

STEM

STEAM

PERCEPTION

4 IN 5 STEM college students say that they decided to study STEM in high school or earlier



1 IN 5 STEM college students decided to study STEM in middle school or earlier



PARENTS AND TEACHERS are critically important to nurturing children's science interest



SCIENCE LITERACY is critical for all Americans young and old, scientist or non-scientist

SCIENCE INTEREST and ability are color-blind and gender-neutral

STEM FACTS

HELPS STUDENTS BECOME



STEAM FACTS

STUDENTS WHO STUDY THE ARTS:



4 TIMES MORE likely to be recognized for academic achievement

Students who take four years of arts and music classes while in high school score **98 POINTS BETTER** on their SATs than students who took only one-half year or less



3 TIMES MORE likely to be awarded for school attendance

Music appreciation students scored **61 POINTS HIGHER** on the verbal and **42 POINTS HIGHER** on the math



93% of Americans believe that the arts are vital to providing well-rounded education for children

86% of Americans agree that arts education encourages and assists in the improvement of a child's attitude toward school

- Training in art education helps to build essential **INTERPRETIVE SKILLS**
- When arts is connected to STEM through mutually-reinforcing objectives, student learning **DEEPENS IN BOTH AREAS**

BRAIN FOCUS

- Deductive reasoning
- Problem solving
- Inductive reasoning
- Problem sensitivity



BRAIN FOCUS

- Creativity and innovation
- Critical thinking and problem solving
- Communication and collaboration
- Flexibility and adaptability
- Social and cross-cultural skills



SCHOOLS WITHOUT ARTS

- 6%** of the nation's public elementary schools offer no specific instruction in music
- 17%** of the nation's public elementary schools offer no specific instruction in the visual arts
- 9%** of public secondary schools reported that they did not offer music
- 11%** of public secondary schools do not offer the visual arts

ONLY 3% of elementary schools offer dance instruction
4% of elementary schools offer drama / theater

SCHOOLS WITH ARTS

94% **83%**

MUSIC (94%) AND VISUAL ARTS (83%) make up most arts instruction in US elementary schools

Of those elementary schools, **93%** that offered music and **85%** that offered visual arts → provided instruction **AT LEAST 1X** a week

Of US secondary schools, **91%** offered music, **89%** offered visual art, → **12%** offered DANCE, **45%** offered THEATER

U.S. STEM RANKINGS



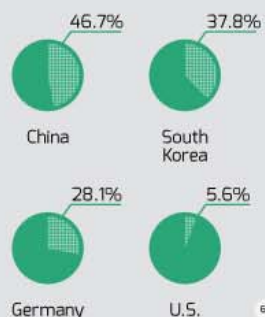
52ND in the quality of mathematics and science education
5TH in overall global competitiveness

27TH in developed nations in the proportion of college students receiving undergraduate degrees in science or engineering



2/3 of the engineers who receive Ph.D.'s from United States universities are not United States citizens

% OF COLLEGE GRADUATES WITH STEM DEGREES



GLOBAL ART EDUCATION

EUROPEAN UNION ARTS EDUCATION FOCUS:

1. Knowledge and understanding
2. Critical appreciation
3. Cultural heritage
4. Artistic skills
5. Individual expression/identity
6. Cultural diversity
7. Creativity

US ARTS EDUCATION FOCUS:

The arts are recognized as a core academic subject **48 STATES** have adopted **STANDARDS** for learning in the arts

DESPITE THIS, ART EDUCATION IS ON THE DECLINE:

51% of art teachers feel curriculum and focus is shifting away from the arts

ARTS CURRICULA is typically process-driven and relationship based, so its impact on academic performance in the US is often underestimated and undervalued

SOURCES

1. Source: The Hill
Author: Rep. Marcia L. Fudge
<http://thehill.com/blogs/congress-blog/education/293569-early-exposure-to-stem-education-benefits-children-economy#ixzz2XBRJofei>
2. Source: Team Metric
<http://www.teammetric.org/stem-literacy/>
3. Source: Purdue University
Authors: Stohlmann, Moore, and Roehrig
<http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1054&context=ipeer>
- Source: Georgetown University
Authors: Carnevale, Smith, and Melton
<http://www9.georgetown.edu/gradi/gppi/hpi/cw/pdfs/stem-execsum.pdf>
- Source: Bayer USA
http://www.bayerusa.com/MSMS/web_docs/Bayer_Compilation_Report.pdf
- Source: Microsoft

- <http://www.microsoft.com/en-us/news/presskits/citizenship/docs/STEMPerceptionsReport.pdf>
4. Source: National Center for Education Statistics
Authors: Parasad and Spiegelman
<http://nces.ed.gov/pubs2012/2012014rev.pdf>
- Source: Artsblog
Author: Narric Rome
<http://blog.artsusa.org/2012/04/02/ten-years-later-a-puzzling-picture-of-arts-education-in-america/#sthash.1LXGxj2s.dpuf>
5. Source: Level Playing Field Institute
<http://www.lpfi.org/how-does-us-compare-other-countries-stem-education>
6. Source: Top Coder
Author: Jessie D'Amato Ford
<http://www.topcoder.com/blog/shocking-stem-stats-and-our-role-in-csedweek-2012/>
Source: Congressional Research Service
Authors: Heather Gonzalez and Jeffrey Kuenzi
<http://www.fas.org/sgp/crs/misc/R42642.pdf>
7. Source: National Assembly of State Arts Agencies
<http://www.nasaa-arts.org/Research/Key-Topics/Arts-Education/critical-evidence.pdf>

- Source: Ohio Alliance for Arts Education
http://www.oaee.net/index.php?option=com_content&view=article&id=58&Itemid=114
- Source: DoSomething.org
<http://www.dosomething.org/tipsandtools/11-facts-about-arts-education>
- Source: Florida Music Educators Association
<http://www.dosomething.org/dnn/Advocacy/FactsandStatistics.aspx>
- Source: Americans for the Arts
<http://www.americansforthearts.org/information-services/toolkit/003.asp#society>
8. Source: National Assembly of State Arts Agencies
<http://www.nasaa-arts.org/Research/Key-Topics/Arts-Education/critical-evidence.pdf>
- Source: Ohio Alliance for Arts Education
http://www.oaee.net/index.php?option=com_content&view=article&id=58&Itemid=114
9. Source: ArtsEd Washington
<http://artsedwashington.org/research/first-look-national-center-for-education-statistics-examines-arts-education-in-schools>

10. Source: European Union Education, Audiovisual & Cultural Executive Agency
http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/13EN.pdf
11. Source: Americans for the Arts
<http://www.americansforthearts.org/networks/arts-education/navigator.asp>
- Source: Americans for the Arts
http://www.artsusa.org/get_involved/advocacy/funding_resources/default_005.asp

CREATED BY



<http://education.arts.ufl.edu/>