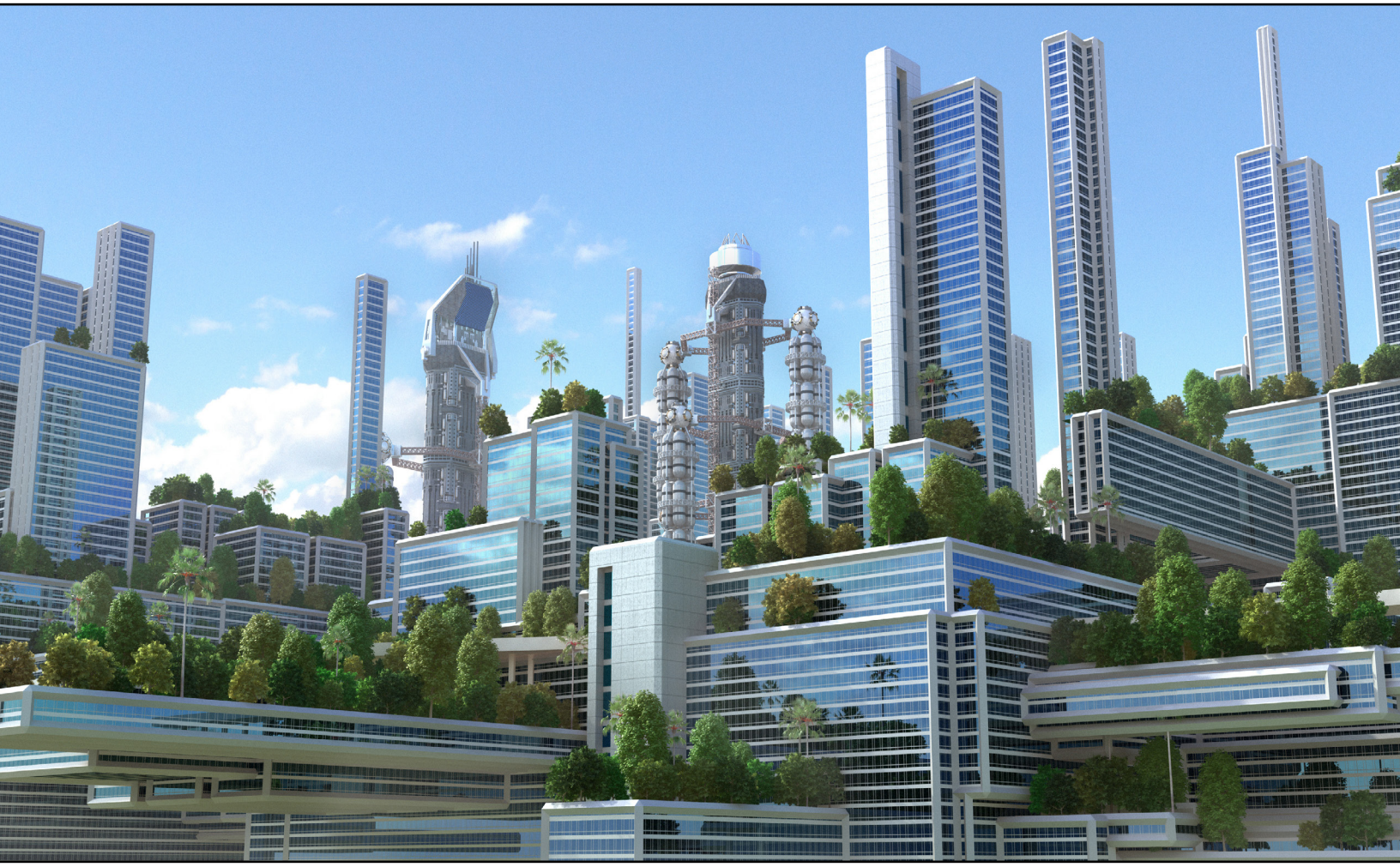
Smithsonian | SCIENCE *for Global Goals*

SUSTAINABLE COMMUNITIES!

How will we help our community thrive?



SUSTAINABLE DEVELOPMENT GOALS

developed by

Smithsonian *Science Education Center*

in collaboration with

iap SCIENCE HEALTH POLICY

the interacademy partnership

Sustainable Communities!
How Will We Help Our Community Thrive?
Community Research Guide

Smithsonian Science for Global Goals Development Team

Lead Guide Developer/Writer
Heidi Gibson

Executive Director
Dr. Carol O'Donnell

Division Director
Laurie Rosatone

Curriculum Series Developers
Heidi Gibson
Andre Radloff
Logan Schmidt

Lead Product Specialist
Hannah Osborn

Digital Media Team
Ashley Deese, Assistant Division Director
Reuben Brenner-Adams
Sofia Elian
Ryan Seymour

Contributing Interns
Maggie New
Vivian Zohery

Smithsonian Science Education Center Staff

Executive Office
Kate Echevarria
Angela Pritchett

Advancement & Partnerships
Cole Johnson, Division Director
Kayla Powitz
Inola Walston

Professional Services
Dr. Amy D'Amico, Division Director
Katherine Blanchard
Katherine Fancher
Katie Gainsback
Dr. Hyunju Lee
Sherrell Lewis
Nejra Malanovic
Tami McDonald
Alexa Mogck
Eva Muszynski

Smithsonian Science for the Classroom Developers
Dr. Sarah J. Glassman
Melissa Rogers
Mary E. Short
Dr. Katya Vines

Finance & Administration
Lisa Rogers, Division Director
Anne-Marie Kom

Senior Project Advisors

John Boright
Executive Director, International Affairs National Academy of Sciences
Washington, DC, USA

Peter McGrath, PhD
Coordinator
InterAcademy Partnership
Washington, DC, USA

Jacob Sherson
Founder and Director
Janet Rafner
Director of Learning
Arthur Hjorth
Postdoctoral Researcher
Ida Bang Hansen
Intern
ScienceAtHome
Aarhus University
Aarhus, Denmark

Research Mentors

Hooi Ling Khoo, PhD
Assistant Professor, Universiti Tunku Abdul Rahman
Perak, Malaysia

Liteboho Makhele
Programme Manager: Sustainable and Resilient Cities, South African Cities Network
Johannesburg, South Africa

Angela Mashford-Pringle, PhD
Associate Director/Algonquin Waakebiness-Bryce Institute for Indigenous Health, Dalla Lana School of Public Health, University of Toronto
Toronto, Canada

Mariana Sepiurka
Co-Founder at XSTEM and Owner at Estudio Rodrigo Sepiurka arquitectos
Buenos Aires, Argentina

Steven O. Nelson, MA
Supervisory Facility Operations Specialist, National Zoological Park DC & VA, Smithsonian Institution
Washington DC, USA

Project Advisors

Professor Andrea Boyack
Washburn University School of Law
Lawrence, Kansas, USA

Susan Brownknight
CEO, Living Arrangements for the Developmentally Disabled (LADD)
Cincinnati, Ohio, USA

Kate Christen, PhD
Research Associate, SLA/Smithsonian Facilities
Washington, DC, USA

Jennifer Collins
Manager of Ocean Education and Outreach, Smithsonian National Museum of Natural History
Washington, DC, USA

Prof Vernon Collis
Consulting Structural Engineer and Architect
Collis and Associates
Cape Town, South Africa

Brian Coyle, PhD
Program Manager, Smithsonian Institution, National Zoological Park & Conservation Biology Institute
Washington, DC, USA

Jessica L. Deichmann, PhD
Program Scientist, Smithsonian National Zoo and Conservation Biology Institute & Smithsonian Working Land and Seascapes Program
Washington, DC, USA

Professor Priyan Dias, PhD
Senior Professor in Civil Engineering, University of Moratuwa, Moratuwa 10400, Sri Lanka
President, National Academy of Sciences of Sri Lanka
Associate Editor, Civil Engineering & Environmental Systems
Bandaranayake Mawatha, Sri Lanka

Ángela María Díaz-Márquez, Arch. Ph.D
Community Outreach Coordinator in Universidad de Las Américas (UDLA), Ecuador
Head of a multidisciplinary research group: Lugar, Medio y Sociedad (LMS)
Quito, Ecuador

Barbara Doten
Regional Director, Californian Global Education Project at CSU Long Beach
Los Angeles, California, USA

Alison Holm
Project Leader, Urban and Regional Planning
Washington, DC, USA

Rahinah Ibrahim, Ph.D., FASc.,
Senior Professor of Architecture, Faculty of Design and Architecture, Universiti Putra Malaysia
Selangor D.E., Malaysia

Caroline Knowles, PhD
Director, Urban Infrastructures of Well-Being Programme, Professor of Sociology, Goldsmiths, University of London
London, Great Britain

Mario Matamoros
School of Architecture, Universidad Nacional Autónoma de Honduras
Tegucigalpa, Honduras

Karen S. McDonald
STEM Program Coordinator, Smithsonian Environmental Research Center
Edgewater, Maryland, USA

Jenia Mukherjee, PhD
Assistant Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Kharagpur
Kharagpur, India

Lara Noren
Ocean and Climate Education Specialist, Smithsonian National Museum of Natural History
Washington, DC, USA

Liana Ricci, PhD
Lecturer/Assistant Professor, School of Architecture, Planning and Environmental Policy
Dublin, Ireland

Kathleen Rooney
Director, Transportation Policy & Programs
Honolulu, Hawaii, USA

Cynthia E. Smith
Curator of Socially Responsible Design, Cooper Hewitt Smithsonian Design Museum
New York, New York, USA

Will Sowers
Regional General Manager—East Coast at Wheels Labs, Inc.
Orlando, Florida, USA

William Tietje, RLA, ASLA
Senior Associate, SCAPE Landscape Architecture
New Orleans, Louisiana, USA

Noah Weeth Feinstein
Director, Robert F. and Jean E. Holtz Center for Science and Technology Studies
Associate Professor, Curriculum & Instruction, Associate Professor, Community & Environmental Sociology, University of Wisconsin-Madison
Madison, Wisconsin, USA

Suresh Kumar Yadav
Province Coordinator, Nepal Peacebuilding Initiative
Katmandu, Nepal

Technical Reviewers

Badin Borde, M.A. Urban Geography
Project Manager, Siemens Stiftung
Munich, Germany

Professor Vernon Collis
Consulting Structural Engineer and Architect, Collis and Associates
Cape Town, South Africa

Jessica Loding, M.S.
Director of Sustainability at Schupan
Detroit, Michigan, USA

Kathleen Rooney
Director, Transportation Policy & Programs
Honolulu, Hawaii, USA

Field Test Sites

Linda Aaron, Jonathan Gonzalez
Natural History Museum of Utah
Salt Lake City, Utah, USA

Michael Oteng Attakora
Kumasi Wesley Girls' High School
Kumasi, Ghana

Constanza Azzolina, Mariana Sepiurka, Valeria Viva
XSTEM
Buenos Aires, Argentina

Chuck Barlow Jr., MSc-Executive Director
Saving Our Sons & Sisters International (SOSSI)
Atlanta, Georgia, USA

Stacy DeVeau, MS Ed
University of Arizona
Prescott, Arizona, USA

Milene Amato Regis de Farias
Southcrest Christian School
Lubbock, Texas, USA

Rosina Garcia
San Diego Unified School District

Talat Seema, Atifa Raza, Noreen Noor, Mohammed Faheem Shahid, Shahnila Zia
Dawood Public School
Karachi, Pakistan

Melanie Shaver, EdD.
Foothills Community School
Marion, North Carolina, USA

San Diego, California, USA

Kevin Hengelbrok
St. Edmund's Academy
Pittsburgh, Pennsylvania, USA

Andrea Inserra
Indian River Central School District
NYS Master Teacher Program Emeritus
Philadelphia, New York, USA

Phillip K Kight
Colgan High School
Manassas, Virginia, USA

Julia Elizabeth Little
Westover Senior High School
Fayetteville, North Carolina, USA

Tristan Orbeta
University of the Philippines—Diliman
Quezon City, Philippines

Maree Pascall, Kasey Liehr
Girl Scouts of Northeast Texas
Dallas, Texas, USA

Lily Shia
Shia Elementary
Los Angeles, California, USA

Terry Snow
Rogers Ranch Elementary
Laveen, Arizona, USA

Jason Watts
Dorris Intermediate School
Collinsville, Illinois, USA

Smithsonian Science Education Center

The Smithsonian Science Education Center (SSEC) is an education organization within the Smithsonian Institution. The SSEC's mission is to transform K–12 Education Through Science™ in collaboration with communities across the globe. The SSEC promotes authentic, interactive, inquiry-based K–12 STEM teaching and learning; ensures diversity, equity, accessibility, and inclusion in K–12 STEM education; and advances STEM education for sustainable development. The SSEC achieves its goals by developing exemplary curriculum materials and digital resources; supporting the professional growth of K–12 teachers and school leaders; and conducting outreach programs through LASER (Leadership and Assistance for Science Education Reform) to help schools, school districts, state education agencies, and ministries of education throughout the world implement inquiry-based science education programs.

Smithsonian Institution

The Smithsonian Institution was created by an Act of Congress in 1846 "for the increase and diffusion of knowledge . . ." This independent federal establishment is the world's largest museum, education, and research complex and is responsible for public and scholarly activities, exhibitions, and research projects nationwide and overseas. Among the objectives of the Smithsonian is the application of its unique resources to enhance elementary and secondary education.

Smithsonian Science for Global Goals (SSfGG) is a freely available curriculum developed by the Smithsonian Science Education Center (SSEC) in collaboration with the InterAcademy Partnership. It uses the United Nations Sustainable Development Goals (SDGs) as a framework to focus on sustainable actions that are student-defined and implemented.

Attempting to empower the next generation of decision-makers capable of making the right choices about the complex socio-scientific issues facing human society, SSfGG blends together previous practices in Inquiry-Based Science Education (IBSE), Social Studies Education (SSE), Global Citizenship Education (GCE), Social Emotional Learning (SEL), and Education for Sustainable Development (ESD).

Thank You for Your Assistance

Thank You for Your Support

This project was supported by the **Gordon and Betty Moore Foundation** through Grant GBMF#9029 to the Smithsonian Science Education Center.

How will we help our community thrive?

Part 1: What are sustainable communities and how do they relate to me?	• Task 1: What is the problem? • Task 2: How is the problem of sustainable communities related to me? • Task 3: What skills do we need to do our research? • Task 4: Where do we notice the problem? • Task 5: How will we achieve our goals?
Part 2: How can including people help our community thrive?	• Task 1: Who is in our community? • Task 2: How has our community changed over time? • Task 3: Who makes decisions in our community? • Task 4: How can including our community help us make better decisions? • Task 5: How do we include the community in our actions?
Part 3: How can we use our space to help our community thrive?	• Task 1: Why does my community need space? • Task 2: How does my community use our shared space? • Task 3: How do green spaces meet the needs of my community? • Task 4: How can we design our space for a sustainable future? • Task 5: How can we make our community better?

Part 4: How can housing help our community thrive?	• Task 1: Why is housing important? • Task 2: What are housing issues in my community? • Task 3: How can the design of housing meet our environmental needs? • Task 4: How can we use our housing in a sustainable way? • Task 5: How can we make housing in our community more sustainable?
Part 5: How can the transportation system help our community thrive?	• Task 1: Why is transportation important? • Task 2: What is the transportation system like in my community? • Task 3: How do transportation systems affect the environment? • Task 4: How do transportation choices affect my community? • Task 5: How can we improve transportation in our community?
Part 6: How can we use resources wisely to help our community thrive?	• Task 1: What resources do I use and how renewable are they? • Task 2: What waste does my community produce? • Task 3: How can my community reuse instead of waste? • Task 4: How can my community recycle waste? • Task 5: How can we improve resource use in our community?
Part 7: How will we act to help our community thrive?	• Task 1. What is the problem we want to take action on in our community? • Task 2: How will we try to solve our problem? • Task 3: How will our team take action in our community? • Task 4: Putting our plan into action • Task 5: What did I learn?

Smithsonian
Science Education Center

Dear Parents, Caregivers, and Educators,

As a global community we face many challenges—biodiversity loss, climate change, pandemics. At times, these worldwide problems can seem overwhelming. We may ask ourselves questions about how to understand these complex problems and whether there's anything we can do to make them better. This community research guide encourages young people to discover, understand, and act on the answers to these questions.

In the years leading up to 2015, people around the world worked together to share their ideas about how our world should be. These ideas became a list of goals, the United Nations Sustainable Development Goals. The goals represent a plan for a sustainable world: a world where peaceful societies collaborate; a world where we live in balance with the environment of our planet; a world in which our economies fulfill our needs; a world that is fair to all.

As youth around the globe engage with the activities in this guide, they will gain an understanding of the science that underlies the Sustainable Development Goals—in particular, Goal 11: Sustainable Cities and Communities. They will be able to share their knowledge with their community, create tangible ways to help their community make informed decisions, and understand the best places to find additional information on the topics.

Throughout the guide, young people may find themselves asking many questions about the role that people, community spaces, housing, infrastructure, transportation, and resources play in helping our communities thrive. You do not need to have the answers to any of these questions. The most important thing you can offer young people is the opportunity to question, investigate, think critically and systemically, synthesize, and act.

One of the best ways to ensure a sustainable planet is by arming yourself with knowledge and then using that knowledge to make a difference in the world. The same is true for young people. But young people may require support and guidance from you to put their new knowledge into context. Ask the young people around you how they are feeling and what they are thinking about as they learn this content. Validate the questions they ask you, even if they ask them repeatedly.

Throughout the world, everyone—even children—strive for clean air, clean energy, a safe and healthy place to live, a sense of community, economic security, and reliable infrastructure. Living in sustainable communities gives us these things.

I am immensely grateful to the experts who helped to develop this guide—the InterAcademy Partnership (IAP), a collaboration of 140 national academies of sciences, engineering, and medicine; our colleagues across the Smithsonian Institution; and the external subject matter experts who contributed to this guide—for their perspectives and technical support in ensuring the science in this guide is accurate. I also want to say a special thank you to the author and developer of this guide, Heidi Gibson, for her tremendous expertise and understanding of international education, for her careful research and ability to translate complex ideas into meaningful content for youth, and for her thoughtful contributions to the *Smithsonian Science for Global Goals* project.

Working together—scientists, researchers, parents, caregivers, educators, youth—we can make a better world for all. This guide is a step toward that grand collaboration.

Thank you for partnering with us to inspire our youth to build a better world.

Best,

Dr. Carol O'Donnell, Director
Smithsonian Science Education Center

About this Community Research Guide

The goal of this guide is to prepare young people to take considered action on pressing global issues. Considered action means young people learn about a problem, connect it to the larger system, consider all the complexities of the problem, decide for themselves the best way to address it, and then execute a solution. Through this process young people are prepared not only to take considered action on a specific issue, but to build the skills to take action on all issues that affect them and their communities.

Figure 1: Sustainability Mindsets

Learners use scientific and socio-scientific investigations to understand their local communities, scientific principles, and innovation possibilities. They then have a chance to immediately apply this information to make decisions that are informed by the results of their investigations. Along the way, young people are prompted to reflect, investigate, think critically, analyze, and build consensus. Engaging in these activities builds important skills of empowerment and agency, open-mindedness and reflection, equity and justice, and global-local interconnection. These sustainability mindsets prepare young people to take an active role in shaping the future of their communities and their world.

A Framework to Discover, Understand, and Act

Throughout the guide, young people are prompted to Discover, Understand, and Act. The three parts of their learning journey are described here.

Discover

Young people already have a lot of information and opinions about the world around them. In this guide, they are prompted to use that knowledge as an entry point. They will discover what they already know and what questions they might have. They are encouraged to consider different perspectives and priorities. This both empowers young people and provides an immediate relevance and context for their investigations.

Figure 2: Global Goals Action Progression

Understand

Gathering new information is a primary goal of science. Using a wide variety of methods to do so helps young people understand the problems related to sustainable communities. They need to understand the problems both abstractly and within the context of their local community. Designing and conducting real-world investigations and interpreting results encourages young people to think like scientists.

Act

Finally, young people apply both their existing knowledge and their newly gathered information. First, they consider personal changes they could make to help make their communities more

sustainable. Then, as a team, young people find consensus on what they *could* do, what they *should* do, and what they *will* do. Teams then take action and reflect on the consequences, both intended and unintended.

Pedagogy Shift

This guide may feel like a big shift from the standard method of teaching. The guide is:

Led by Young People

To make progress toward a better world, we need the ideas, enthusiasm, and energy of every young person. We need them to help design and build the world in which they want to live. This means throughout the guide young people make authentic decisions about what and how they will learn. Their goal is to understand issues in their own community and take sustainable actions to make their community and their world better.

Driven by Data Collected by Young People

In this guide, the young people you teach will become action researchers. They will gather information about what sustainable communities mean in their own local spaces. This includes scientific investigations and experiments to understand the problems better, and also using social science methods to understand their community better. Using science and social science helps young people arrive at a sustainable solution.

Focused on Action

The goal of the guide is to help young people not just learn but also do. Throughout the guide young people will conduct investigations and then use that knowledge to make decisions about the actions that would be best for their community. They will then put those decisions into practice and see the results of their actions.

Customized for Local Communities

Each community is unique. While the world has global problems, the solutions must work locally. Young people already have tremendous knowledge about their local community. This guide prompts them to use that knowledge and find out new information to figure out solutions that are sustainable in *their* community.

Structure of this Community Research Guide

Parts

This guide is made up of seven parts. Each part works with the others to help learners understand how to help their community thrive and to put that knowledge to work by taking action.

However, we recognize that time is a limiting factor in many learning spaces. Therefore, the guide is designed flexibly so it can be shortened, if necessary. The learners are guided to do this shortening work themselves at the end of Part 1. The guide prompts learners to discuss with their teacher how much time is available and then make decisions about the best way to use that time.

Tasks

Within each part there are five tasks. Each task helps learners examine a different aspect of the topic they are exploring. Within each task, there are three activities, which correspond to the Discover, Understand, Act framework. Discover activities focus on existing learner knowledge. Understand

activities focus on gathering new information. Act activities focus on analyzing and applying that new information to make decisions. Tasks also include perspectives and stories from experts around the globe, so students can connect with the work of real-world scientists.

Using this Guide

Roles

The Learner's Role

Learners are the decision-makers of the guide. They will decide what information they need and what the information they gather means. Then learners use that information to decide and implement actions.

The Teacher's Role

This guide may be challenging for learners, since they may be unfamiliar with their role. Learners may need assistance in deciding what to do. Support and help them, but do not decide for them. Be patient. There are no right answers to the big questions posed by the guide.

Adapting the Guide for Your Context

Different Ages

This guide is designed to be used with young people between the ages of 8 and 17. This large range is deliberate to give access to these ideas to as many young people as possible. If you teach learners who are on the younger end of the age range you may need to support them a little more. For example, you might need to:

- Explain more complex words or topics.
- Promote listening and tolerance in group discussions.
- Support group decision-making.
- Help them plan investigations in their community or accompany the teams on their investigations.
- Help learners think through the feasibility of the action they plan.
- Present alternate ways of capturing ideas. For example if the guide suggests that learners write, but that is too difficult or is inappropriate for your learners, they can always draw, act out, or just talk about their ideas.

If you teach learners who are on the older end of the age range the language of the guide might seem a little simple. However, older learners who can understand more complex ideas will be able to develop a more nuanced view of the problem and come up with more extensive solutions.

All young people should be able to engage with the guide in a way that is developmentally appropriate for them.

Different Resources

We have assumed that you have very basic classroom resources, such as a class board (blackboard or whiteboard), paper, and pens/pencils. If it is not possible to capture learner writing, you can always have learners act out or discuss their ideas. If you do not have the capacity to print out a Community Research Guide for each learner, you or learner leaders can read the guide out loud from a single print or digital copy.

Accessibility

This guide is designed to be widely accessible. The language, tone, and format attempt to be as inclusive as possible to reach learners with a wide variety of learning styles. However, learners with specific needs may need teacher support. As mentioned earlier, the guide activities can always be adapted to fit learner abilities, either by you or by the students themselves.

Extensions

For each part and many tasks there are additional activities, videos, and resources available digitally. They can all be found at the *Sustainable Communities!* storymap at https://bit.ly/2YdHNqB.

Teams

Much of the research, decision-making, and acting is designed to be done in teams. However, these teams can range in size from a group of two or three learners to the whole class. As a teacher, this is something to consider before beginning the Community Research Guide.

If you have motivated and responsible learners who need minimal teacher support, you may want to break your class into small teams. Smaller teams will allow individual learners to share their opinions and have more of an impact on team decision-making. With smaller teams, the experience can be more customized to the interests of the individual learner because there are fewer interests represented.

If you have learners who need more support, you may need to keep the class together in one team or have one team for each adult in the class. If you have only one team per adult, an adult can help support learners directly while they are engaging in activities such as conducting investigations and making decisions. However, because the team is larger, individual learners will have less of a voice in decision-making and less impact on group actions.

Alternately, if you have a group of learners with mixed abilities, you can design groups that bring together learners with different strengths. These types of groups can help learners support one another rather than immediately turning to an adult for support.

If you are uncertain whether a small or large group is most appropriate for your learners, you may want to wait and observe them during Task 1. In Task 1 in the Understand activity, learners break into groups and conduct investigations. If learners are able to complete this task independently with fairly limited teacher support, they would probably be successful in a small group. If learners need a great deal of help to complete this activity, you may want to structure group size so they can have more focused adult support throughout the Community Research Guide.

Getting Started

We recommend you give the young people you work with the Student Letter to read. You also may find it useful to read through each part of the Community Research Guide in its entirety before beginning that part. We suggest you encourage your learners to be excited about this new learning adventure. Be prepared to be enthusiastic about their ideas.

Student Letter

Dear Student,

This is the last time you will be called a student in this Community Research Guide. Instead, you will take on a new role as an action researcher. Action researchers are interested in figuring out what to do to make their communities better. They use scientific investigations to help understand the natural world around them. They use social science investigations to help understand the people, cultures, and history of their communities. Then they use the information they gather to help solve problems in their own communities. This guide will help you learn more about this process. The most important thing to know is that you will control your own research and make your own decisions.

Think back to a time when you solved a problem. You first needed to know what you wanted, your goal. Then you needed to figure out what you needed to do to achieve your goal. This guide is similar. You will think about goals you have for your local community, then figure out what you need to take action to help reach those goals.

You and your classmates will work as a team to think about information you already have about the place where you live. Then you will investigate your local community and how things work. Finally, your team will decide how to make things better. Together you will put your decision into action. Sometimes, making decisions about what to do is difficult. Don't worry, this guide will give you lots of support.

How to Use this Guide

This guide is designed to help you explore and think about problems in your community. The guide is here to help you. That means you can always change it.

Adapting the Guide

You will notice that in this guide there are often suggestions of different ways of sharing your ideas or doing investigations. This is because different people think and work best in different ways. For example, some people like to draw, some people like to talk out loud, and some people prefer to write to express their ideas. This guide has suggestions, but you can always change the method suggested. You can share your ideas using discussions, acting, signing, telling stories, recording your voice, writing by

hand, typing on a computer, drawing, or another way you choose. Think about the way you and your team learn best together. Including everyone on the team is important.

Safety Tips

This guide asks you to do and think about things that may seem unfamiliar. You will notice physical and emotional safety tips in the guide. These will help you stay safe and supported during the activities. Make sure you follow your teacher's directions about staying safe.

Guide Structure

There are seven parts in this guide. Each part has five tasks. Each task has three activities. The activities are called ***Discover***, ***Understand***, and ***Act***. In the ***Discover*** activities you will focus on thinking about information that you and your team already know. In the ***Understand*** activities you will investigate to find out new information. In the ***Act*** activities you will put your existing and new knowledge into action by applying it and making decisions. Words that may be unfamiliar will be in **bold** the first time they are used. Then at the end of each part a glossary lists the definitions of these words.

Investigations

You are the one doing the research in this guide. This means often you will develop your own questions and determine the best way to answer them. Developing and answering questions is how scientists find out new information about the world around them. As an action researcher, you need to think like a scientist to discover what you need to know, investigate to find out more information, and think about the meaning of what you found out.

Keeping Organized

In this guide you will have some papers you will need to keep so you can look at them later. You may want to have a folder, notebook, or scientific journal to help you stay organized.

Teams

You will be working with other classmates as part of a research team. Your team will conduct investigations and make decisions together. When conducting research, there

may be many things to figure out as a team. You will need to be creative. There will not always be a clear right and wrong answer. Sometimes the team might not agree. This is okay. Just make sure to respect your teammates. There is no one right answer to the problems faced by your community. There is just the right answer for you and your team.

Getting Started

You will be thinking about complex problems. Sometimes this can feel difficult. Be patient. You will be guided to consider different parts of the problem. By the time you are making big decisions, you should have lots of information. Always remember, your work is important. Decisions you make can change your community. You are an important part of making your local and global communities better.

Thank you for working to make your community better.

The Smithsonian Science for Global Goals team
Smithsonian Science Education Center
Smithsonian Institution

Guide Planner

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 1: What is the problem?					
Discover	Explore the concept of community using your class as an example.	• Paper • Pens or pencils		20 minutes	7
Understand	Investigate five different parts of the classroom community.	• Paper • Pens or pencils		55 minutes	9
Act	Connect parts of a classroom with your local community and imagine a perfect community.	• Class board or poster paper		25 minutes	12
Task 2: How is the problem of sustainable communities related to me?					
Discover	Develop a personal identity map showing the different parts of who you are. Compare with teammates.	• Paper • Pens or pencils • Objects that represent you (optional)		25 minutes	15
Understand	Create a team identity map.	• Paper • Pens or pencils		15 minutes	17
Act	Gather your team's knowledge about parts of your community.	• Class board or poster paper • Sticky notes (optional)		20 minutes	19
Task 3: What skills do we need to do our research?					
Discover	Interview teammates to find out about their ideas about a perfect community.	• Pens or pencils • Paper (optional)	*My Perfect Community* (Task 1) *My Identity Map* (Task 2)	20 minutes	21
Understand	Explore different perspectives on what makes a perfect community.			25 minutes	22

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Act	Come to consensus on the most important goals for your local community.	• Paper • Pens or pencils • Class board or poster paper	*My Perfect Community* (Task 1)	25 minutes	24
Task 4: Where do we notice the problem?					
Discover	Consider connections between problems and knowledge in different places.			20 minutes	28
Understand	Investigate how the UN Sustainable Development Goals connect to the Thriving Community Goals you developed.	• Class board or poster paper • Sticky notes (optional) • Bag of small items (Option B: Activity)	*Thriving Community Goals* (Task 3) * StoryMap extension available	30 minutes	30
Act	Decide where your research area will be.	• Paper • Pencils • Local map (optional)		20 minutes	34
Task 5: How will we achieve our goals?					
Discover	Consider what you already know about your community and what you need to find out.	• Paper • Pens or pencils • Class board or poster paper	*Thriving Community Goals* (Task 3)	20 minutes	38
Understand	Decide which Parts of the guide you will use.			15 minutes	40
Act	Reflect on your thoughts and concerns about being an action researcher.	• Paper • Pens or pencils		20 minutes	42

* StoryMap extension found at https://bit.ly/2YdHNqB

Timing note: *The time used for investigations, observations, and actions can vary. When different options are listed within an activity, some options may take longer than others.*

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 1: Who is in our community?					
Discover	Consider the different identities in your community and why inclusion is important.	• Paper • Pens or pencils	*My Identity Map* (Part 1, Task 2) *Team Identity Map* (Part 1, Task 2)	15 minutes	55
Understand	Use a survey or other investigation to find out more about the people in your community.	• Paper • Pens or pencils • Computer (optional)		35 minutes + investigation time	56
Act	Create a community identity map.	• Paper • Pens or pencils		20 minutes	60
Task 2: How has our community changed over time?					
Discover	Reflect on and record changes you and your team have noticed in your community.	• Class board or poster paper • Audio or video recording device		45 minutes	62
Understand	Record oral histories from community members.	• Audio or video recording device • Paper and Pen		25 minutes + investigation time	64
Act	Create a representation of your community's history.	Optional: • Computer, paper, pen		25 minutes	68
Task 3: Who makes decisions in our community?					
Discover	Explore decision-making in your community.	• Paper • Pens or pencils	*My Identity Map* (Part 1, Task 2)	15 minutes	70
Understand	Collect information about how decisions are made in your community.			25 minutes + investigation time	72

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Act	Record how decisions are made in your community and how that could be more inclusive.	• Paper • Pens or pencils	*My Perfect Community* (Part 1, Task 1)	20 minutes	73
Task 4: How can including our community help us make better decisions?					
Discover	Design a shared community space to fill your own needs.	• Paper • Colored pencils	*My Identity Map* (Part 1, Task 2)	15 minutes	76
Understand	Experiment to find out whether including different people changes decision-making.	• Class board or poster paper • Paper • Pens or pencils		45 minutes	77
Act	Analyze experiment results and decide how you want to make decisions	• Paper • Pencils		20 minutes	79
Task 5: How do we include the community in our actions?					
Discover	Consider what you now know, think, and wonder about your local community.	• Paper • Pens or pencils	*Community Identity Map* (Task 1)	10 minutes	82
Understand	Investigate the best way to share information with your community.	• Paper • Pens or pencils		20 minutes + investigation time	83
Act	Share and get feedback on your Thriving Community Goals.	• Paper • Pens or pencils	*Thriving Community Goals* (Part 1, Task 3)	30 minutes	85

* StoryMap extension found at https://bit.ly/2YdHNqB

Timing note: *The time used for investigations, observations, and actions can vary. When different options are listed within an activity, some options may take longer than others.*

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 1: Why does my community need space?					
Discover	Consider your needs and how places in your community help you meet those needs.	• Paper • Pens or pencils • Computer (optional)	*My Identity Map* (Part 1, Task 2)	20 minutes	99
Understand	Use a survey, interviews, focus group, or other investigation to find out about the needs of people in your community.	• Paper • Pens or pencils • Computer (optional)	*Survey Instructions* (Part 2, Task 1, optional) *Oral History Instructions* (Part 2, Task 2, optional)	20 minutes + investigation time	101
Act	Identify ways the needs of people in your community are not met.	• Paper • Pens or pencils		15 minutes	104
Task 2: How does my community use our shared space?					
Discover	Find and analyze shared spaces in your research area.	• Paper • Pens or pencils	*My Research Area* (Part 1, Task 4) * StoryMap extension available	40 minutes	106
Understand	Investigate housing density and building use in your community.	• Paper • Pens or pencils		45 minutes	110
Act	Analyze the use of space in your community and decide if changes are needed by using different perspectives.	• Paper • Pens or pencils	*My Research Area* (Part 1, Task 4) *Part 3 Organizer* (Task 1)	25 minutes	111

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 3: How do green spaces meet the needs of my community?					
Discover	Explore built spaces and green spaces in your community.	• Small pieces of paper	*My Research Area* (Part 1, Task 4)	20 minutes	115
Understand	Investigate the ecosystem services provided by green spaces.	• Paper • Pens or pencils • Water, bowl, leaf, stone (optional, Observation 1) • Plastic bag, tie, plant (optional, Observation 2) • Water container (optional, Observation 4) • Water cup or bottle (optional, observation 5)	* StoryMap extension available	30 minutes + observation time (instructions for five observations provided, time for each varies; all are optional)	117
Act	Redesign the location and distribution of green space in your research area.	• Paper • Pencils	*Part 3 Organizer* (Task 1) *My Research Area* (Part 1, Task 4)	25 minutes	124
Task 4: How can we design our space for a sustainable future?					
Discover	Identify the strengths and weaknesses of your community.	• Paper • Pens or pencils • Computer (optional)	*Community Identity Map* (Part 2, Task 1)	25 minutes	127
Understand	Explore future opportunities and threats for your community.	• Paper • Pens or pencils • Topographical map of research area (optional)	*My Research Area* (Part 1, Task 4) *SWOT Analysis* (Task 4)	35 minutes	131

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Act	Continue redesigning your research area, adding shared spaces and considering the SWOT analysis results.	• Paper • Pencils • Items to represent shared spaces (optional)	*Part 3 Organizer* (Task 1) *My Research Area* (redesigned, Task 3) *SWOT Analysis* (Task 4)	20 minutes	134
Task 5: How can we make our community better?					
Discover	Consider what you now know, think, and wonder about the way space is used in your local community.	• Paper • Pens or pencils	*Part 3 Organizer* (Task 1) *Thriving Community Goals* (Part 1, Task 3)	15 minutes	136
Understand	Decide on individual actions you will take to help your community.		*Part 3 Organizer* (Task 1)	15 minutes	137
Act	Put your idea for individual change into action and reflect on it.			10 minutes + action time	138

* StoryMap extension found at https://bit.ly/2YdHNqB

Timing note: *The time used for investigations, observations, and actions can vary. When different options are listed within an activity, some options may take longer than others.*

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 1: Why is housing important?					
Discover	Consider how housing helps you meet your needs.	• Paper • Pens or pencils		15 minutes	153
Understand	Observe how people use housing and analyze whether it is functional for everyone in your community.	• Paper • Pens or pencils	*Community Identity Map* (Part 2, Task 1)	40 minutes + investigation time	155
Act	Examine and evaluate information about housing in your community.	• Paper • Pens or pencils	*Thriving Community Goals* (Part 1, Task 3)	15 minutes	159
Task 2: What are housing issues in my community?					
Discover	Explore housing issues and your own experiences with housing.	• Paper • Pens or pencils		20 minutes	162
Understand	Investigate housing affordability in your community.	• Paper • Pens or pencils	*Survey Instructions* (Part 2, Task 1, optional)	20 minutes + investigation time	165
Act	Identify functional and affordable housing issues in your community.	• Paper • Pens or pencils	*Part 4 Organizer* (Task 1)	25 minutes	170
Task 3: How can the design of housing meet our environmental needs?					
Discover	Explore how climate and local materials affect housing design.	• Paper • Pens or pencils		20 minutes	172
Understand	Investigate housing design in your research area.	• Paper • Pens or pencils	* StoryMap extension available	55 minutes	176

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Act	Draw or build a model of how you think housing should be designed in your area.	• Paper • Pens or pencils • Model-building materials (optional)	*Part 4 Organizer* (Task 1)	30 minutes	180
Task 4: How can we use our housing in a sustainable way?					
Discover	Consider different perspectives on saving resources at home.	• Paper • Pens or pencils		25 minutes	183
Understand	Investigate the sustainability of your daily actions at home.	• Paper • Pens or pencils	*Resource Use Checklist* (found at end of Part 4)	50 minutes	185
Act	Create a list of changes you could make so your daily actions are more sustainable.	• Paper • Pens or pencils	*Part 4 Organizer* (Task 1) *My Research Area* (redesigned, Task 3)	20 minutes	187
Task 5: How can we make housing in our community more sustainable?					
Discover	Consider what you now know, think, and wonder about how housing could be better in your local community.	• Paper • Pens or pencils	*Part 4 Organizer* (Task 1) *Thriving Community Goals* (Part 1, Task 3)	15 minutes	191
Understand	Decide on individual actions you will take to help your community.		*Part 4 Organizer* (Task 1)	15 minutes	193
Act	Put your idea for individual change into action and reflect on it.			10 minutes + action time	193

* StoryMap extension found at https://bit.ly/2YdHNqB

Timing note: *The time used for investigations, observations, and actions can vary. When different options are listed within an activity, some options may take longer than others.*

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 1: Why is transportation important?					
Discover	Explore how you use transportation and how it helps you.	• Paper • Pens or pencils		15 minutes	210
Understand	Investigate how people in your community use the local transportation system.	• Paper • Pens or pencils	*Survey Instructions* (Part 2, Task 1, optional) *Oral History Instructions* (Part 2, Task 2, optional) *Focus Group Instructions* (Part 3, Task 1, optional)	20 minutes + investigation time	211
Act	Consider how a transportation system can help your community thrive.	• Paper • Pens or pencils	*Thriving Community Goals* (Part 1, Task 3)	10 minutes	213
Task 2: What is the transportation system like in my community?					
Discover	Examine the transportation system within your research area.	• Paper • Pens or pencils	*My Research Area* (Part 1, Task 4)	25 minutes	215
Understand	Investigate to find out how different locations encourage different types of transportation.	• Paper • Pens or pencils	* StoryMap extension available	20 minutes + investigation time	217
Act	Develop and record ideas about how to redesign the transportation system in your area.	• Paper • Pens or pencils	*Part 5 Organizer* (Task 1)	20 minutes	219

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 3: How do transportation systems affect the environment?					
Discover	Consider your transportation choices and calculate your travel-related carbon footprint.	• Paper • Pens or pencils	* StoryMap extension available	35 minutes	222
Understand	Investigate the origin of items you use and consider how they might have traveled to you.	• Paper • Pens or pencils • Items to investigate (for example, clothing, food)	* StoryMap extension available	25 minutes	225
Act	Share what you have learned about transportation and carbon footprint with others.	• Paper • Pens or pencils	*Part 5 Organizer* (Task 1)	20 minutes + action time	228
Task 4: How do transportation choices affect my community?					
Discover	Explore different perspectives on how the transportation system affects your community.	• Class board or poster paper • Pens or pencils		25 minutes	230
Understand	Conduct an impact assessment for a new part of your community's transportation infrastructure.	• Paper • Pens or pencils	* StoryMap extension available	20 minutes + investigation time	232
Act	Propose changes to the new transportation infrastructure to make it more sustainable.	• Paper • Pens or pencils	*Part 5 Organizer* (Task 1)	20 minutes	234

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 5: How can we improve transportation in our community?					
Discover	Consider what you now know, think, and wonder about how transportation can make your community more sustainable.	• Paper • Pens or pencils	*Part 5 Organizer* (Task 1) *Thriving Community Goals* (Part 1, Task 3)	15 minutes	236
Understand	Decide on individual actions you will take to help your community.		*Part 5 Organizer* (Task 1)	15 minutes	237
Act	Put your idea for individual change into action and reflect on it.			10 minutes + action time	238

* StoryMap extension found at https://bit.ly/2YdHNqB

Timing note: *The time used for investigations, observations, and actions can vary. When different options are listed within an activity, some options may take longer than others.*

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 1: What resources do I use and how renewable are they?					
Discover	Observe and analyze the resources you use.	• Paper • Pens or pencils		25 minutes + observation time	253
Understand	Investigate the source and sustainability of the electric energy used in your community.	• Paper • Pens or pencils		25 minutes + investigation time	256
Act	Consider ways to make resource use in your community more sustainable.	• Paper • Pens or pencils	*Thriving Community Goals* (Part 1, Task 3)	15 minutes	258
Task 2: What waste does my community produce?					
Discover	Explore the waste you produce and what happens to it.	• Paper • Pens or pencils	*List of Things Used* (Task 4)	35 minutes	262
Understand	Investigate the amount of plastic waste you produce.	• Paper • Pens or pencils	* StoryMap extension available	20 minutes + investigation time	264
Act	Decide how you will reduce the waste you produce and put these ideas into action.	• Paper • Pens or pencils	*Part 6 Organizer* (Task 1)	20 minutes + action time	266
Task 3: How can my community reuse instead of waste?					
Discover	Search for evidence of a circular economy system in your community.	• Paper • Pens or pencils	* StoryMap extension available	40 minutes	268
Understand	Repurpose an item to create a new use for it.	• Paper • Pens or pencils • Items to repurpose	* StoryMap extension available	25 minutes + creation time	270

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Act	Share what you have learned about the circular economy with others.	• Paper • Pens or pencils	*Part 6 Organizer* (Task 1)	15 minutes + action time	272
Task 4: How can my community recycle waste?					
Discover	Explore recycling options and rules in your community.	• Paper • Pens or pencils	* StoryMap extension available	45 minutes	274
Understand	Investigate composting opportunities in your community.	• Paper • Pens or pencils	* StoryMap extension available	40 minutes	275
Act	Plan ways you could help your community do more recycling or composting.	• Paper • Pens or pencils	*Part 6 Organizer* (Task 1)	30 minutes	280
Task 5: How can we improve transportation in our community?					
Discover	Consider the ecological footprint of your community and how it could be more sustainable.	• Paper • Pens or pencils • Computer (optional)	*Part 6 Organizer* (Task 1) *Thriving Community Goals* (Part 1, Task 3) * StoryMap extension available	25 minutes	283
Understand	Decide on individual actions you will take to make your resource use and waste more sustainable.		*Part 6 Organizer* (Task 1)	15 minutes	287
Act	Put your idea for individual change into action and reflect on it.			10 minutes + action time	287

* StoryMap extension found at https://bit.ly/2YdHNqB

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 1: What is the problem we want to take action on in our community?					
Discover	Explore ways in which your community is doing well and ways in which it could be doing better.	• Paper • Pens or pencils	*Part 2, 3, 4, 5, 6 Organizers* (from Task 1 in each Part)	30 minutes	298
Understand	Report on problems in your community and consider the connections between the root causes of these problems.	• Paper • Pens or pencils	*Connected Problems* (Task 1)	25 minutes	300
Act	Come to a team consensus about which community problem you want to take action on.	• Paper • Pens or pencils	*Thriving Community Goals* (Part 1, Task 3)	25 minutes	303
Task 2: How will we try to solve our problem?					
Discover	Imagine different actions you could take to help address your team problem.	• Paper • Pens or pencils		25 minutes	305
Understand	Explore ways your possible actions could be more sustainable.	• Paper • Pens or pencils	*Team Action Plan* (Task 2) *Community Identity Map* (Part 2, Task 1)	20 minutes + investigation time	306
Act	Come to a team consensus on which action you will take.	• Paper • Pens or pencils	*Thriving Community Goals* (Part 1, Task 3)	20 minutes	308
Task 3: How will our team take action in our community?					
Discover	List the steps needed for your action.	• Paper • Pens or pencils	*Community Communication* (Part 2, Task 5)	15 minutes	310
Understand	Organize the action steps.	• Paper • Pens or pencils		20 minutes	311

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Act	Create an inclusive team action plan.	• Paper • Pens or pencils	*Team Action Plan* (Task 2)	25 minutes	312
Task 4: Putting our plan into action					
Task 4	Put your plan into action!	• Varies, depends on action plan		Varies, depends on action plan	313
Task 5: What did I learn?					
Task 5	Reflect on your action and your feelings.	• Paper • Pens or pencils	*My Feelings* (Part 1, Task 5) *Team Identity Map* (Part 1, Task 2)	15 minutes	314

* StoryMap extension found at https://bit.ly/2YdHNqB

