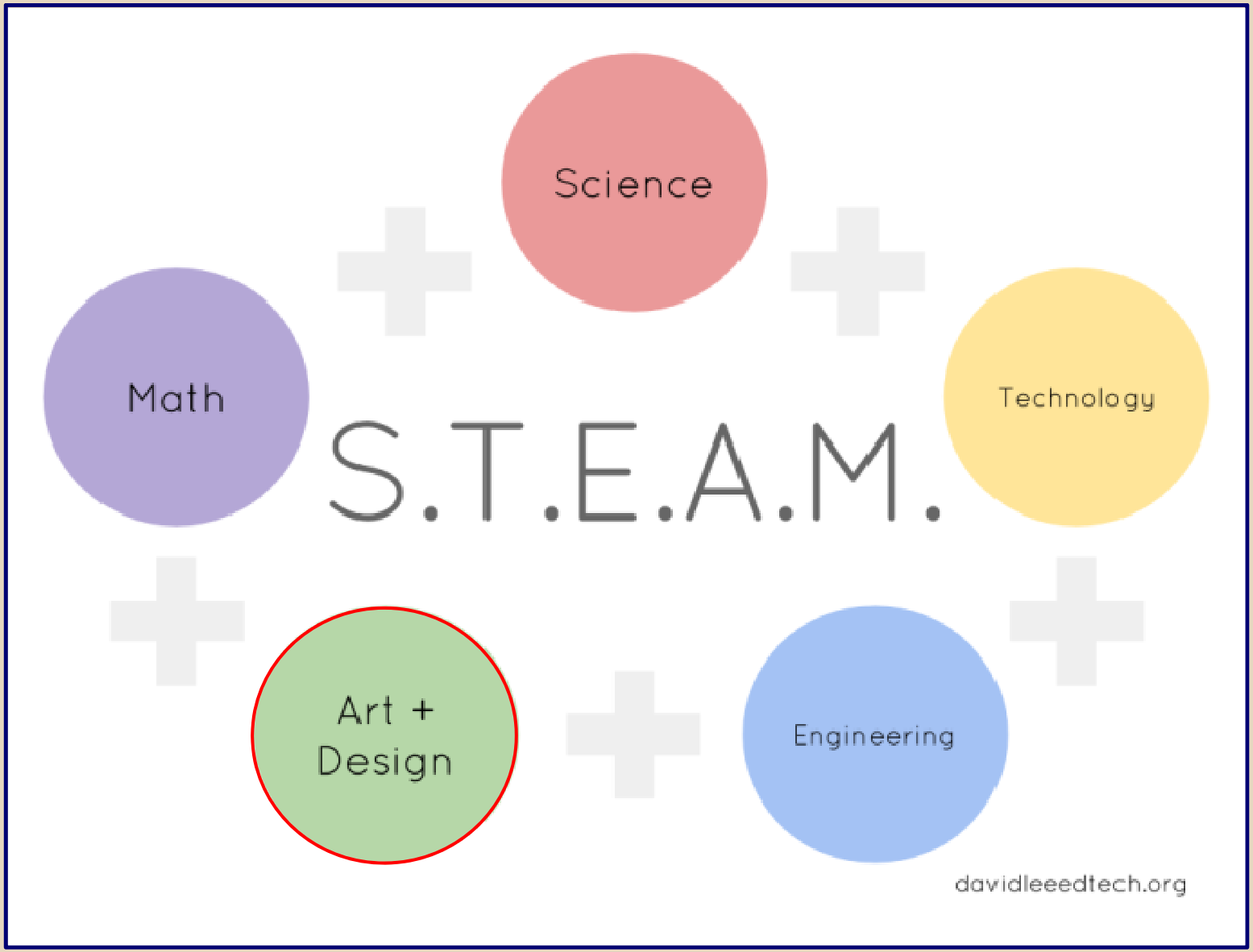
NASAA



Source: STEM Education Coalition



Source: National Math and Science Initiative


Science
Math
S.T.E.A.M.
Technology
Art + Design
Engineering
davidleeedtech.org

Fifth-grade students in Jamestown, ND, make STEAM with Chihuly and science!

Your Hosts

National Assembly of State Arts Agencies
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Eric Giles
Learning Services Manager

Sue Struve
Communications Manager

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Tech Tips

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- **View all participants** in the roster to the right.
- **Use the Chat box at any time** to submit a question or get technical help.
- **During the Q&A break,** presenters will answer chat questions.

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Agenda

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I. SAA Presentations

II. Moderated Discussion

III. Audience Q&A

IV. Wrap-up

If you have just arrived, please complete your connection following the system prompts to synchronize your phone line and web identity.

Presenters

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Sherilyn Brown
Director of Education Programs
Rhode Island State Council on the Arts

Rebecca Engelman
Arts in Education Director
North Dakota Council on the Arts

Catherine O'Brian
Grants Coordinator - Arts in Education & Arts in Health
New Hampshire State Council on the Arts

James Wolfe
Arts in Education Coordinator
West Virginia Commission on the Arts

Rhode Island College President Dr. Nancy Carriuolo

- In Rhode Island, individuals and organizations have carried the STEM-to-STEAM message in different ways at different times.
- RISCA was a catalyst—found STEM Center on RI College campus, and began conversation with RI College President Dr. Nancy Carriuolo

RI School of Design (RISD) Past President John Maeda

- Conversation grew with invitation of RI College president to RISD president and subsequent joint meeting.
- Tour of RISD and president/ faculty discussion of STEAM enterprises already happening at RISD.
- Concept of STEAM is just good interdisciplinary curriculum.
- No joint RI College/RISD project developed, but President Maeda became a carrier of the message.

Amy Leidtke, industrial designer and teaching artist, RISD faculty

- President Maeda invited the commissioner of K-12 education to present on STEAM at South by Southwest.
- Brought in five educators, including Amy Leidtke, to prep commissioner.
- Leidtke became another carrier of STEAM message and appears later in our story.

Back to the Rhode Island College STEM Center

- In the meantime, RISCA working with the RI College STEM Center and its new director.
- STEAM working group put together, including science and technology staff from DOE and the Providence After School Alliance (PASA).
- Working group applied for grants from the National Science Foundation (NSF) to support STEAM hubs with PASA.
- NSF applications unsuccessful; the STEM Center put its focus elsewhere.

Congressional Rep. James Langevin

"The STEAM initiative championed by RISD has become a national movement thanks to the continued support and advocacy of Congressman Langevin, the efforts of the Congressional STEAM Caucus, and the rising call from industry for a more creative and dynamic workforce. The grass roots support and investment of educators and business leaders alike clearly demonstrates the value and importance of art and design education in advancing our economy and nation," said Rhode Island School of Design President Rosanne Somerson."RISD is proud of the STEAM initiative's continued momentum and growth, and its development into a broad national conversation on educational innovation and global competitiveness."

- RISD and John Maeda cultivated a relationship with Representative James Langevin.
- Annual resolutions introduced, including one in May 2015.
- Resolutions not passed, but STEAM emerges in new education reauthorization just passed.

STEAM Now Coalition

Carol M. Giuriceo, Director of the Rhode Island STEM Center at Rhode Island College

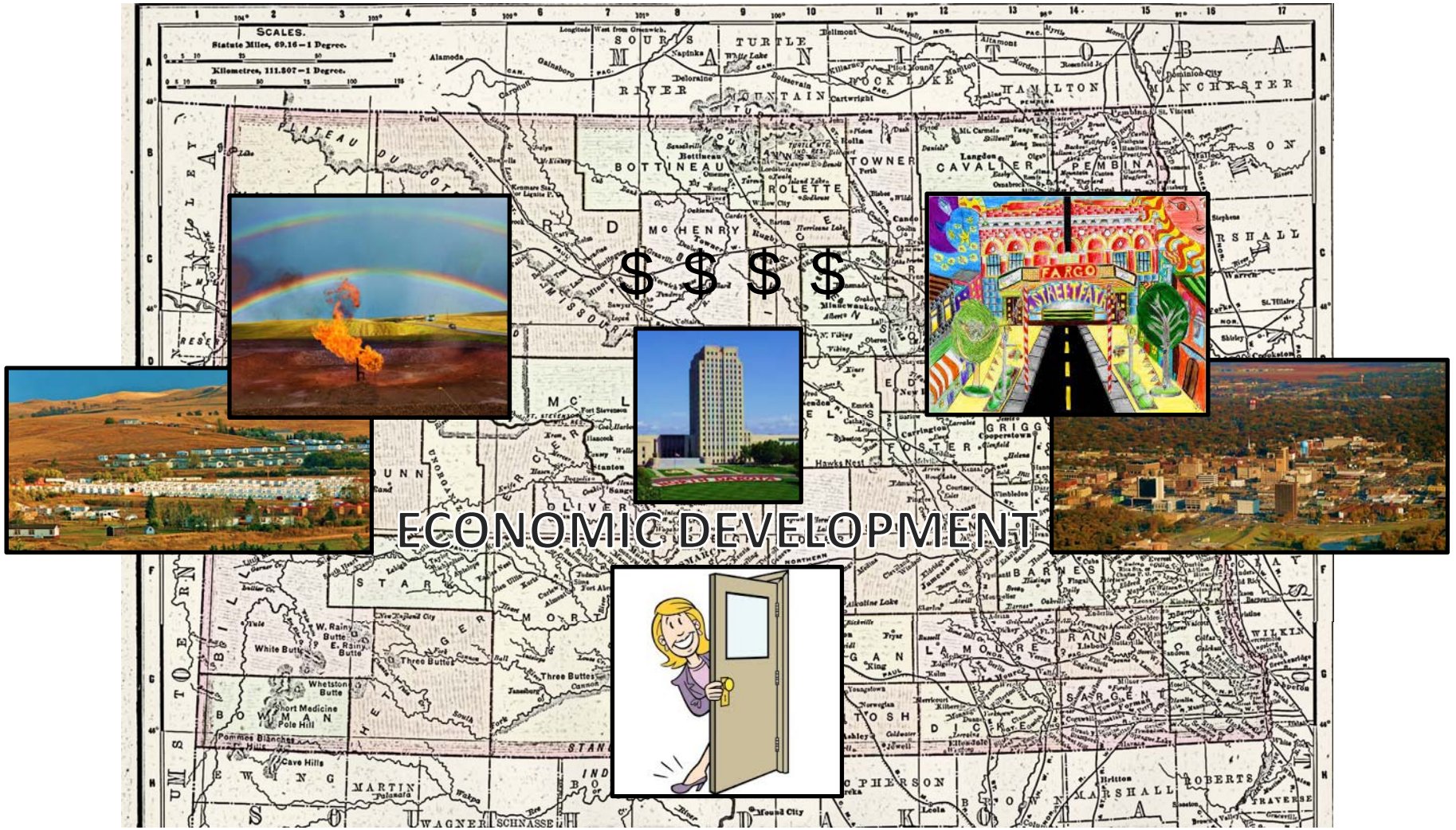
1) Integrated approach to STEM education

2) Students need to explore the world and make critical decisions

3) Building partnerships among business/industry, preK-12, higher education, after-school programs, community organizations, government agencies

Full circle

- Newly established Langevin Center for Design, Innovation, and Advanced Manufacturing at RI College announced in October.
- Features programmable robots for automated manufacturing, 3-D printers and scanners, laser cutters for different materials, etc.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ECONOMIC DEVELOPMENT

STEP ONE: FIND THE PLAYERS

NORTH DAKOTA STEM NETWORK

Promise:

- The ND STEM Network aims to connect and increase cooperation amongst all North Dakota stakeholders in order to provide opportunities for students to be creative and innovative and gain 21st century skills through increased engagement in project-based learning driven by the Science, Technology, Engineering, and Mathematics (STEM) disciplines.

Main Goals:

- Pursue policies and funding to support STEM education, including changing the current Carnegie unit system to one based on mastery of material.
- Increase high school graduation rates and increase the number of those graduates that are prepared to pursue STEM degrees, certifications, and careers.

STEP TWO: MAKE A CASE FOR THE ARTS

2013-14 LEGISLATIVE ASSEMBLY

- **Transitioned Schools and Artists Learning Teams (SALT) to STEAM Teams**

  "Arts integration is key to creating STEM Literacy"

The STE[A]M Team Grant Program is a means of providing financial assistance, time, professional development, and support to teacher/artist teams committed to teaching the whole student and nurturing both sides of the brain to enhance creativity and 21st-century thinking and learning.

STE[A]M Teams work with NDCA instructional coaches over a three-year period to:

- Build collaborations between teachers and artists
- Increase capacity of both teachers and artists for teaching in and through the arts
- Develop and implement curriculum that is intentional and bridges the concepts of STEM (science, technology, engineering, math), [A]RT and/or Core Curricula (language arts, history, social studies, geography)
- Implement reflective teaching practice as a tool for inspiring change, innovation and collaboration
- Earn up to 3 North Dakota Multi-Campus Graduate Credits per year

- **Requested additional funding from ND state legislature to expand program**
- **Funding denied**
- **Unexpected outcome**!

STEP THREE: LEVERAGE WHAT ALREADY EXISTS

When one door closes, another door opens – create doors!

Create language that invites STEM partnerships and encourages STE[A]M projects.

ARTIST IN RESIDENCE

Artist in Residence (AIR) Program provides funds for schools and other nonprofit organizations to connect artists and North Dakota students and teachers. Activities take place during the regular school year, last three days or longer, and may be scheduled before, during, or after the regular school day. The AIR Program is designed not to replace but to build upon and enhance a schools' existing art programs and vision for future programming.

TEACHER INCENTIVE GRANT ($600 NON-MATCHING FUNDS FOR ARTS-INTEGRATED PROJECTS)

The Teacher Incentive Grant Program is a means of providing financial assistance to teachers who wish to explore new and creative ways of integrating the arts into other areas of the curriculum. Projects are teacher driven and may involve the visual arts, literary arts, performing arts (drama, music, dance), architecture, design, folk arts, media arts or any combination of artistic disciplines.

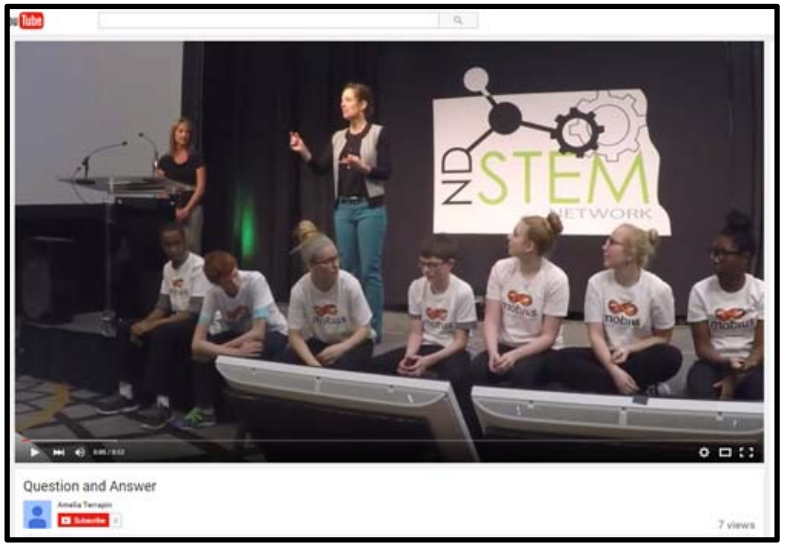
50% of the total amount requested may be used to fund artists'/consultant's fees. (Applications must describe how the artist or consultant will support the learning goals of the project.)

INELIGIBLE ACTIVITIES

- Costs related to permanent equipment
- Costs related to capital improvements, construction, or purchase of permanent equipment

STEP FOUR: BE WILLING TO PUT SOME SKIN IN THE GAME

BRING SOMETHING TO THE TABLE



- Back to the legislature in 2015-16
- Request was made to increase overall NDCA grant line
- Asked and received an additional $125,000 - $20,000 per year for AIE
- Baby steps!

STEP FIVE: HELP OTHERS UNDERSTAND THE POWER OF THE ARTS

"Seriously, which would you rather do?"

Defining STEAM

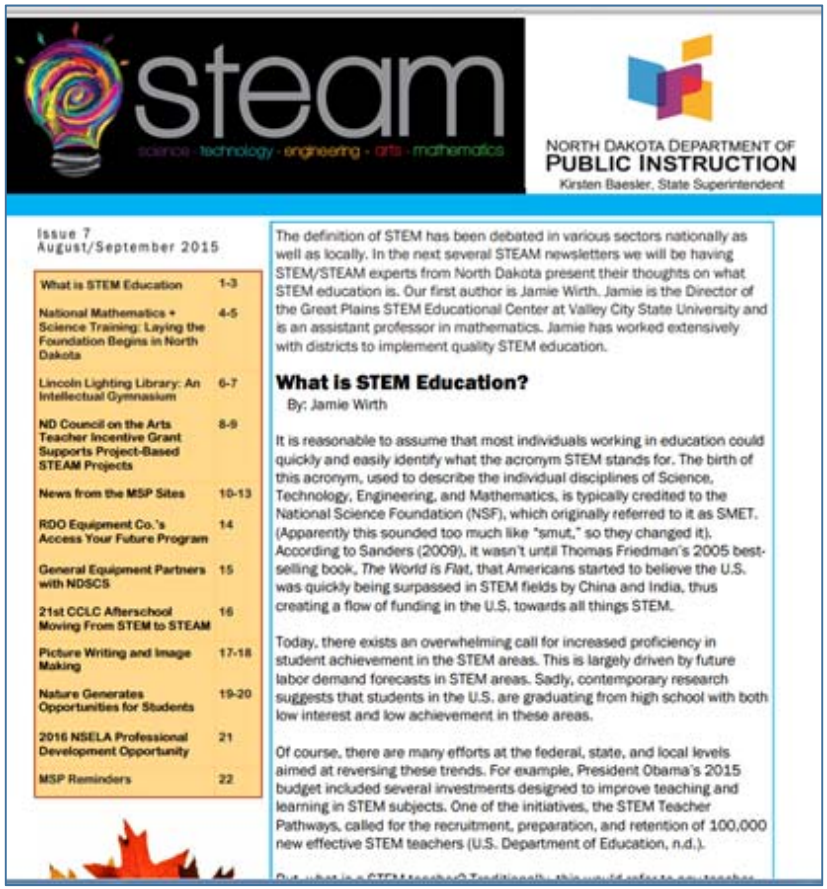
"….Why STEAM? To begin, one must be clear on what the **A** actually represents. The **A** is more than drawing pictures of a cell and/or singing a song to recall the periodic table. In STEAM the **A** represents 'how society develops, impacts, is communicated and understood with its attitudes and customs in the past, present and future' (Yakman, 2008, p. 16). I invite you to envision the **A** as a large umbrella that encompasses the Fine Arts (music, dance, visual arts, performing arts, and media arts), Language Arts, and Liberal and Social Arts. These are the areas of the curriculum that promote the development of various forms of literacy which include visual, cultural, media and other 21st Century literacies, along with the 21st Century Skills of creativity, communication, collaboration, and critical thinking. The Arts connect us to the world, culture, society, and what it means to be human.

"… The Arts are the perfect vehicle for finding the 'elegant fit' necessary for authentic and meaningful integration to occur. 'The strategies of arts integration are educationally powerful because they are grounded in deep connections between the arts and cognition and between learning, social, and emotional development' (Rabkin & Redmond, 2004, p. 152). The A is the cord that binds heart to mind, the thread that weaves curriculum together, the glue that binds knowledge and application. It is the grease that keeps the wheels moving. With all of the research currently available, it is clear that positioning the Arts as a side-note and a 'maybe' to STEM benefits no one. Adding the A to STEM gives educators and others permission to harness its power and use it as a tool for creating students who are not only STEM literate, but also GLOBAL CITIZENS."

Rebecca Engelman
ND Department of Public Instruction STEAM Newsletter

STEP SIX: KEEP AN EAR TO THE GROUND

AND AN EYE OUT FOR OPPORTUNITIES



steam
science - technology - engineering - arts - mathematics

NORTH DAKOTA DEPARTMENT OF PUBLIC INSTRUCTION
Kirsten Baesler, State Superintendent

Issue 7
August/September 2015

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The definition of STEM has been debated in various sectors nationally as well as locally. In the next several STEAM newsletters we will be having STEM/STEAM experts from North Dakota present their thoughts on what STEM education is. Our first author is Jamie Wirth. Jamie is the Director of the Great Plains STEM Educational Center at Valley City State University and is an assistant professor in mathematics. Jamie has worked extensively with districts to implement quality STEM education.

What is STEM Education?

By: Jamie Wirth

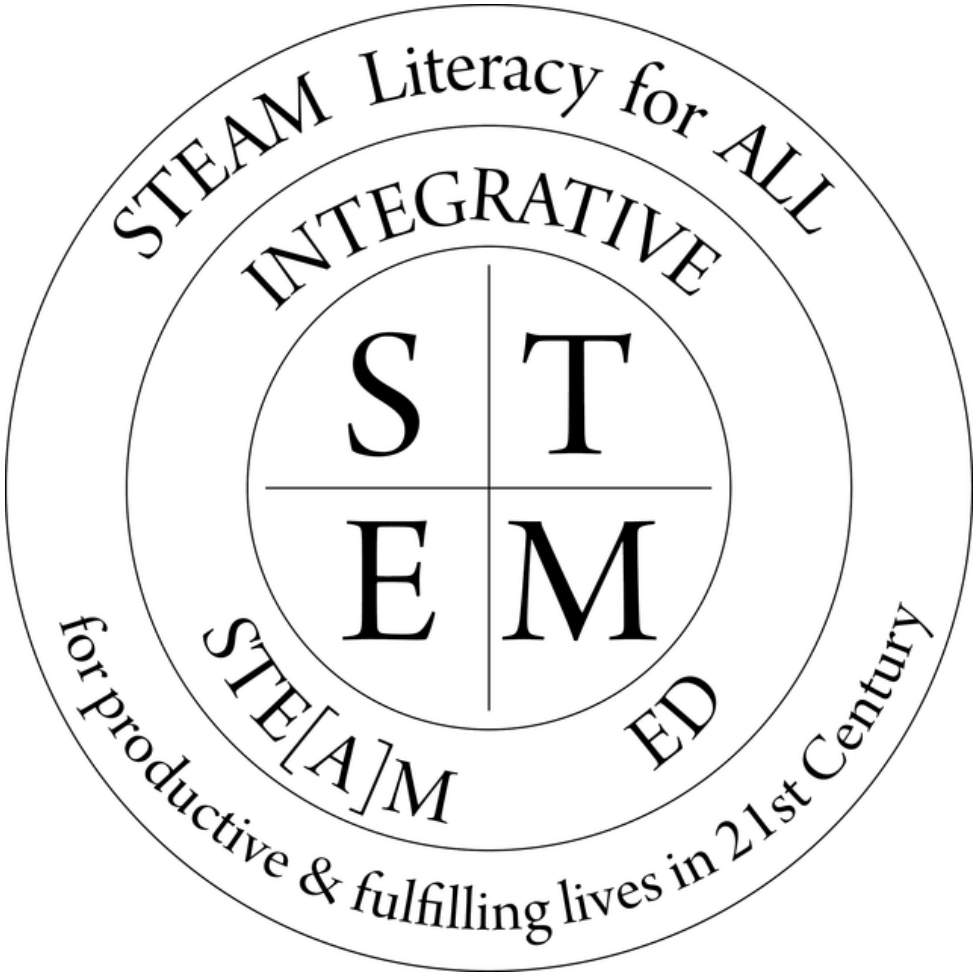
It is reasonable to assume that most individuals working in education could quickly and easily identify what the acronym STEM stands for. The birth of this acronym, used to describe the individual disciplines of Science, Technology, Engineering, and Mathematics, is typically credited to the National Science Foundation (NSF), which originally referred to it as SMET. (Apparently this sounded too much like "smut," so they changed it). According to Sanders (2009), it wasn't until Thomas Friedman's 2005 best-selling book, *The World is Flat*, that Americans started to believe the U.S. was quickly being surpassed in STEM fields by China and India, thus creating a flow of funding in the U.S. towards all things STEM.

Today, there exists an overwhelming call for increased proficiency in student achievement in the STEM areas. This is largely driven by future labor demand forecasts in STEM areas. Sadly, contemporary research suggests that students in the U.S. are graduating from high school with both low interest and low achievement in these areas.

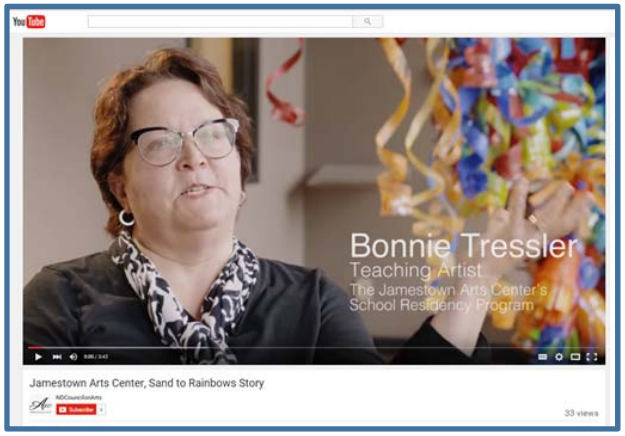
Of course, there are many efforts at the federal, state, and local levels aimed at reversing these trends. For example, President Obama's 2015 budget included several investments designed to improve teaching and learning in STEM subjects. One of the initiatives, the STEM Teacher Pathways, called for the recruitment, preparation, and retention of 100,000 new effective STEM teachers (U.S. Department of Education, n.d.).

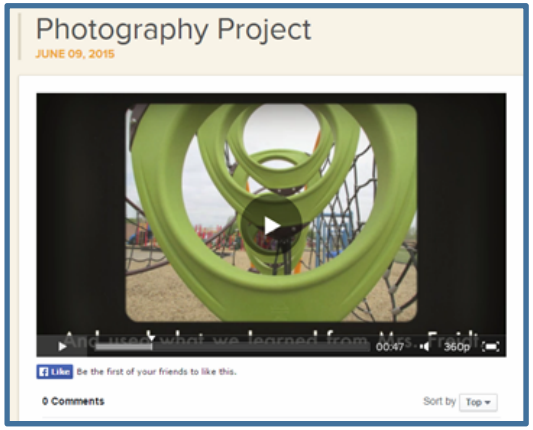
STEP SEVEN: WORK TOWARDS A COMMON GOAL

"WHAT'S BEST FOR KIDS"



STEP EIGHT: COLLECT EVIDENCE AND DOCUMENT SUCCESS





WHAT'S NEXT FOR steam ?

- **PREPARING FOR 2017-18 LEGISLATIVE SESSION**
  - Seek additional funding for AIE grant line (rather than funding for a specific program).

- **NDCA TEACHING ARTISTS TO ICELAND IN MARCH**
  - Two STEAM teaching artists will travel to Iceland to conduct a one-week residency that will combine social studies, language arts, theatre, and digital media.

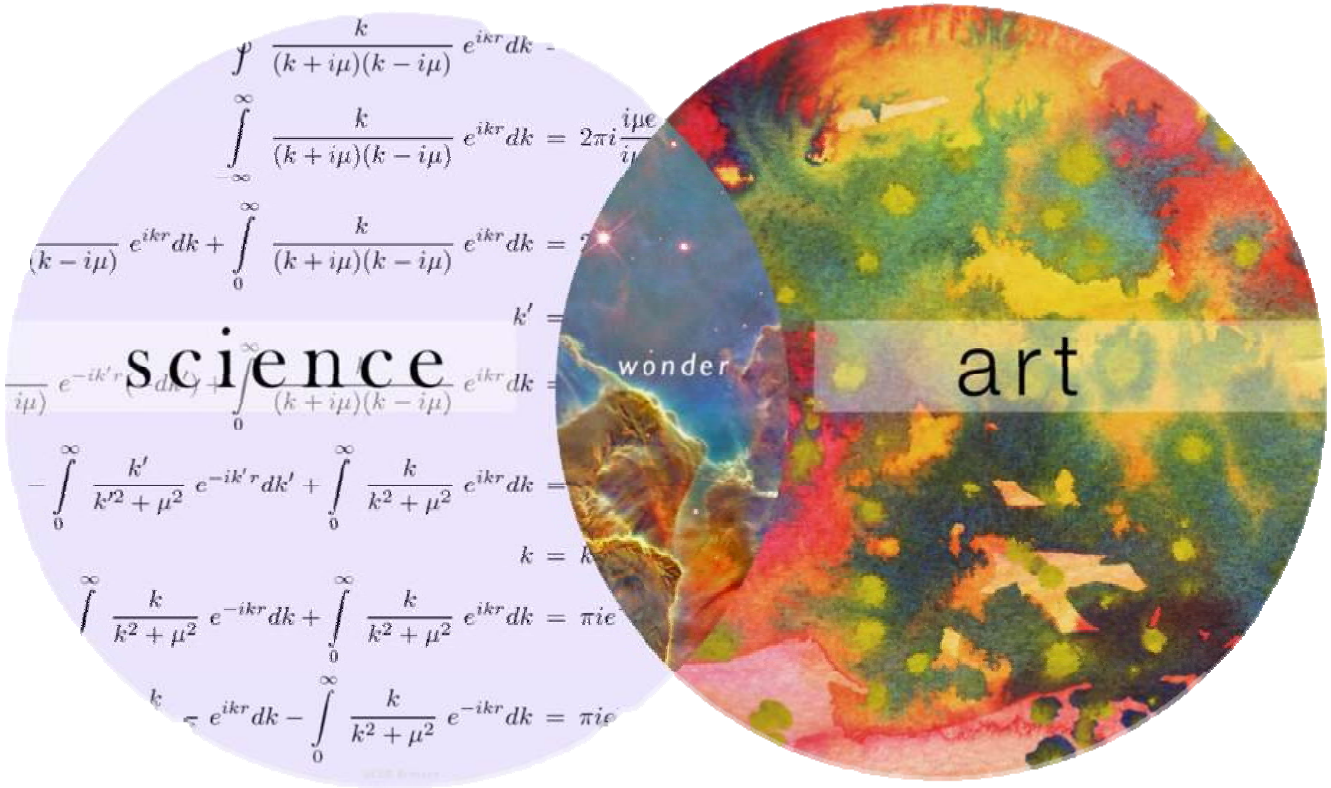
- **JAMESTOWN STEAM TEAM**
  - STEAM Team and students will present the results of their three-year collaboration, which explored the intersections between geometry, visual arts, and dance. Students will create a dance that interprets the transformation of 2D shapes to 3D forms—resulting in a life-size pyramid.
  - Project is the result of a collaboration between the Jamestown STEAM Team, NDCA, Jamestown Arts Center, and Newman Sign Company.

- **NDCA WILL SPONSOR PRESENTER FOR THE 2016 MATH/SCIENCE TEACHERS MARCH CONFERENCE**
  - Presenter will return to ND in June to provide a two-day professional development workshop.

- **SEED ADDITIONAL STEAM PROJECTS AS FUNDING ALLOWS**

- **2 VIDEO DOCUMENTARIES ON DECK**

- **CONTINUE TO WORK COLLABORATIVELY AND PROVIDE SUPPORT TO STATEWIDE STEM COHORTS, INTIATIVES, AND PROJECTS THAT INCLUDE THE ARTS**



NH steaming forward into the future

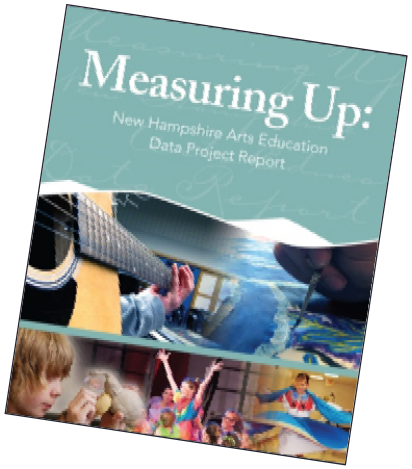
New Hampshire State Council on the Arts

Catherine O'Brian, NH State Council on the Arts

with thanks to our schools, artists & partners in New Hampshire

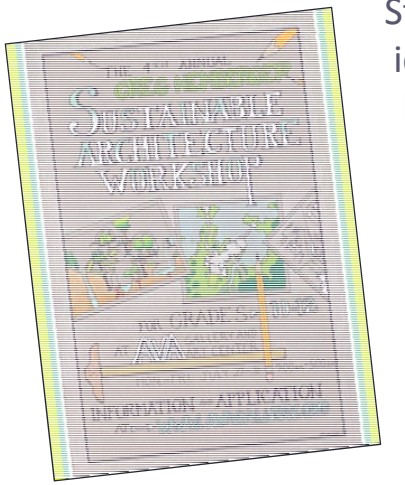
Background:
NH K-12 STEM Education Commission: Pathways to STEM Excellence

- Gov. Maggie Hassan initiates a Commission & Task Force on K-12 STEM Education. http://governor.nh.gov/commissions-task-forces/stem/documents/stem-01-2015-final-report.pdf



- In 2010-2011 the NHSCA & NHDOE released Measuring Up: The NH Arts Education Data Project & Survey Report. http://www.nh.gov/nharts/programservices/pdf/2010_measuringup_fullreport.pdf

- The NH Charitable Foundation released a report, "Smarter Pathways: Strengthening New Hampshire's STEM Pipeline," identifying a significant STEM "pipeline leakage" and lost opportunities for students plus an insufficient STEM-trained work force. This report identified that hours spent per week in sciences in grades 1-4 had declined by almost 40% since 2004.



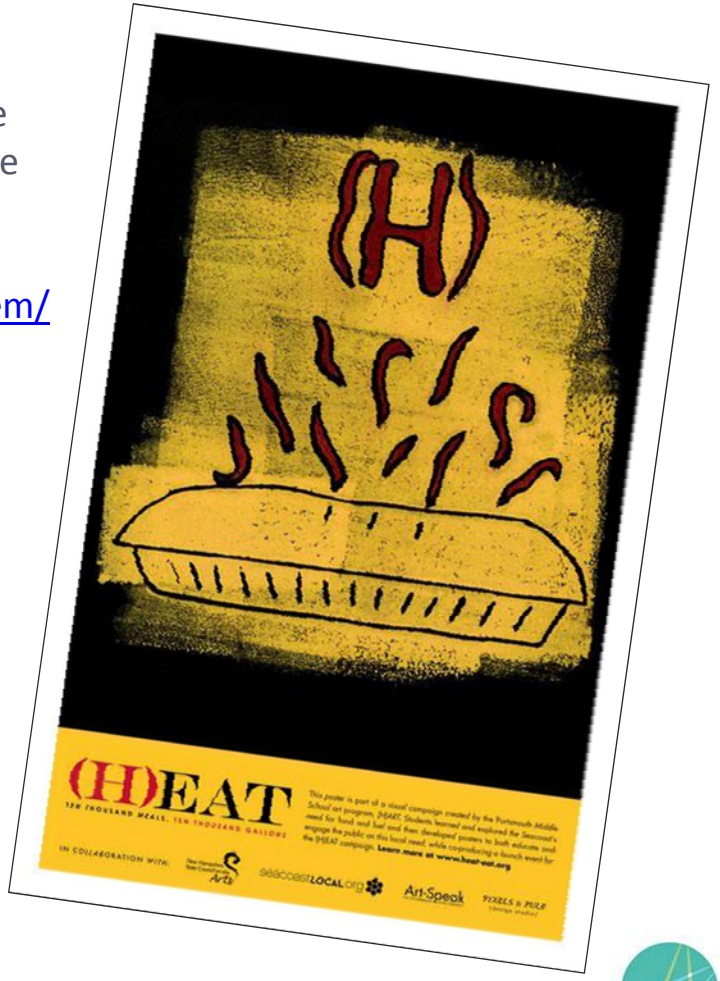
New Hampshire State Council on the Arts

Influence, Advocacy & Outcomes

The governor's STEM task force releases a report in January 2015:

- The comprehensive report includes a section "Arts in STEM: The Relevancy of Both" (see page 55 of the report). This included the following statement: **"the intersection of the liberal arts with technology and STEM education is critical to the innovation economy."** http://governor.nh.gov/commissions-task-forces/stem/documents/stem-01-2015-k-12.pdf

- Among the recommendations & outcomes:
  - The NH Dept. of Education (NHDOE) adds a new, full-time STEM coordinator.
  - The NHDOE now has a full-time science consultant.

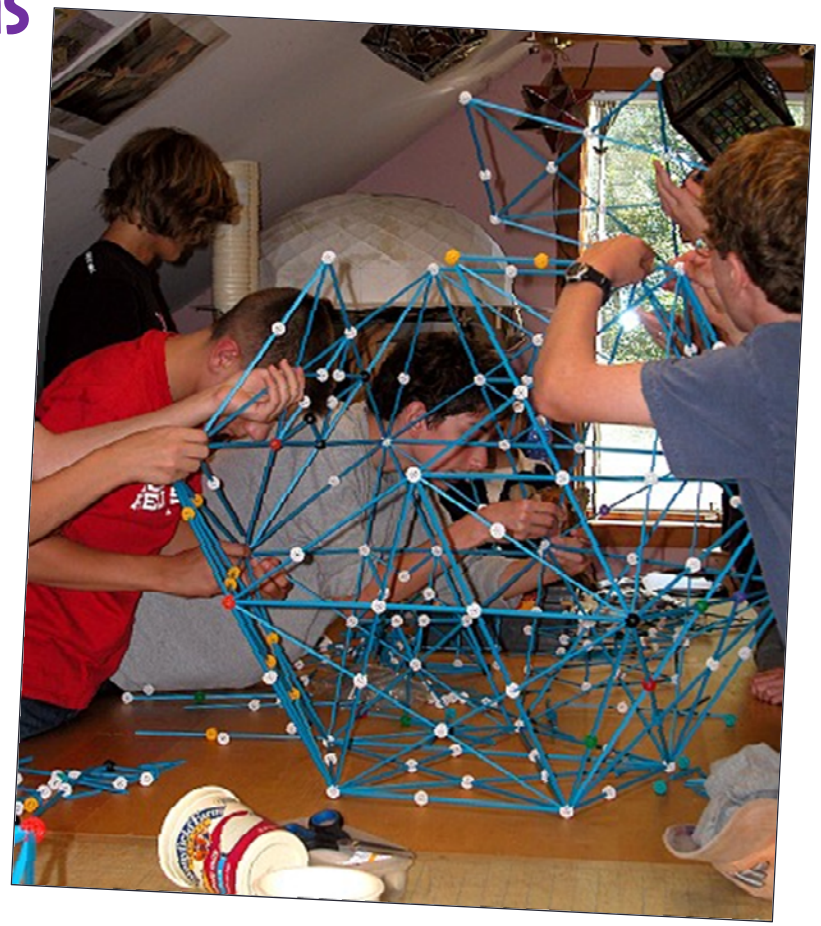


New Hampshire
State Council on the Arts

Measuring Up: NH Arts Education Data Report Recommendations

Two of the top five recommendations from the NH Measuring Up report were:

1. To increase technology opportunities in the arts for all NH students
   - Increase access to digital technology
   - Incorporate high-quality arts components into high-tech programs
   - Provide media arts opportunities
   - Establish state guidelines for highly qualified teachers in media arts
2. To use arts-based strategies to support student learning and school improvement goals. http://www.nhartslearningnetwork.org/Resources/MeasuringUp/tabid/108/Default.aspx



New Hampshire State Council on the Arts

Strategic & Collective Actions Included:

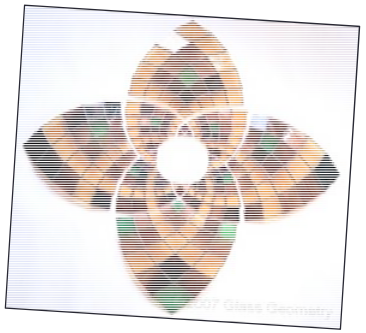
- Presentation on STEM-to-STEAM to NH State Board of Education by NHSCA's Catherine O'Brian and NHDOE Arts Consultant Marcia McCaffrey, with middle school art educator Anna Nuttall
- Including & encouraging STEAM projects in our AIR and Youth Arts Project Grants guidelines http://www.nh.gov/nharts/grants/partners/artistresidencies.htm

New Hampshire
State Council on the Arts

STEAM-ing up our NH State Council on the Arts Conferences

- Our NHSCA Arts Education 2012 Partnership Conference included keynote speaker & game designer Colleen Macklin, plus a STEM-to-STEAM panel discussion that included school district administrators, teaching artists and Dartmouth college faculty, including the chair of Dartmouth college's biology department.
- Our 2013 Arts Education Partnership Conference featured a STEAM presentation, and keynote speaker Eric Booth highlighted innovative arts & science integration.
- Our 2014 Arts Education Partnership Conference included a call for STEAM workshops.
- Our 2015 conference keynote speaker, sculptor Jerome Meadows, spoke about the need for math and engineering in design and work for his community public art sculptures.

To learn about our conferences, visit:
http://www.nh.gov/nharts/programservices/aieconferences/index.htm



New Hampshire
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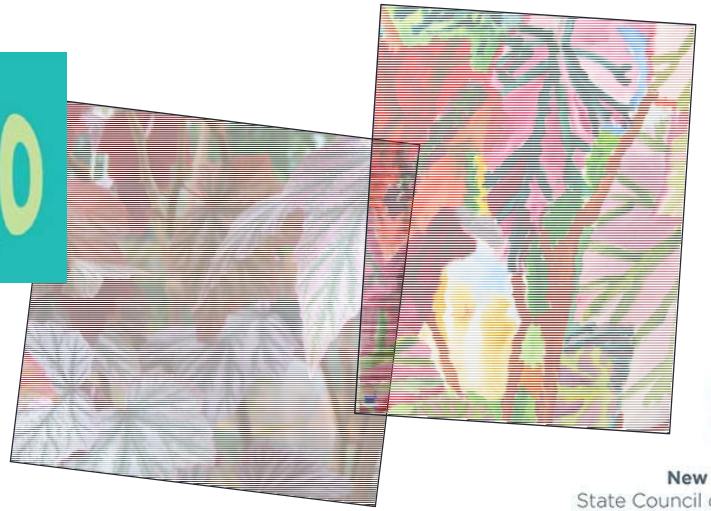
Highlighting, Sharing & Supporting STEM-to-STEAM in New Hampshire

Examples of exciting AIR and Youth Art Projects with STEAM focus:

- AVA Gallery & Art Center Partners with Dartmouth College for two-week Art & Science STEAM Camps for youth. Several of these projects are funded in part by the National Science Foundation.
- AVA recently offered its third annual Greg Hemberger Sustainable Architecture weeklong seminar for students in grades 10-12.
- Students at Ernest Barka Elementary School designed and created an outdoor, nature based butterfly garden with teaching artist and landscape designer Laura Campbell.
- Kennett High School, in the north country, hosted an Interdisciplinary STEAM based White Mountain Mobile Art-Kinetic Sculpture Project working with a teaching artist and sculptor Emile Birch.
- An innovative AIR Grant Funded FY2016 project at ConVal High School, Peterborough NH, brings five teaching artists who partner with STEM teachers with a focus on STEAM careers/competencies. This project will be presented to NH State School Board.



New Hampshire
State Council on the Arts

"STEAM Ahead" Alternative High School

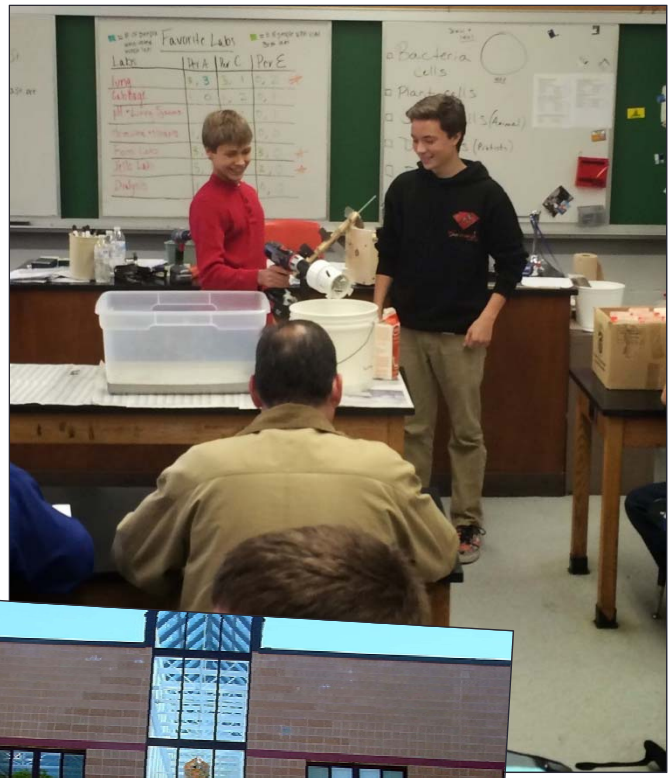
An innovative STEAM Ahead program at Manchester West High School in Manchester, NH, has been featured in the *Wall Street Journal, The Union Leader,* and NH Public Radio.

http://www.steamaheadnh.com/

http://online.wsj.com/articles/recruiting-tech-talent-in-high-school-1412220618?KEYWORDS=STEAM

http://www.unionleader.com/article/20141002/NEWS04/141009734/0/SEARCH

http://nhpr.org/post/steam-ahead-manchester-tech-companies-throw-coal-local-k-12-engine



New Hampshire State Council on the Arts

STEAM in NH Middle Schools and Charter Schools

Partners and Leaders in the Dover, NH, school district have been working and designing for the past two years a new STEAM Design Lab School to be offered within the district as an alternative learning opportunity to middle school students.

Anna Nuttall, art educator at the Portsmouth Middle School, has initiated innovative STEAM projects with support from an AIR Grant from the NH State Council on the Arts and other community partners.

The Academy for Science & Design Charter School grows and develops: http://www.asdnh.org/

New Hampshire
State Council on the Arts

STEM & STEAM Resources

- **NH Arts Learning Network** is a collaborative site for postings on Facebook and holding resources on STEAM: www.NHArtsLearningNetwork.org
  - Click on Resources dropdown menu → STEAM

- **The NH Arts Learning Network** is a Collective Impact statewide initiative led by:
  - The NH State Council on the Arts
  - The NH Department of Education
  - The Arts Alliance of Northern New Hampshire
  - Plus others, arts educators, advocates, partners and supporters

New Hampshire
Arts Learning Network

New Hampshire
State Council on the Arts

Special thanks to artists and arts educators for their inspiring work with STEM and STEAM. Photo above shows children in Robotics Camp at AVA Art Center.

Photos courtesy of several project leaders throughout the state. Organizations and individuals who submitted photos include: Anna Nuttall, art educator, Portsmouth Middle School, Portsmouth, NH; Adam Blue, AVA Gallery, Lebanon, NH; Hans Schepker, NH glass and mathematics Teaching Artist; STEAM Ahead, West High School, Manchester, NH; the Cooperative Catalyst; and the NH State Council on the Arts.

New Hampshire
State Council on the Arts

BAF

BECKLEY AREA FOUNDATION

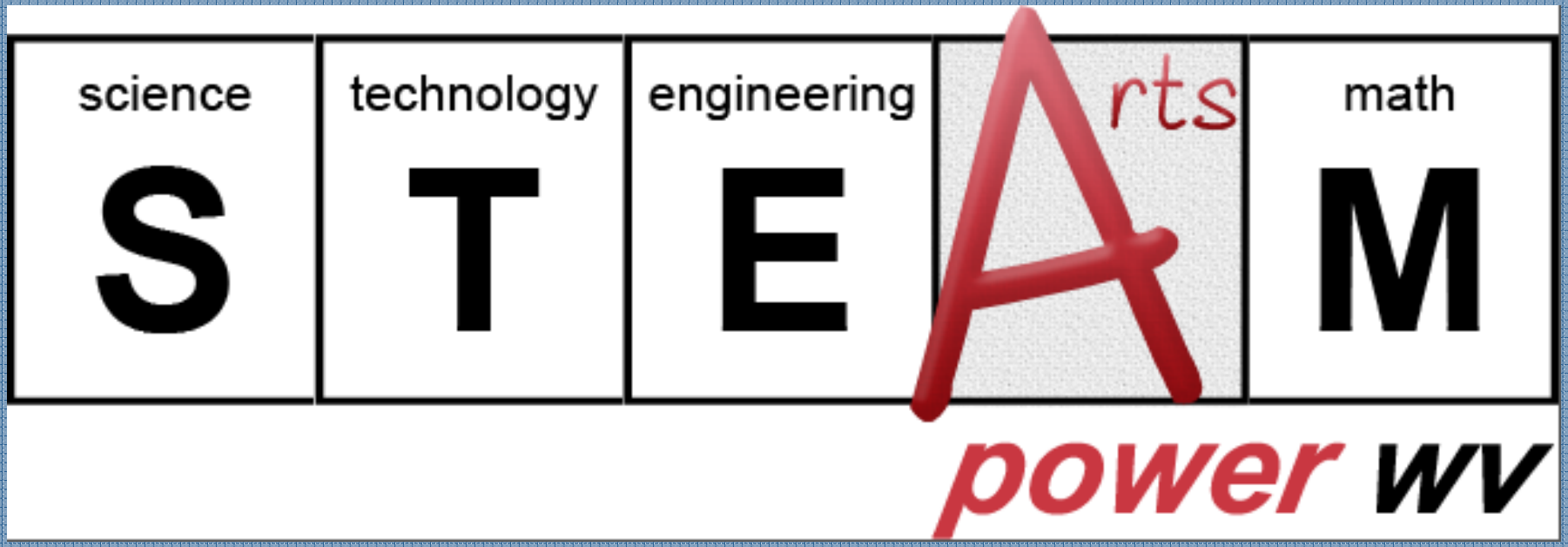
EST. 1985

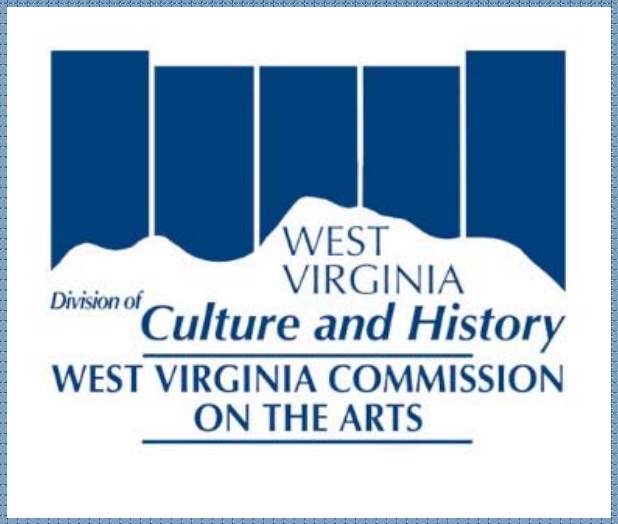
CLAUDE WORTHINGTON BENEDUM FOUNDATION

FULL STEAM AHEAD

WEST VIRGINIA
Division of Culture and History
WEST VIRGINIA COMMISSION ON THE ARTS

CLAUDE WORTHINGTON BENEDUM FOUNDATION

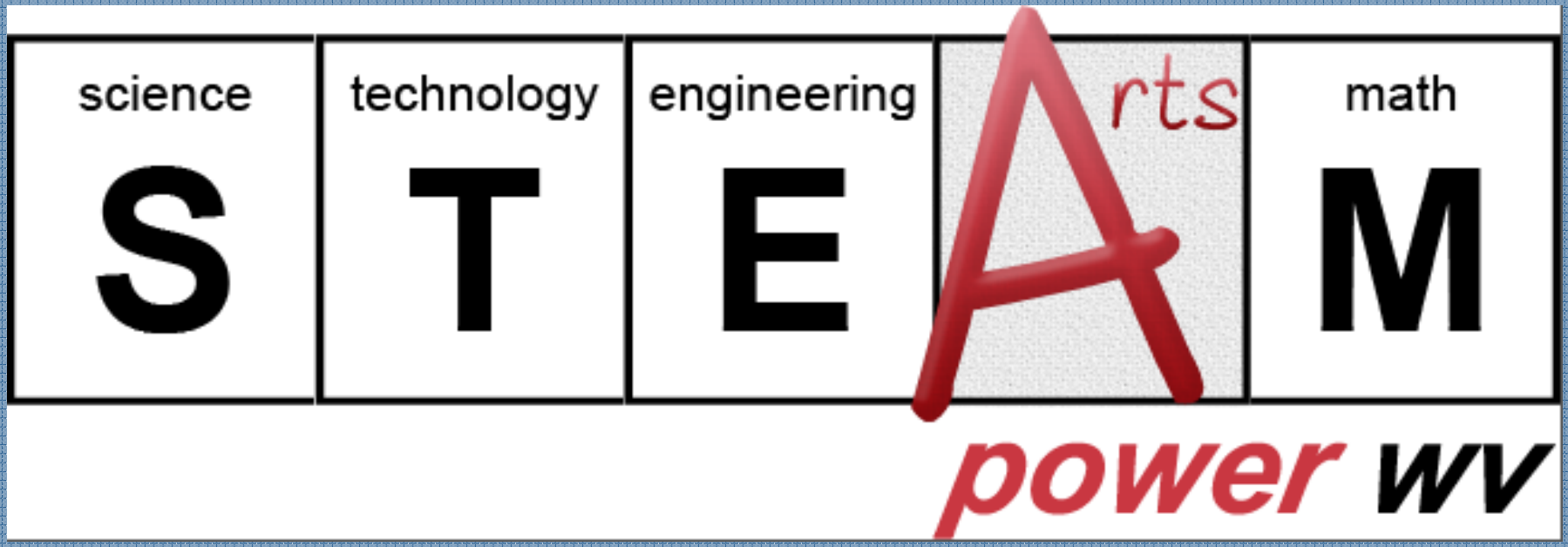


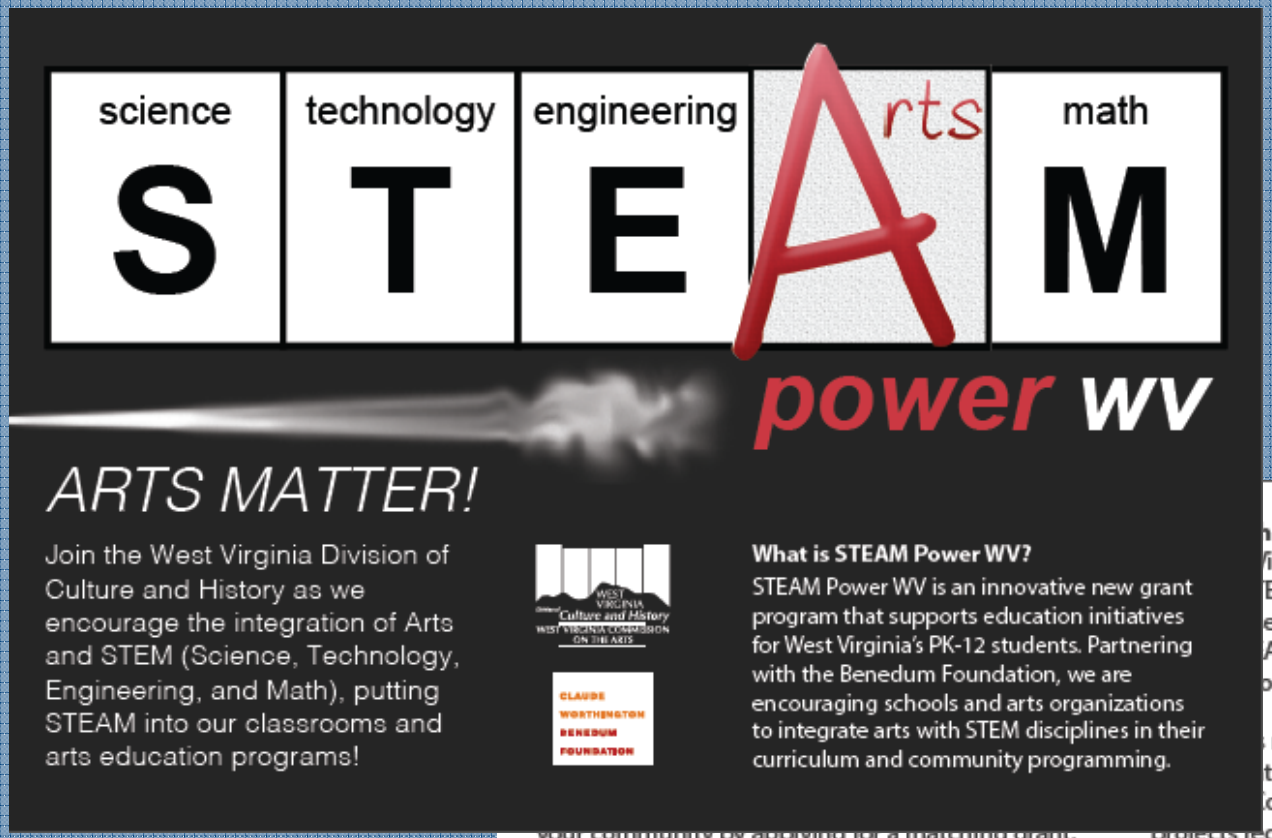


CLAUDE
WORTHINGTON
BENEDUM
FOUNDATION

- Distribute 30 STEAM grants to community based arts groups and schools (at least 20 school based and at least 10 community based).
- Create a repository of model STEAM projects for schools, arts organizations, and professional development agencies.

- **Eligible applicants: preK-12 schools and nonprofit organizations**
- **$7,500 max request / 25% match required**
- **Eligible expenses: contracted artist/professional fees, travel, materials, supplies**





n funding is available?
Virginia Division of Culture and History plans to EAM projects between October 2015 and June e initial grants will help us to create a repository of AM projects that other schools, arts education ons and community organizations can follow.

may request up to $7,500 and must provide a t least 1/3 of the amount requested. Appalachian ommission-designated Distressed Counties' projects require a cash match of at least 10% of the amount requested. For possible assistance securing the grant match through the West Virginia Division of Culture and History, please contact Jim Wolfe (see contact information below).

your community by applying for a matching grant.

West Virginia preschool through high school programs, school systems, non-profit arts organizations and community non-profit organizations with arts-related missions may be eligible for this funding.

If you have a teaching or learning project that integrates the Arts with STEM disciplines, you may wish to apply for a grant. Your program must enhance school and/or after-school curricula by using cross-disciplinary partnerships that include teachers, teaching artists, STEM educators or other professionals. Arts and community organizations as well as higher education organizations may also be involved.

How can I apply for STEAM Power WV?
The STEAM Power WV application is available at www.wvculture.org/arts. The application postmark deadline is September 25, 2015.

For information, contact Jim Wolfe at the West Virginia Division of Culture and History at 304-558-0240 or james.d.wolfe@wv.gov

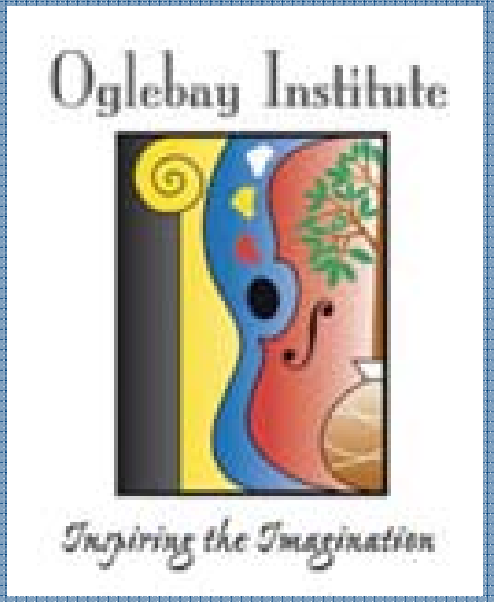
The WV Division of Culture and History received a $225,000 grant from the Claude Worthington Benedum Foundation. These funds are to be used for a specific Arts in Education initiative.

Priorities

- Build collaborations among teachers, artists and STEM professionals
- Include hands-on and problem-solving activities
- Include a strong evaluation component
- Can be documented and are replicable
- Innovation, creativity, and collaboration
- School based or serving schools
- Reach underserved areas or student populations with limited access to STEM and/or arts education projects

HMA
HUNTINGTON MUSEUM OF ART

West Virginia
Public
Broadcasting

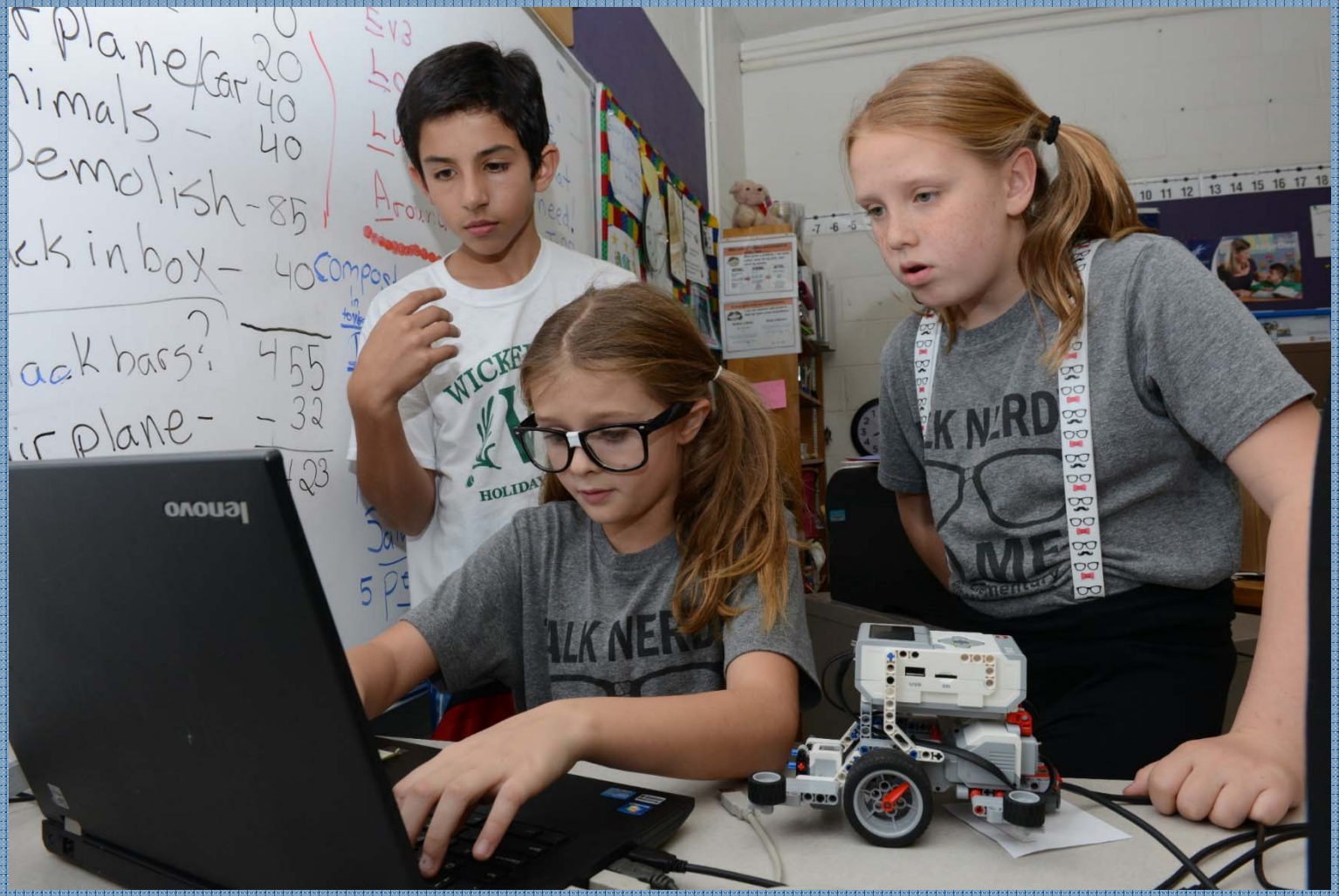

Oglebay Institute
Inspiring the Imagination

Morgan Arts Council

WEST VIRGINIA
SYMPHONY
ORCHESTRA

ClayCenter
for the Arts & Sciences □ West Virginia

BAF
BECKLEY AREA FOUNDATION
EST. 1985



- **Received 82 applications**
- **To date: $162,432 in STEAM grant awards / 41 projects**
- **33 grants to schools + 8 grants to arts organizations**

WEST VIRGINIA
Division of Culture and History

WV Culture & History
@WVDCH

The official Twitter for the West Virginia Division of Culture and History.

Joined June 2014

WV Culture & History
@WVDCH

Follow

Holz Elementary students' Lego Robotics project made possible by a #STEAMPowerWV grant. bit.ly/1YuD1dG

11:45 AM - 25 Nov 2015

Reply to @WVDCH

How do you reassure STEM purists that the arts don't "dilute" their message?

How are you measuring the lessons learned, successes or impact of your efforts working with STEM?

Do you see your STEM work as assisting underserved communities or helping to close achievement gaps?

Audience Questions

Use the Chat box.

National Assembly of State Arts Agencies
KNOWLEDGE ★ REPRESENTATION ★ COMMUNITY

Thanks for participating!

Questions or comments about this session?
Contact NASAA Learning Services Manager Eric Giles:
eric.giles@nasaa-arts.org

Many thanks to NASAA's member states for making this session possible.