Inspiring STEM Interest

February 2, 2021

DISCLAIMER

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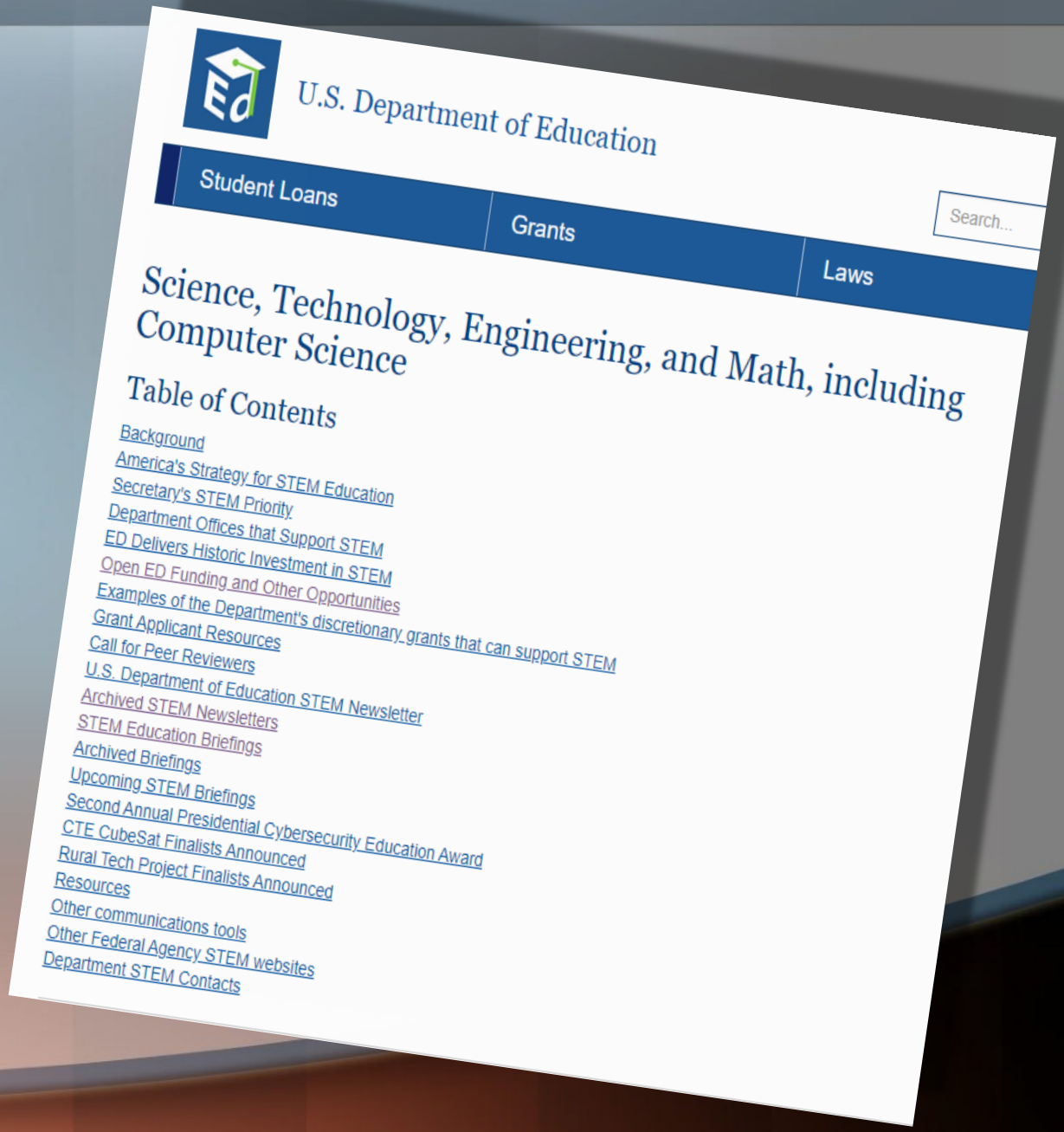
Take Note

- March 25, 2:00 – 3:30 PM ET
  Differing Abilities in STEM
- STEM Webpage
  www.ed.gov/STEM
- STEM Newsletter
  www.ed.gov/subscriptions
- ED Grants
  https://www2.ed.gov/fund/grants-apply.html



Miriam Lund

Group Lead, Nita M. Lowey 21st CCLC Grant Program, The Out of School Time Career Pathways Grant Program, Office of Formula Grants, Office of School Support and Accountability, U.S. Department of Education

Nita M. Lowey 21st Century Community Learning Centers Grant Program's STEM Investments

21st CCLC – Title IV, Part B

Science, Technology, Engineering, and Mathematics Investments

- Interagency Agreements with the following:
  - NASA
  - NOAA
  - NPS
  - IMLS
- Agreements are in place for 3 years
- Total support of STEM for 21st CCLC through IAA is $10.7M

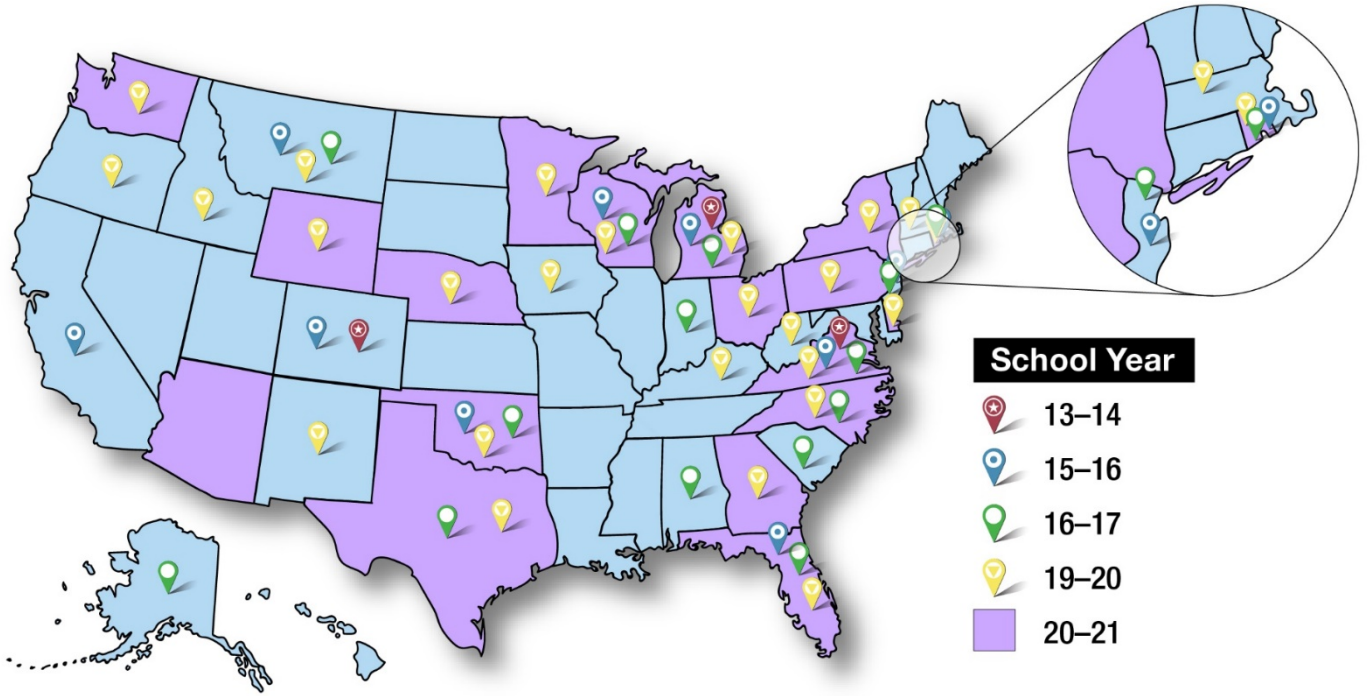
Audience	Total - Direct	Total - Indirect
Students	467	700
21st CCLC staff	125	10
Educators/Administrators	91	153
NOAA Scientists	14	9
Local Media, Social Media	48,852	426,017
Other	3,771	230
TOTAL	53,320	427,263
TOTAL (excluding media)	4,468	1,246

NASA STEM Design Challenge

What	A partnership between NASA and the US Department of Education's 21st Century Community Learning Centers
Who	Sites execute a series of engineering design challenges in 3rd – 8th grades, enabling them to develop solutions to real world science and engineering problems faced by NASA scientists, engineers and astronauts today
Where	The collaboration will support an expansion of STEM opportunities for students across the country in up to 18 states
When	2020-2021 School Year

NASA 2020-2021 Reach

# of states	Participating States
1	Arizona*
2	Delaware*
3	Florida
4	Georgia*
5	Michigan
6	Minnesota
7	Nebraska
8	New York
9	North Carolina
10	Oklahoma
11	Ohio
12	Pennsylvania
13	Rhode Island
14	Texas
15	Virginia
16	Washington
17	Wisconsin
18	Wyoming



*New States in 2020-2021

INSTITUTE of Museum and Library SERVICES

Museum	# of Museum Partners at NYSCI	# of CCLC Sites Assigned	# of CCLC Educators Trained	# of Students
Franklin (PA)	4	5	11	135
NYSCI (NY)	2	5	19	99
Amazeum (AR)	2	5	25	184
Betty Brinn (WI)	3	4	12	113
ScienceWorks (OR)	2	5	8	48
ASC (AZ)	2	5	14	68
Houston (TX)	2	5	28	75
Frost (FL)	2	4	11	138
Total	**19**	**38**	**128**	**860**

- Summer Symposium Workshops/Trainings 7
  - Craters, Great Smoky, Saguaro completed PD

- 21st CCLC Engagement with Partners 8
  - Most NPS pushed back activities due to COVID-19
  - Saguaro NP students set up wildlife camera around their school
  - Grounds and the NP staff set up cameras in the NP; discussions on difference
  - Olympic NP found social distancing precluded students from riding buses to the park so in the spring, field trips that include parents will happen, parents will be reimbursed for their gas
  - Craters of the Moon NP reduced the number of students and chaperones but added virtual visits for those who couldn't attend in person
  - Great Smoky Mountains NP didn't change the activities but reduced the number of students per visit and added virtual sessions. The site will continue in person visits in school year 20-21.

Learning has no boundaries!

Soaring Beyond Expectations
21st Century Community Learning Centers

DEPARTMENT OF EDUCATION
UNITED STATES OF AMERICA

Thank you!

Visit: [Y4Y.ed.gov](Y4Y.ed.gov)

Dr. Sylvia James

Deputy Assistant Director,
Education and Human Resources
Directorate, National Science
Foundation

Dr. Heidi Schweingruber

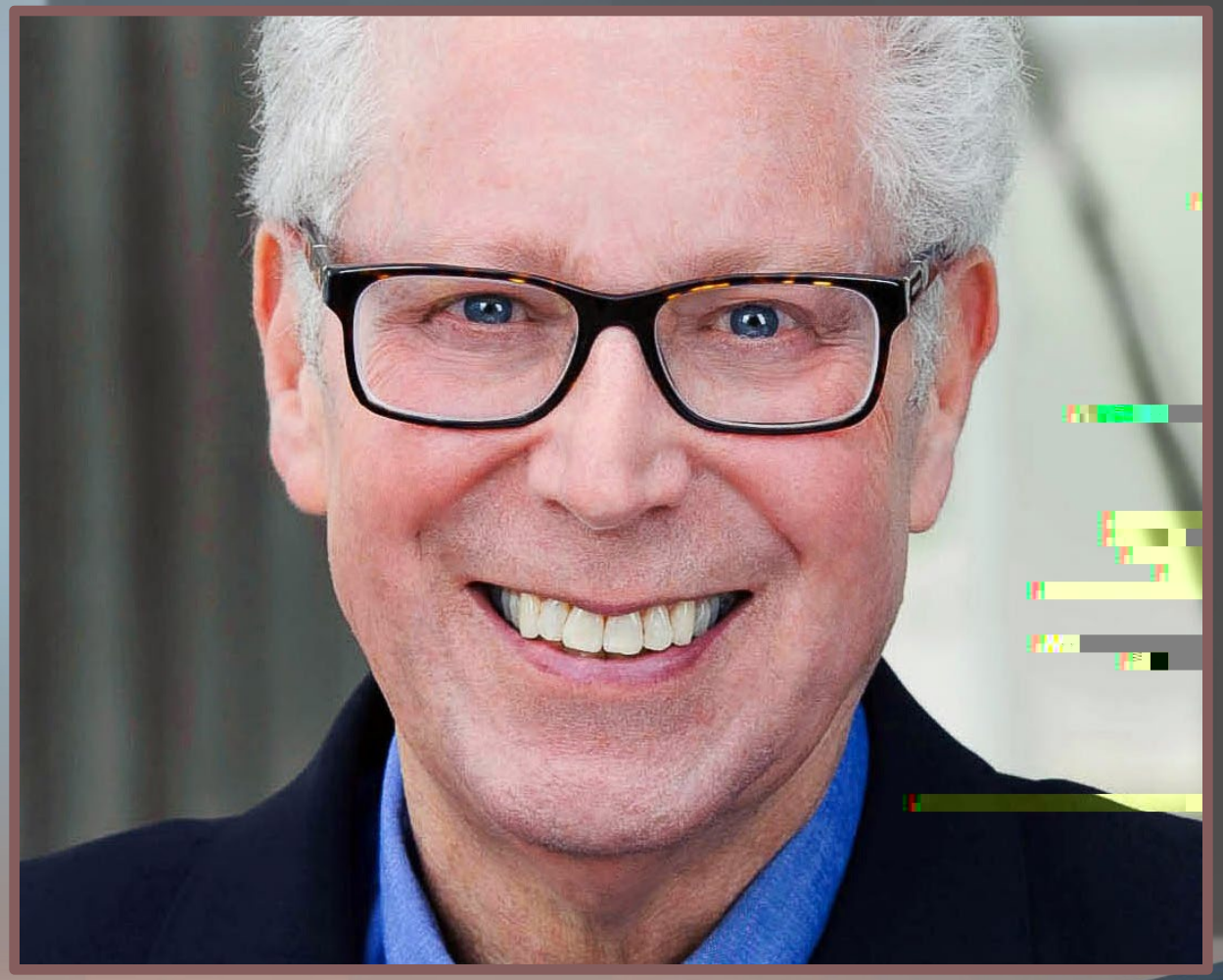
Director for Board on Science Education, National Academies of Science, Engineering and Medicine

Dennis Schatz

Science Educator, Connected Science Learning

Retiring President, National Science Teaching Association

Senior Fellow, Institute for Learning Innovation



Dr. Adam Maltese

Professor, Martha Lea and Bill Armstrong Chair for Teacher Education, Indiana University

What type of experience first sparked your interest in STEM?	Male	Female
Playing or spending time outdoors	10%	15%
Class at school	8%	13%
No specific event - I remember ALWAYS being intrinsically interested	13%	12%
Math problems/logic games/patterns	8%	12%
Good grades in STEM courses	7%	9%
Home experiments/investigations (with microscope, chemistry kit, etc.)	11%	7%
Books, magazines, and/or comics	9%	5%
Visit to a museum, zoo, aquarium or nature reserve/park	3%	3%
Television show or movie	4%	2%
Building / Tinkering / Taking apart mechanical objects or electronics	9%	2%
Total Responses	*3817*	*2969*

Source: Adam Maltese, Ph.D., University of Indiana

STEM Interest by Gender and Grade

Career Interest	SEX/GRADE	3	4	5	6	7	8	9	10	11	12
Science & Engineering	Boy	15%	14%	17%	16%	18%	25%	17%	20%	23%	18%
	Girl	4%	4%	3%	4%	4%	6%	5%	4%	4%	9%
Medicine & Veterinary	Boy	5%	5%	7%	4%	7%	5%	8%	8%	6%	10%
	Girl	29%	34%	31%	28%	29%	34%	34%	39%	45%	43%

Source: Adam Maltese, Ph.D., University of Indiana

Which of the following were the most important factors in your persistence in STEM beyond the event that initially interested you?	Grades 1-4	Grades 5-8	Grades 9-12	Age 18+
Playing or spending time outdoors	15%	7%	4%	1%
Books, magazines, or comics	12%	9%	5%	2%
Innate interest/passion for the field	12%	10%	12%	20%
Building / Tinkering / Taking apart mechanical objects or electronics	12%	9%	4%	1%
Math problems/logic games/puzzles	10%	10%	5%	2%
Home experiments/investigations (with microscope, chemistry kit, etc.)	9%	9%	3%	0%
Visits to museum, zoo, aquarium or nature reserve/park	6%	5%	2%	1%
Good grades in STEM courses	5%	13%	20%	8%
Television show or movie	3%	2%	1%	0%
Expectations of Others (e.g., family, peers)	3%	3%	3%	2%
STEM classes at school	3%	7%	18%	14%
I was not interested at this point	2%	2%	2%	3%
Computer programming/building	1%	4%	5%	5%
Research Experience	0%	0%	2%	23%
Total	*2753*	*4061*	*4776*	*5129*

Source: Adam Maltese, Ph.D., University of Indiana

Timing of STEM Interest by Experience Type

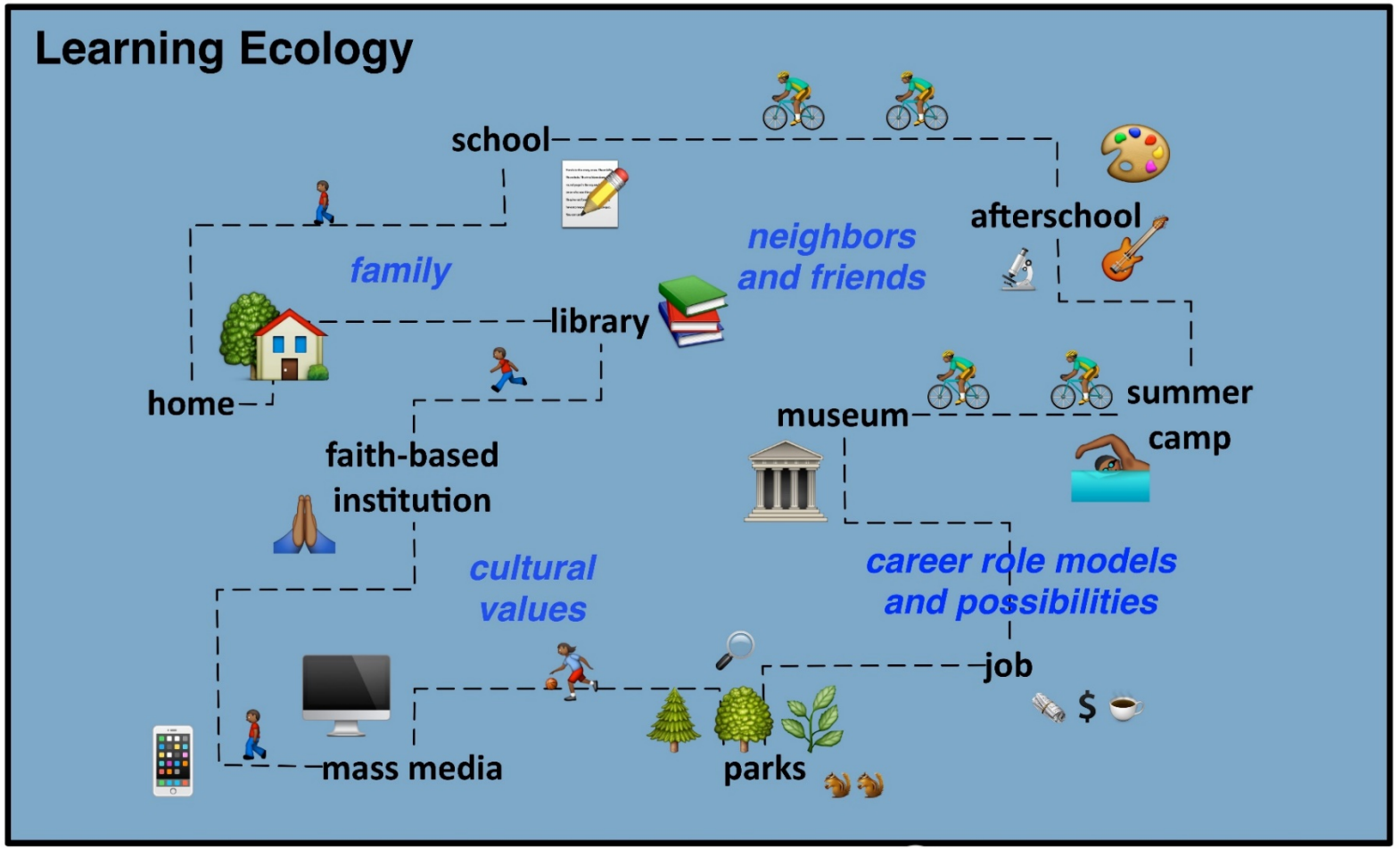
Timing of Initial Interest by Type of Experience (in percentages)

What type of experience first sparked your interest in STEM?	Pre-K		Grades K–5		Grades 6–8		Grades 9–12		College	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
No specific event; innate interest	29	35*	19	22	11	12	10*	7	10	5
Building, tinkering, or taking apart mechanical objects or electronics	22**	4	19**	4	18**	3	12**	2	9**	3
Media (books, television, or video games)	17*	12	16**	11	14**	8	13**	8	18**	9
Playing or spending time outdoors	9	21**	7	9	3	6**	3	3	3	4
A visit to a museum, zoo, aquarium, or nature reserve	5	7	5	8**	3	5	3	5	3	2
Interest in math problems or logic games	4	5	7	10*	9	10	11	8	3	8*
Class at school	1	1	12	21**	29	41**	33	52**	37	49*
Science fair	0	0	2	3*	2	3	2	3	2	1
All other categories	12	14	12	12	11	12	12	13	16	19
Subsample *n*	474	407	1,165	1,115	542	534	565	577	188	232

Source: Adam Maltese, Ph.D., University of Indiana

nsta
National Science Teaching Association

Promoting excellence and innovation in science teaching and learning for all



Research+Practice Collaboratory. 2015.

Center to Advance Informal STEM Education (CAISE) [video interview series]

https://nsta.org/csl/

Promoting excellence and innovation in science teaching and learning for all

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National Science Teaching Association

NASEM Reports

Download reports for free: www.nap.edu

- Cultivating Interest and Competencies in Computing (2021)
- Teaching K-12 Science and Engineering During a Crisis (2020)
- Science and Engineering for Grades 6-12 (2018)
- Learning Through Citizen Science (2018)
- Barriers and Opportunities to 2 and 4 year STEM degrees (2016)
- Identifying and Supporting Productive STEM Programs in Out-of-school Settings (2015)
- STEM Integration in K-12 Education (2014)
- A Framework for K-12 Science Education (2012)
- Surrounded by Science: Learning Science in Informal Environments (2010)
- Learning Science in Informal Environments: People, Places & Pursuits (2009)

Inspired by a Boa

Reminders

www.ed.gov/STEM