

Raising Citizen Scientists

What is iQ: smartparent?

iQ: smartparent is an Emmy-winning multimedia television and web series designed for parents that will empower them with new knowledge, tools, and abilities to successfully guide their children through the changing landscape of digital media and technology. It's a growing community of caregivers, national experts, educators, and parent bloggers who want to understand the opportunities and challenges of media as it relates to the development of their children. *iQ: smartparent* was created by WQED Multimedia in 2012.

About this Episode

A "Citizen Scientist" is defined as a member of the general public who collects and analyzes data, typically as part of a collaborative project with professional scientists. According to the National Environmental Education Foundation (NEEF): No matter your age or level of scientific experience, citizen science offers a chance for everyone to get involved and contribute to the growing wealth of information we know about our planet. This episode of *iQ: smartparent* explores the range of exciting and essential projects that allow young people to use their curiosity, STEM skills, and digital technology aptitudes to help care for our natural world.

Discussion Questions

1. How can you support your child's exploration of science?
2. Why do you think some caregivers are hesitant to explore science with their children? What are some barriers and concerns?
3. What are a few rules to have when experimenting and exploring science safely with your family?
4. Citizen science is about making the world a better place together. How can your community engage in citizen science to make your neighborhood a better place?
5. What are some local resources available to your family to explore science? Scout troops, museums, Citizen Science Labs, watershed conservation, parks, etc. are just a few examples.

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About the Guests



Dr. Andre Samuel, a long-time resident of Washington, DC, graduated from the University of the District of Columbia with a degree in Biology. Following graduate study at the George Washington University in Genomics and Bioinformatics, he received his PhD in Biology from Duquesne University. At Duquesne, his research focused on studying the structure and function of the cold shock related proteins in *E. coli*. As a Ph.D. candidate, Dr. Samuel founded the S.I.G.M.A Science Mentorship Initiative, a summer study program designed to introduce diverse ninth graders to the University's lab with the long-term goal of encouraging the pursuit of careers in scientific research. Dr. Samuel's research experience includes studying toxicology and carcinogenicity effects of novel drugs, hookworm vaccine development and tuberculosis reactivation in non-human primates. Dr. Samuel has a passion for STEM education and life science research. He has received the BMe community leader award in 2015, The President's Volunteer Service Award in 2016 and the Pennsylvania Statewide Afterschool/Youth Development Network (PSAYDN) Afterschool Champion Award in 2017 for his dedication to STEM education. He believes that creating fun engaging and hands on lab experiences for people is the best pathway to an interest in STEM.



Sara Espinoza is the Vice President of Programs for the National Environmental Education Foundation (NEEF). Sara oversees the design, integration, execution, and evaluation of NEEF programs and pilot initiatives, as well as exploration of new themes and concepts in environmental education. Sara's previous positions at NEEF have included overseeing research and innovation, designing and implementing national public engagement campaigns with NBA and NHL, and working with broadcast meteorologists across the US to incorporate environmental information into the television weathercast. She is a senior fellow of the Environmental Leadership Program and a member of the Bucknell University Alumni Association Board of Directors. Before joining NEEF, Sara worked on education programs at World Wildlife Fund and the Jane Goodall Institute. She holds a BA from Bucknell University and a master of environmental management (MEM) from Duke University.

Online Resources

The Citizen Science Lab: Pittsburgh's first community life sciences laboratory
www.thecitizensciencelab.org/

Carnegie Mellon CREATE Lab – Smell Pittsburgh is a mobile phone app designed to engage Pittsburgh residents in tracking pollution odors across our region.
https://cmucreatelab.org/projects/Smell_Pittsburgh

Plum Landing Science Activities <https://pbskids.org/plumlanding/parents/allresources.html>

SciGirls - Citizen Science <https://pbskids.org/scigirls/citizen-science>

10 Popular Citizen Science Projects
<https://blog.nature.org/science/2015/02/17/citizen-science-10-most-popular-projects-best-nature-conservation/>

PBS Kids – Citizen Science Fun for All! pbskids.org/scigirls/citizen-science

Common Sense Media / Education –Real-World Science Resources for Students
www.commonsense.org/education/top-picks/real-world-science-resources-for-students

National Environmental Education Foundation (NEEF) – Hands on the Land program
www.neefusa.org/hands-land

- o Advancing the Field www.neefusa.org/advancing
- o Preparing the Next Generation www.neefusa.org/preparing
- o Greening STEM Learning Center www.neefusa.org/greening-stem-learning-center

What Parents Talk about When They Talk about Learning – National Survey
www.edc.org/sites/default/files/uploads/EDC_SRI_What_Parents_Talk_About.pdf

The Impact of Citizen Environmental Science in the United States
scholarship.law.gwu.edu/cgi/viewcontent.cgi?article=2703&context=faculty_publications

U.S. Environmental Protection Agency – Impact Reports and Fact Sheets
www.epa.gov/research/impact-reports-and-fact-sheets

Association of American Educations – “Five Citizen Science Projects to do with your Students”
aaeteachers.org/index.php/blog/1804-five-citizen-science-projects-to-do-with-your-students

Science News for Students – “Kids make great citizen scientists”
www.sciencenewsforstudents.org/article/kids-make-great-citizen-scientists

Citizen Science Association www.citizenscience.org/

Citizen Science Alliance – Find projects www.citizensciencealliance.org/projects.html

CitizenScience.gov www.citizenscience.gov/#

U.S. Environmental Protection Agency – *Citizen Science Opportunities for Monitoring Air Quality* epa.gov/sites/production/files/2017-07/documents/citizenscience_airmonitoring_factsheet_updated_sept2016_0.pdf

Scientific American – “8 Apps That Turn Citizens into Scientists”
www.scientificamerican.com/article/8-apps-that-turn-citizens-into-scientists/

Smithsonian – “Mobile Apps for Citizen Science”
<https://ssec.si.edu/stemvisions-blog/mobile-apps-citizen-science>

EdTechLens – Citizen Science Projects for Kids at Home or School
www.edtechlens.com/blog/citizen-science-projects-for-kids-at-home-or-school

Earthwatch Institute – Hands-On Citizen Science – Connecting People With Science
<https://bit.ly/2MHaDYj>

NASA – Citizen Science www.nasa.gov/solve/opportunities/citizenscience

National Geographic – Citizen Science nationalgeographic.org/encyclopedia/citizen-science/

Scientific American – Citizen Science www.scientificamerican.com/citizen-science/

Nature magazine – “No PhDs needed: How citizen science is transforming research”
www.nature.com/articles/d41586-018-07106-5

The Cornell Lab of Ornithology – Citizen Science Central
www.birds.cornell.edu/citscitoolkit/about/defining-citizen-science/

Association of Zoos & Aquariums – Citizen Science www.aza.org/citizen-science

Smithsonian Research Mission – Citizen Science www.si.edu/volunteer/citizenscience

American Forests – The Importance of Citizen Scientists <https://bit.ly/2p9AVJv>

Education Week – “Save the Planet! Do a Citizen Science Project With Your Students”
http://blogs.edweek.org/edweek/curriculum/2018/07/save_the_planet_do_a_citizen_s.html

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