NISE Network Online Workshop

Futures Thinking - Exploring Ideas and Developing Skills to Shape Our World

Tuesday, June 11, 2024

Today's Presenters:

Rae Ostman, Arizona State University, Tempe, AZ

Max Cawley, Museum of Life + Science, Durham, NC

Darrell Porcello, Children's Creativity Museum, San Francisco, CA

Welcome! As we wait to get started with today's discussion, please:

Introduce yourself! Type your name, institution, and location into the Chat Box

Questions? Feel free to type your questions into the Chat Box at any time throughout the webinar or use the raise your hand function in the participants list and we'll unmute your microphone.

Today's discussion will be recorded and shared on nisenet.org at: nisenet.org/events/online-workshop

Session overview

- Introduction to futures (Rae)
- Engaging museum visitors in futures thinking (Rae and Max)
- Connecting futures thinking to related skills and topics (Darrell)
- Resources (Christina)

Rae Ostman

Director, NISE Network
Research Professor, School for the Future of Innovation in Society
Co-Director, Center for Innovation in Informal STEM Learning
Arizona State University, Tempe, AZ
rae.ostman@asu.edu

What is futures thinking? Some terminology!

Futures thinking: A mindset that involves exploring potential futures, engaging with long-term perspectives, and anticipating and preparing for various possibilities.

Futures studies: An interdisciplinary field that studies possible futures, including the approaches and methodologies that inform futures thinking.

Futures literacy: A set of futures skills and capabilities that allow us to understand, interpret, and use the knowledge and tools of futures studies.

Foresight: A process of investigating potential future changes and challenges, with an emphasis on taking proactive actions and shaping the future.

Community futuring: The application of futures thinking tools and methodologies by communities to negotiate shared futures.

Adapted from: K. Alford, Ed., *Cultivating Futures Thinking in Museums,* Routledge (forthcoming).

Why think about the future (in museums)?

What do you think? Share your thoughts in the chat!

Why think about the future in museums?

The capabilities we need to shape the future are valuable for individuals and our communities. They also connect to other learning goals, such as:

- Understanding complex thoughts and ideas
- Solving problems creatively and thinking critically
- Understanding connections between actions and outcomes
- Developing a sense of social/civic responsibility
- Seeing and coping with change as part of life
- Playing and using imagination

Let’s look at some examples of how museums can support futures thinking!

Goals related to futures

- Explore ideas from future studies
- Create an immersive, experiential future
- Provide opportunities to practice futures thinking

Let’s watch a video!

Mission Future

Possible future for Arizona in 2045:

- Climate change
- Space exploration

Four areas (2,500 sq ft):

- Intro theater
- Ranch house
- R&D lab
- Hub/exit

Elements:

- Narrative videos
- Scenic elements
- Hands-on components

Goal 1 - Ideas from futures studies

The videos establish big ideas from futures thinking:

- The future is not predetermined
- The future is not predictable
- The future can be influenced by our choices in the present

And explore their implications:

- We have an opportunity and responsibility to think about the future
- Multiple perspectives are essential to shaping our preferred future

These ideas are reinforced by the interactive components.

Characters from the videos

Goal 2 - Experiential futures

The exhibition design uses methods from experiential futures:

- Scenic elements, props, and media present a plausible future world
- Hands-on components allow people to experience, reflect on, and talk about one version of the future

These methods help visitors to bridge abstract ideas of the future with their embodied experience of the present.

Ranch house

Goal 3 - Futures thinking

The hands-on components provide opportunities for visitors to practice futures thinking and connect it to STEM.

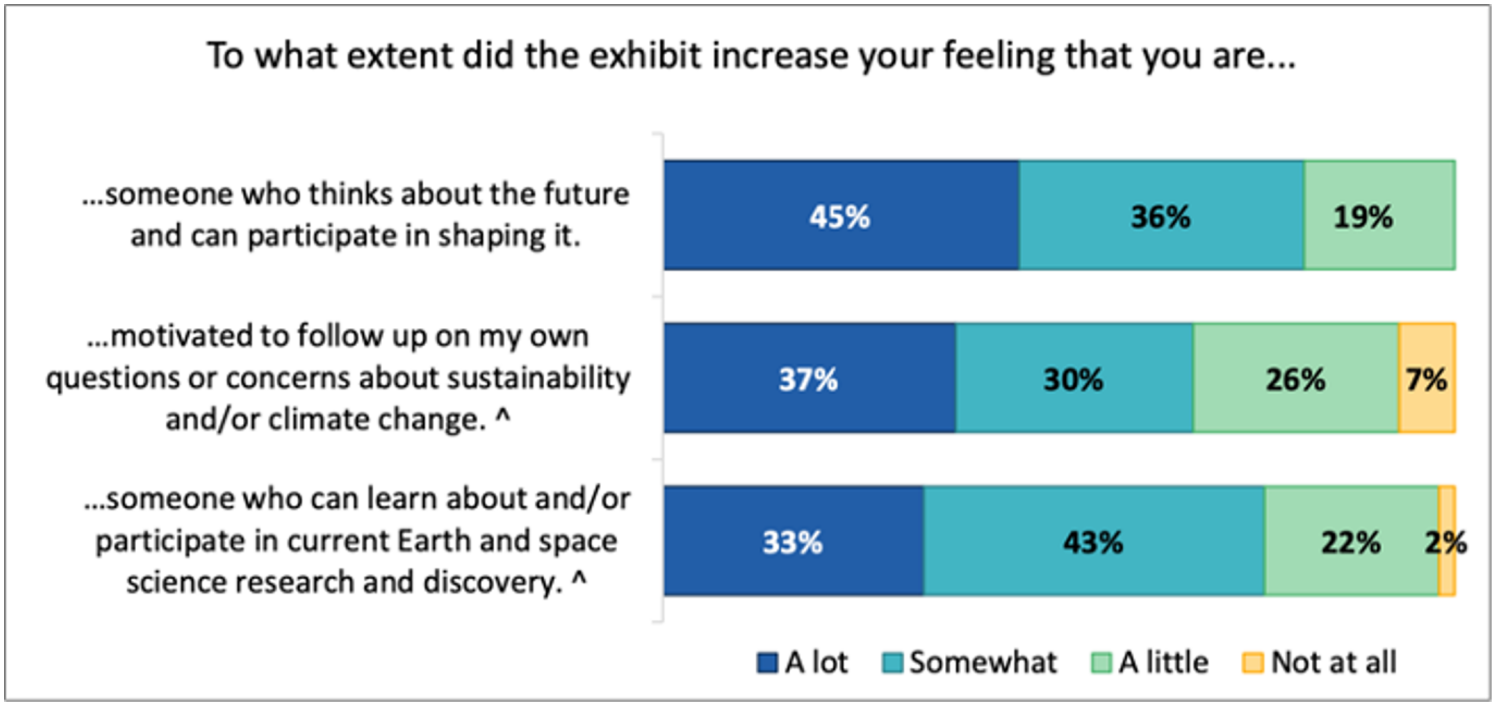
Our evaluation showed that the exhibition supported visitors in:

- developing new ways of thinking about the future and their role in making an impact on the future;
- developing their sense of self-efficacy related to using STEM to meet challenges of the future;
- increasing their understanding of Earth and space science, especially related to its societal context; and
- practicing STEM process skills.

R&D lab

Evaluation

Mission Future supports futures thinking and self-efficacy:



Evaluators asked visitors about changes in their self-confidence as future thinkers (N=47, ^n=46).

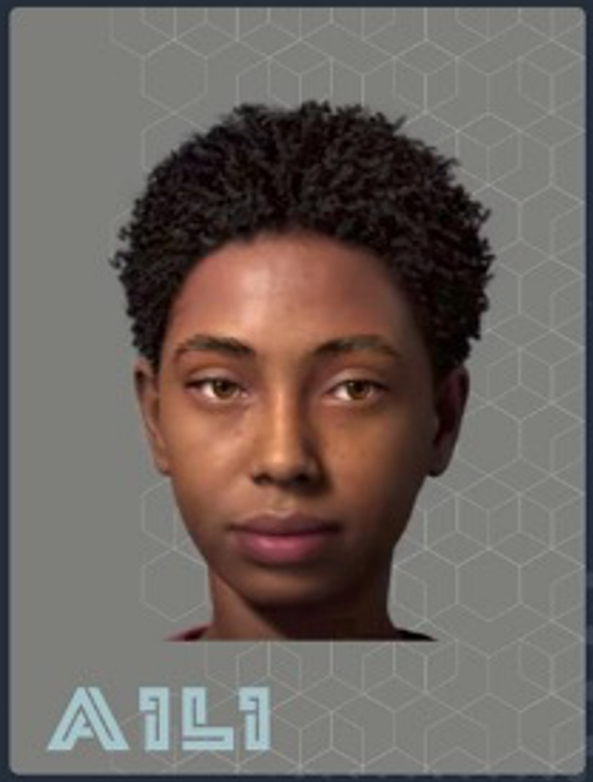
What kind of future thinker are you?

- Let's do a fun, seven-question quiz that is included in the exhibition.
- For each question, decide which answer sounds most like you, and jot down the letter of your response (A, B, C, or D).
- At the end, you'll find out about your future orientation!*

**Disclaimer: Not a scientifically validated instrument!*

Entry and Hub

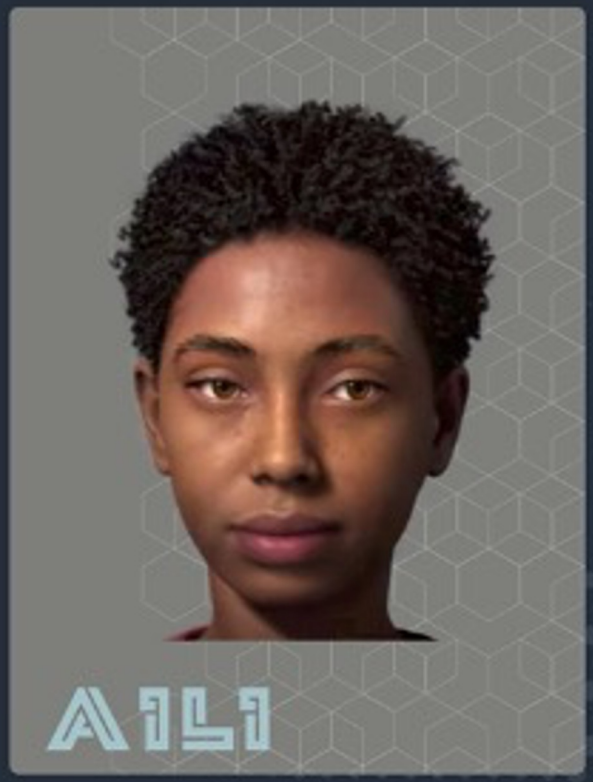
What kind of future thinker are you?



I'm A.I.L.I. I'm an Artificial Intelligence Learning Investigator. I'm learning how people think about the future. Help me out by taking my quiz! There are only 7 questions, and you'll find out what kind of future thinker you are!

START THE QUIZ

Imagine that you travel to the future, 20 years from now.



Which of these foods do you want to eat?

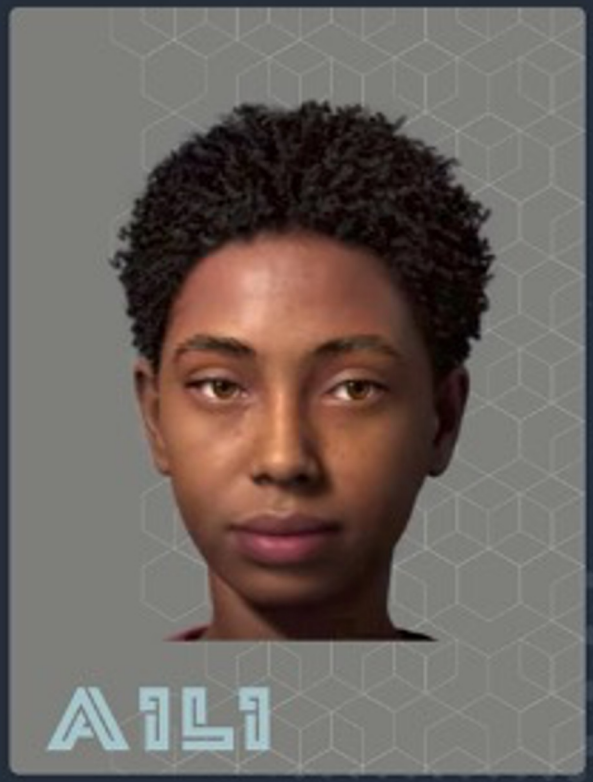
A I'll stick with my favorite food today. Then I can't go wrong!

B I'll try a lab-grown hamburger. It's high tech, and hopefully delicious!

C I'm up for engineered algae. What do flavors like "nebula" or "volcano" taste like?

D I'll go for a vegetarian stew made from local ingredients. It sounds sustainable and healthy!

Imagine that you travel to the future, 20 years from now.



What is the first thing you'll do in your free time?

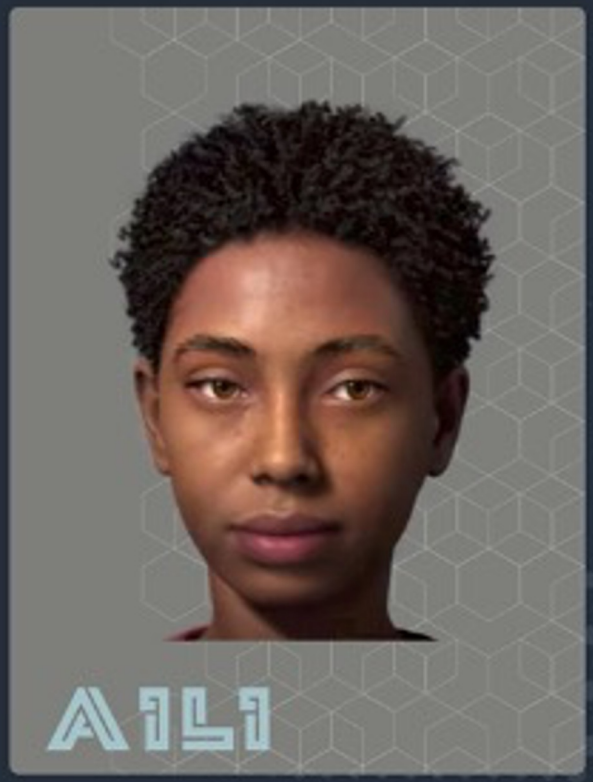
A I'll do the activities that are my favorites now. I'll definitely still like them in the future!

B I'll check out all the new gadgets. I'll want to be up to date on the latest technology!

C I'll try to find the places that are most different from today. What is the city of the future like?

D I'll gather information about where I am and how things work. I need to get oriented!

Imagine that you travel to the future, 20 years from now.



What future technology are you most excited to try?

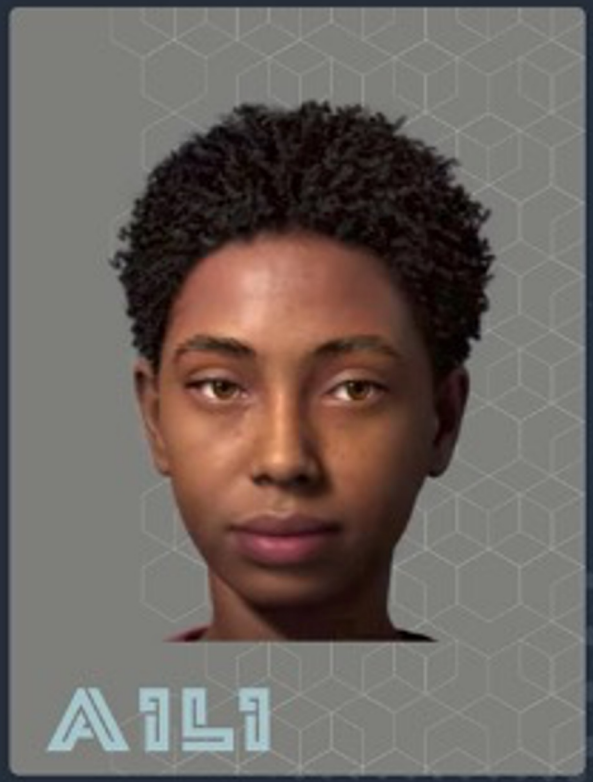
A The latest cell phone. How does it compare to my current device?

B Robots. I can't wait to find out everything AI can do in the future!

C Artificial gravity. Can I turn it off and on whenever I want?

D Super powerful battery pack. I want my own portable energy source in case the power goes out!

Imagine that you travel to the future, 20 years from now.



Which job is most interesting to you?

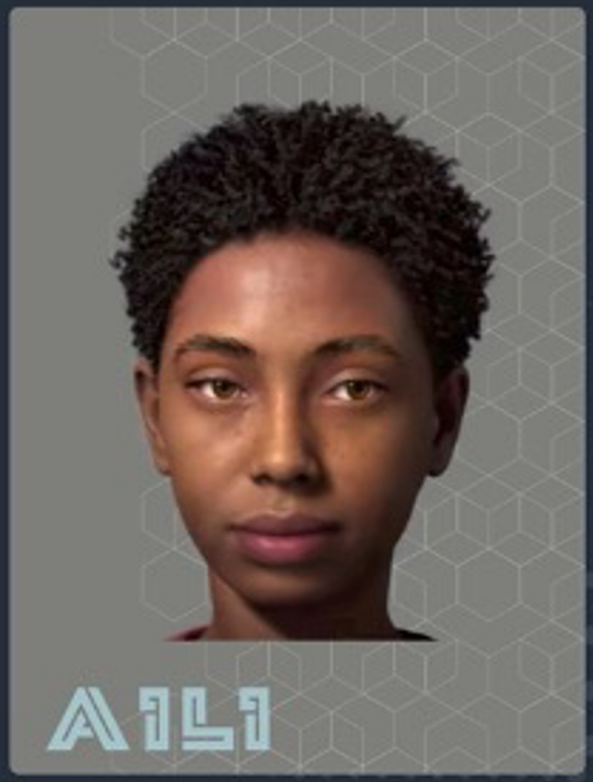
A Parent. It has always been the most important job in the world.

B Tech entrepreneur. New technologies will be important in the future and it sounds exciting.

C Explorer. Especially if I can lead an interplanetary human-robot team.

D Teacher. We'll always need to prepare the next generation.

Imagine that you travel to the future, 20 years from now.



Which description of your new home town would make you proud?

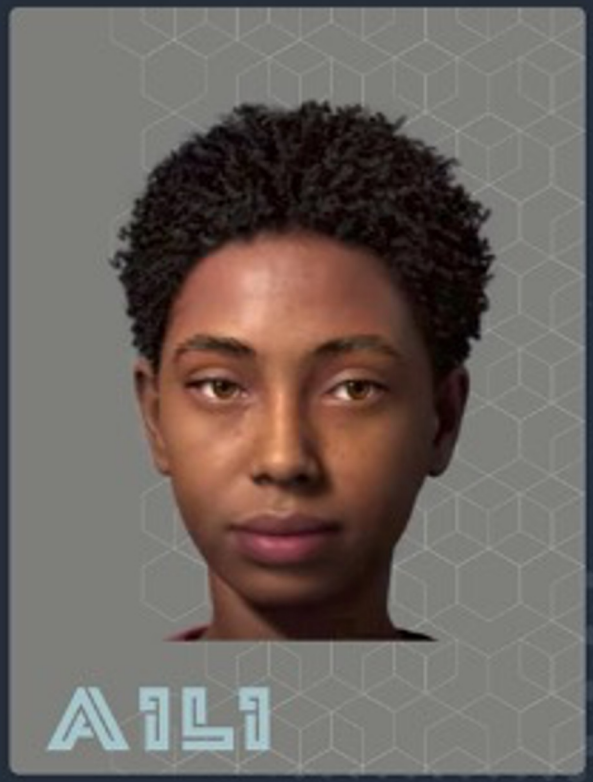
A. We preserve our culture, history, and natural environment.

B. We lead the space industry and climate solutions.

C. We invent new buildings, vehicles, farms... our town is one big experiment.

D. We make sure everyone thrives and is healthy.

Imagine that you travel to the future, 20 years from now.



What trip are you most excited to take?

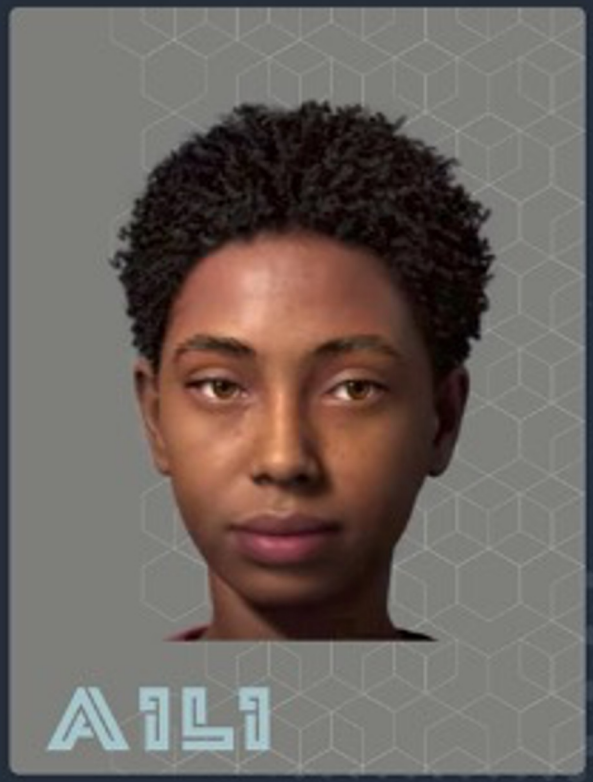
A I'd visit places I've lived on Earth, to see if they've changed.

B I'd take a vacation to the Moon, to see everything we've built there.

C I'd take off on a mission to Mars, even if it would take months to get there.

D I'd do a North Pole expedition to see the effects of climate change on the polar ice cap.

Imagine that you travel to the future, 20 years from now.



If you lived on a space station, what would keep you happy?

A I'd like to have my own living area that reminds me of home.

B I'd like to know how everything works on the station.

C I'd like to hop in a personal spacecraft and explore space.

D I'd like to make sure nothing could go wrong and all the systems had double backups.

So, what kind of future thinker do you think you are?

Traditional thinker

You like life the way it is today and worry about possible changes in the future.

Innovative thinker

You think the future will be even better than today and you are excited about new technologies and other changes.

Bold thinker

You are open-minded about imagining many possibilities for the future.

Practical thinker

You think the future will have its pluses and minuses and you want to figure out what is most likely to happen.

REVEAL YOUR RESULTS

What kind of future thinker are you?

Mostly As - Traditional thinker

You like life the way it is today and worry about possible changes in the future.

Mostly Bs - Innovative thinker

You think the future will be even better than today and you are excited about new technologies and other changes.

Mostly Cs - Bold thinker

You are open-minded about imagining many possibilities for the future.

Mostly Ds - Practical thinker

You think the future will have its pluses and minuses and you want to figure out what is most likely to happen.

Learn more!

Anderson, A., Harvey-Justiniano, S., & Kollman, E. K. (2016). Mission Future: Arizona 2045 summative evaluation. Boston, MA: Museum of Science for the NISE Network. www.nisenet.org/sites/default/files/catalog/uploads/seise_project_mission_futures_exhibition_summative_evaluation_final_report_revised_february_2024v2.pdf

Candy, S., & Dunagan, J. (2016). The experiential turn. *Human Futures 26*, pp. 26–9. www.researchgate.net/publication/311910011_The_Experiential_Turn

Ostman, R., Anderson, A., Kollmann, E. K., & Martin, P. (2024). Mission Future: An experiential future. *Exhibition 43*(1), pp. 32–44. www.nisenet.org/catalog/mission-future-exhibition-journal-article

Voros, J. (2001). A primer on futures studies, foresight and the use of scenarios. *Prospect: The Foresight Bulletin 6*(1), pp. 1–8.

Thank you!

Images from Arizona State University, Arizona Science Center, and NISE Network

NASA Partner

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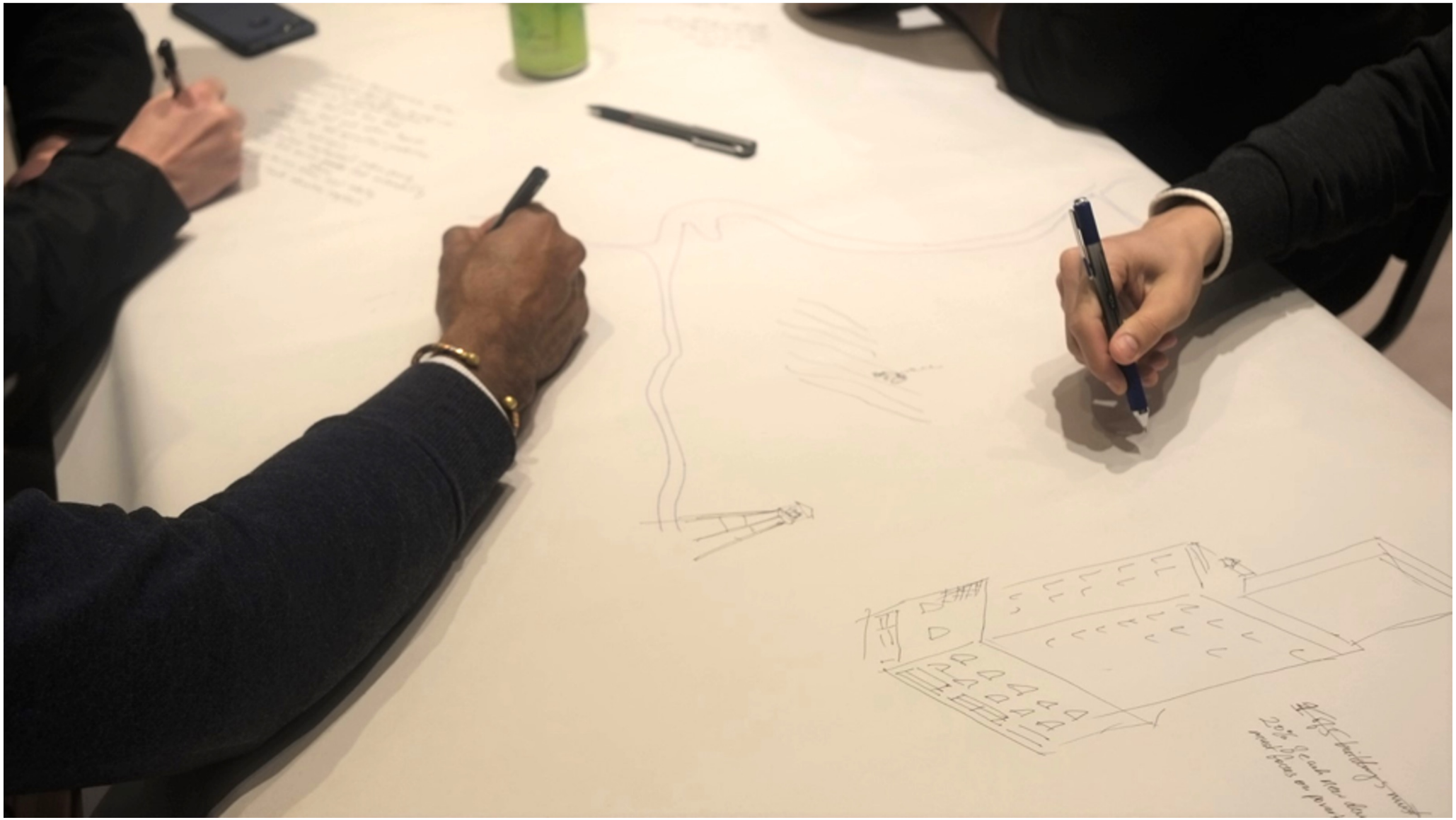
IMAGINE DURHAM 2100


IMAGINE DURHAM
2100
Sustainable Futures
+
MUSEUM of LIFE + SCIENCE



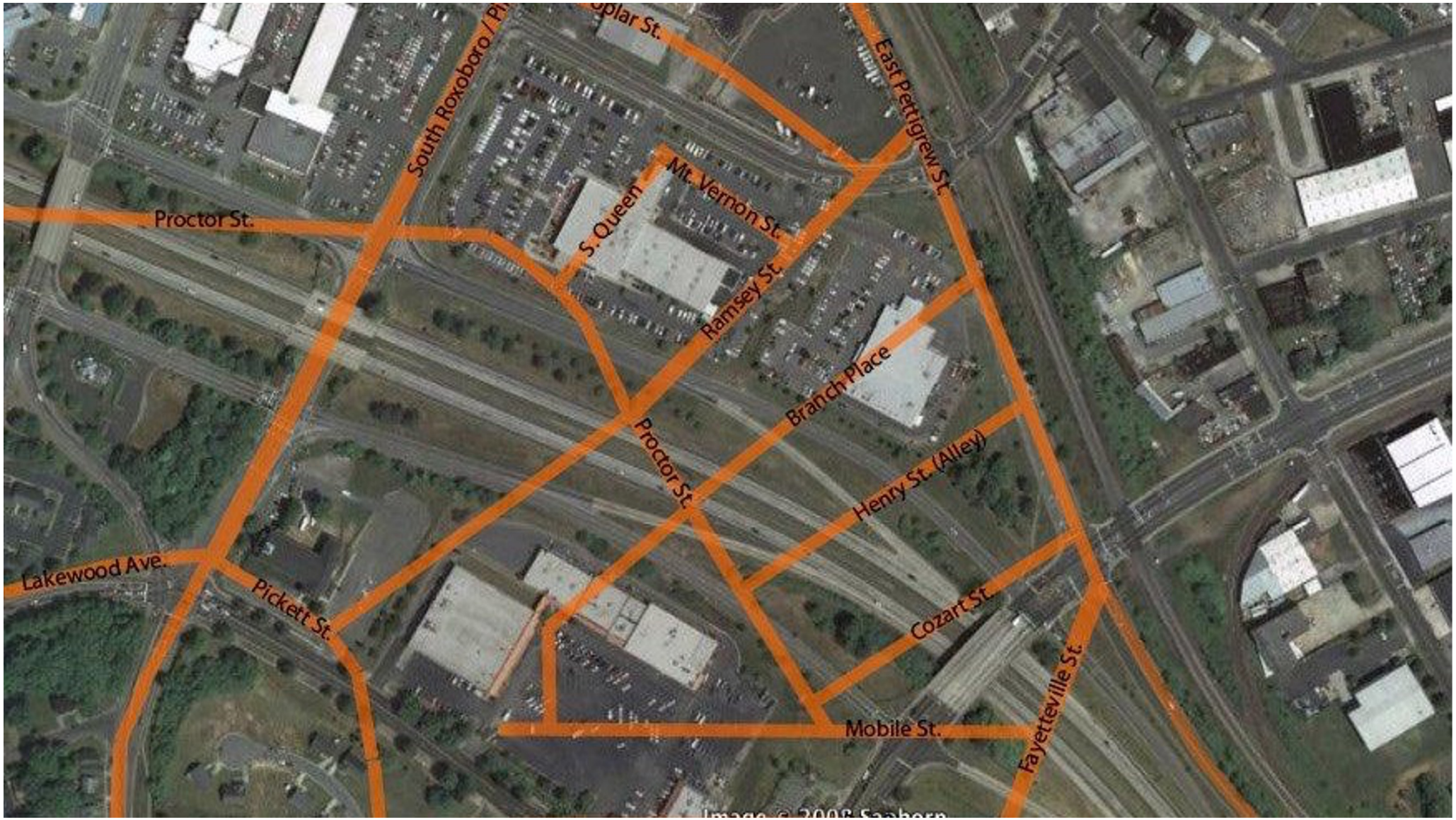

Fayetteville St (old path)
Pettigrew St
St. Joseph's
AME


Present-day Fayetteville St
Durham Freeway


Mobile Ave.
Moore St.
Chess Pl.
Ray Place
Fayetteville
Elm
Elm
Gould St.
South Roxboro (Pine)
St. Joesph St.
Whitted St.
Memphis St.
Macklin St.
Mebane
Glenn St.
Mason St.
Fowler Ave.
Fowler Ave.
Piedmont Ave.
Image © 2008 Sanborn


Cozart Alley
McCoy
Mobile Ave.
Moore St.
Chess Pl
Ray Place
Fayetteville
Elm
Elm
Gould St.
South Roxboro (Pine)
St. Joesph St.
Whitted St.
Memphis St.
Macklin St.
Mebane
Glenn St.
Mason St.
Fowler Ave.
Fowler Ave.
Piedmont Ave


Poplar St.
South Roxoboro / Pine
East Pettigrew St.
Proctor St.
S. Queen
Mt. Vernon St.
Ramsey St.
Branch Place
Proctor St.
Henry St. (Alley)
Lakewood Ave.
Pickett St.
Cozart St.
Mobile St.
Fayetteville St.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Cozart St.
Mobile St.
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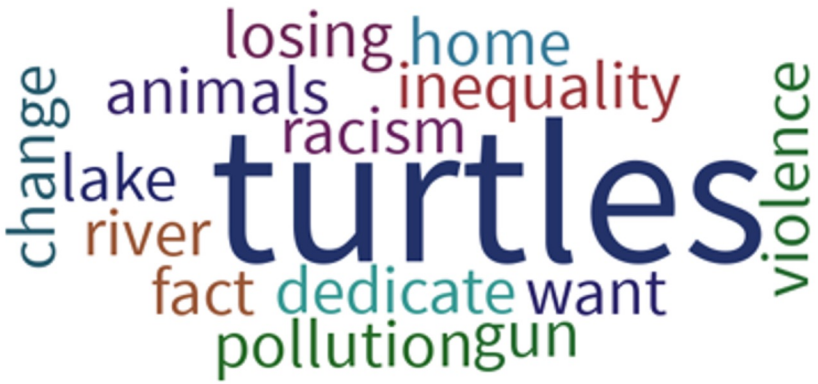
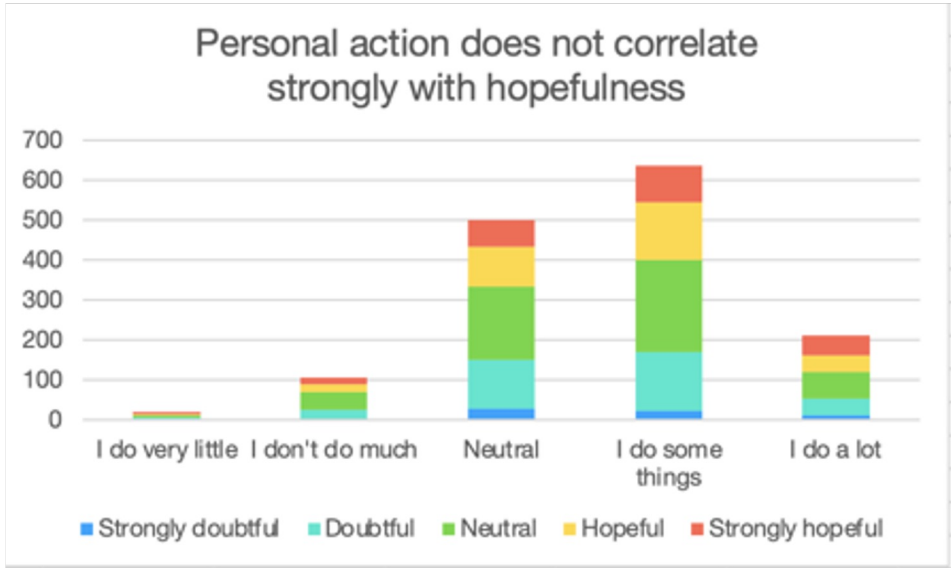
Image © 2008 Sanborn

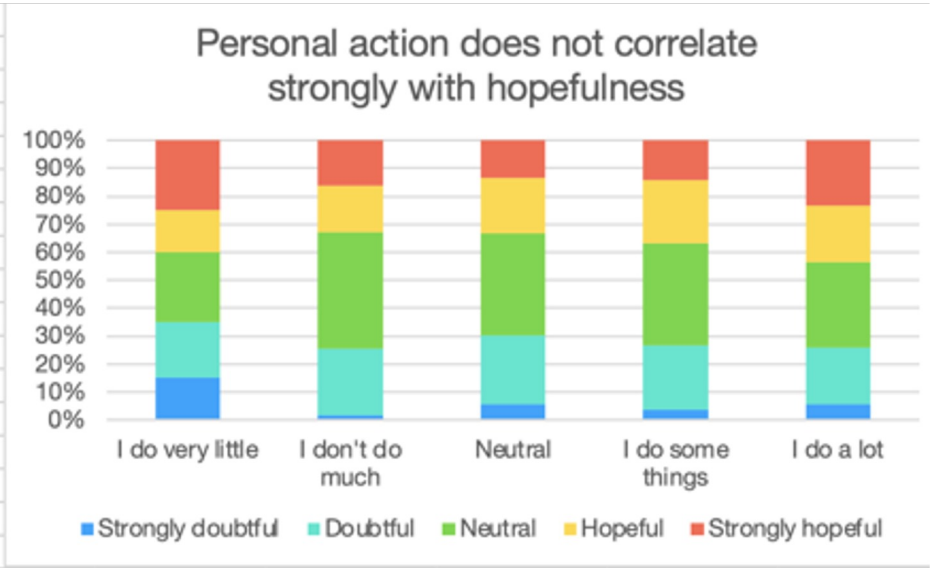
When poll is active, respond at **PollEv.com/maxc173**

Text **MAXC173** to **22333** once to join

What Might You Change?




Personal action does not correlate strongly with hopefulness
700
600
500
400
300
200
100
0
I do very little
I don't do much
Neutral
I do some things
I do a lot
Strongly doubtful
Doubtful
Neutral
Hopeful
Strongly hopeful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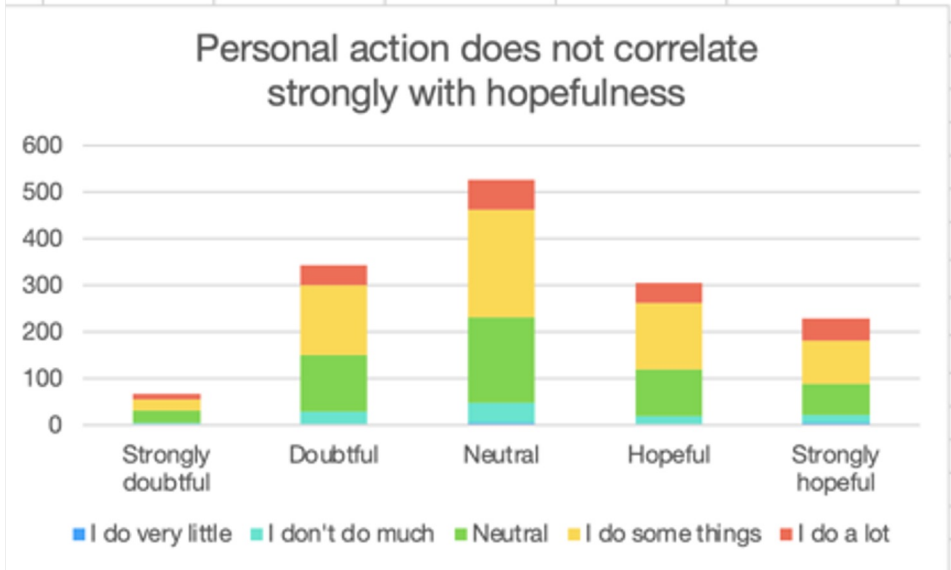
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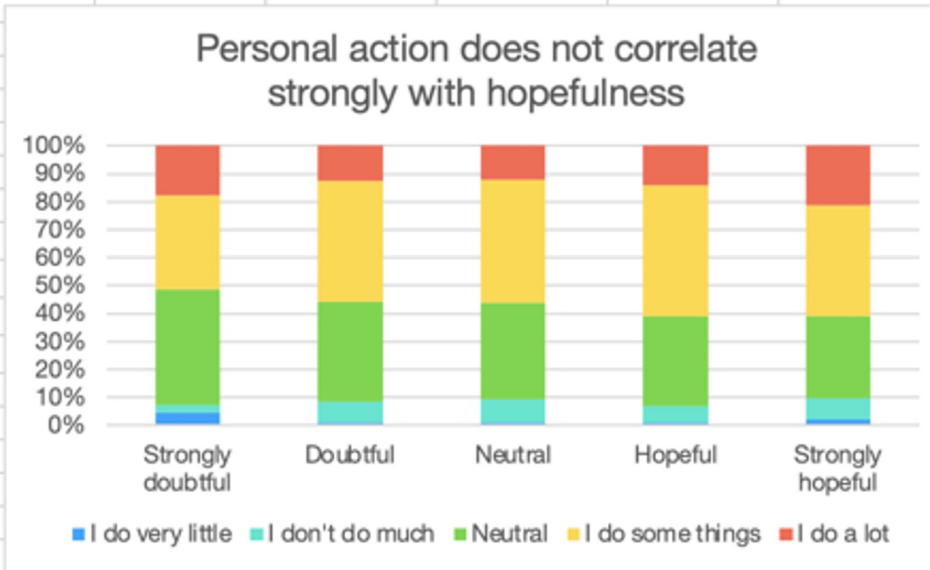
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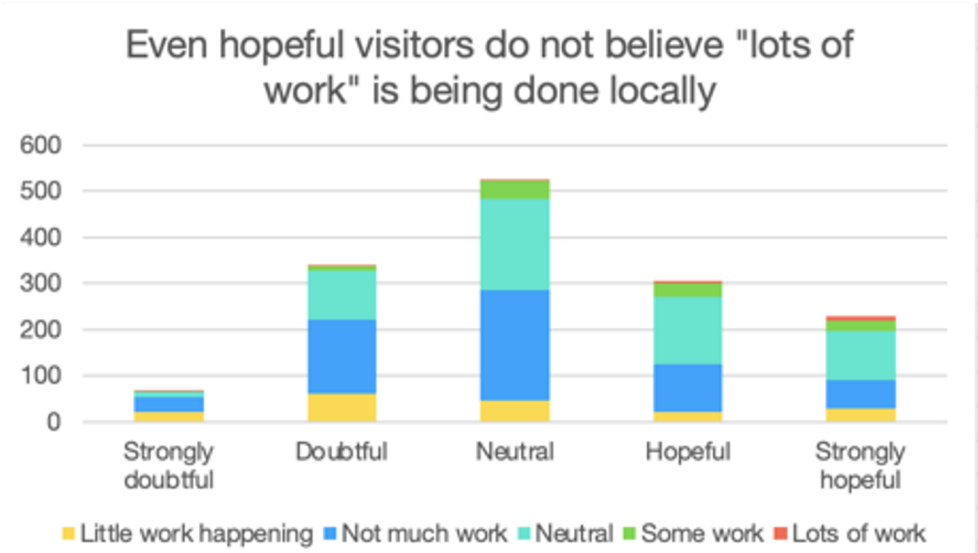
Even hopeful visitors do not believe "lots of work" is being done locally
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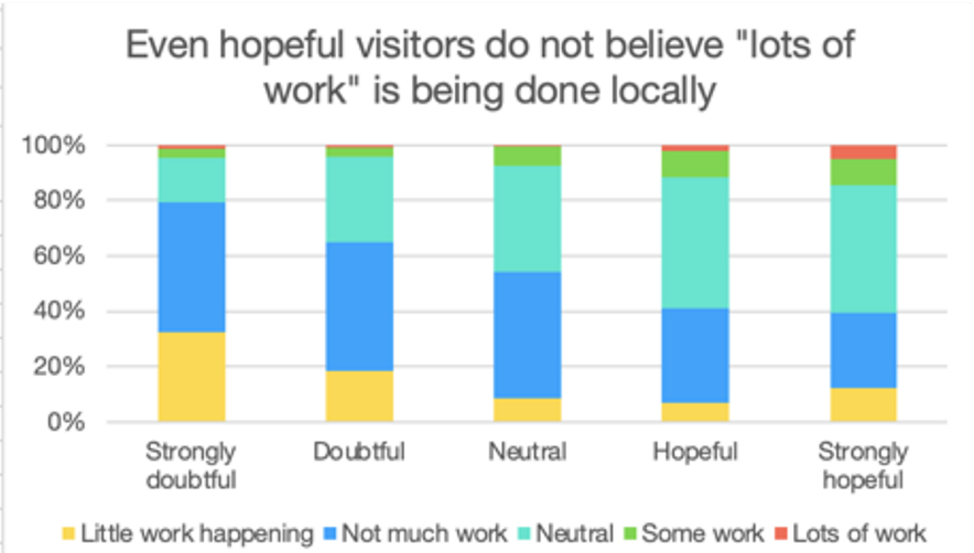
Strongly doubtful
Doubtful
Neutral
Hopeful
Strongly hopeful
Little work happening
Not much work
Neutral
Some work
Lots of work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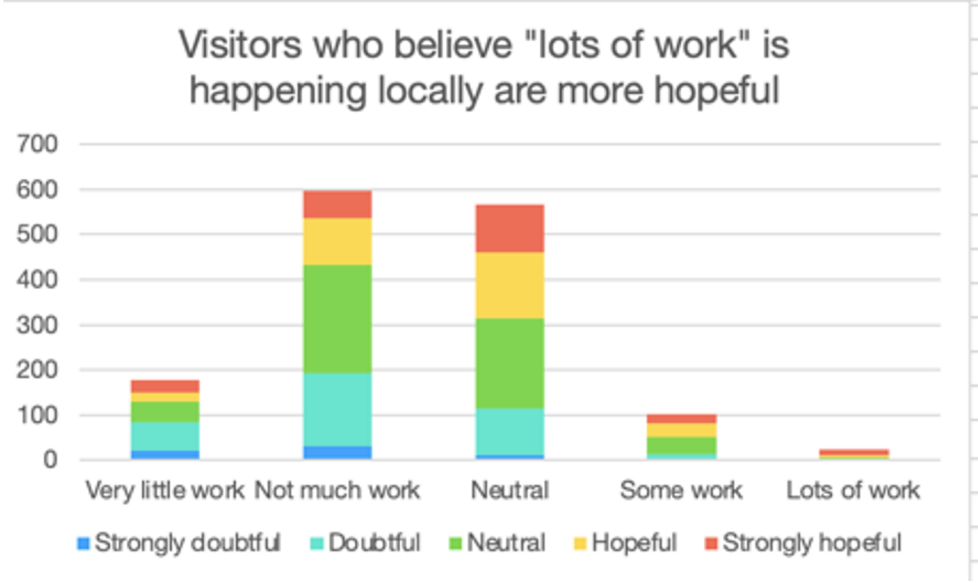
Not much work
Neutral
Some work
Lots of work


Visitors who believe "lots of work" is happening locally are more hopeful
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Very little work
Not much work
Neutral
Some work
Lots of work
Strongly doubtful
Doubtful
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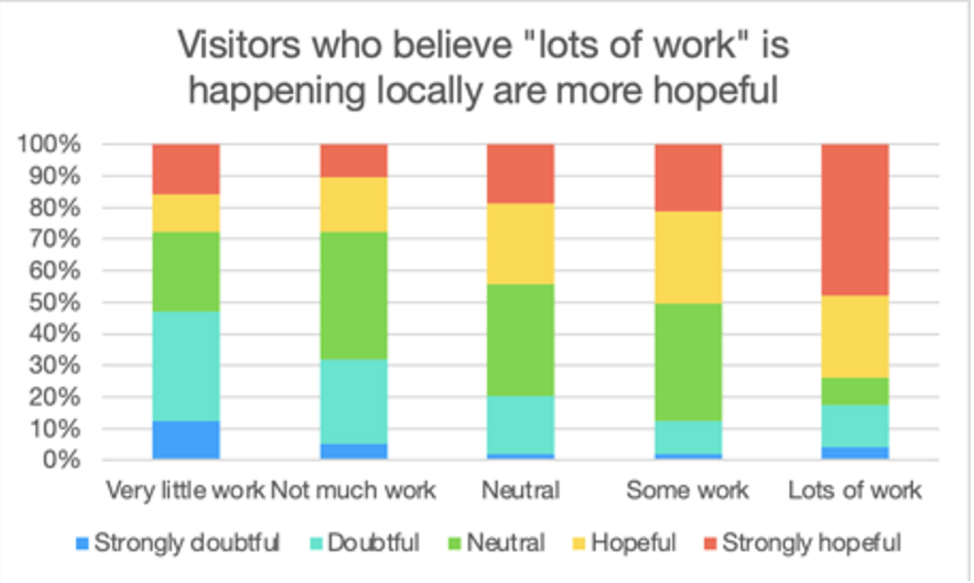
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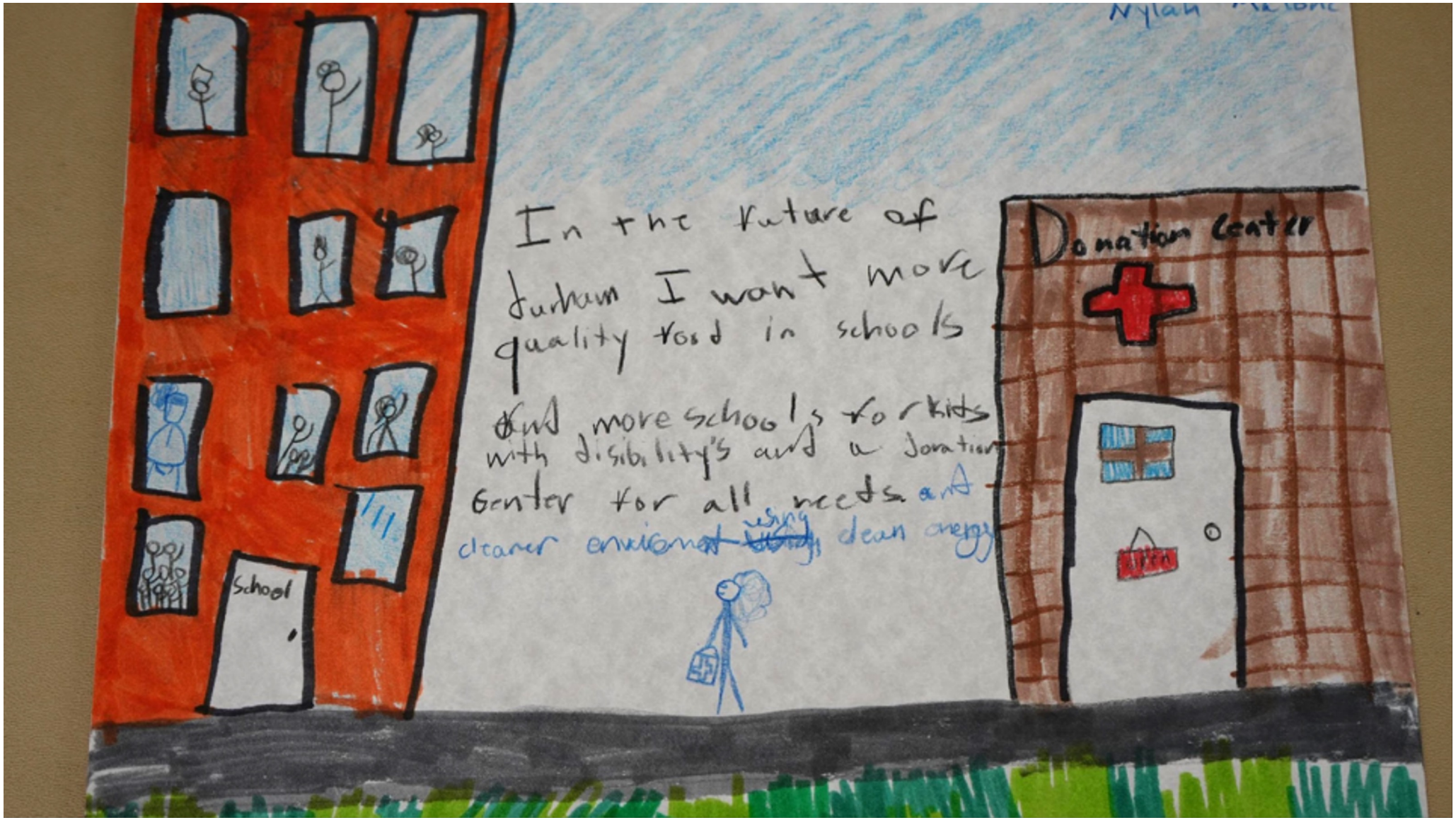
10%
0%
Very little work
Not much work
Neutral
Some work
Lots of work
Strongly doubtful
Doubtful
Neutral
Hopeful
Strongly hopeful

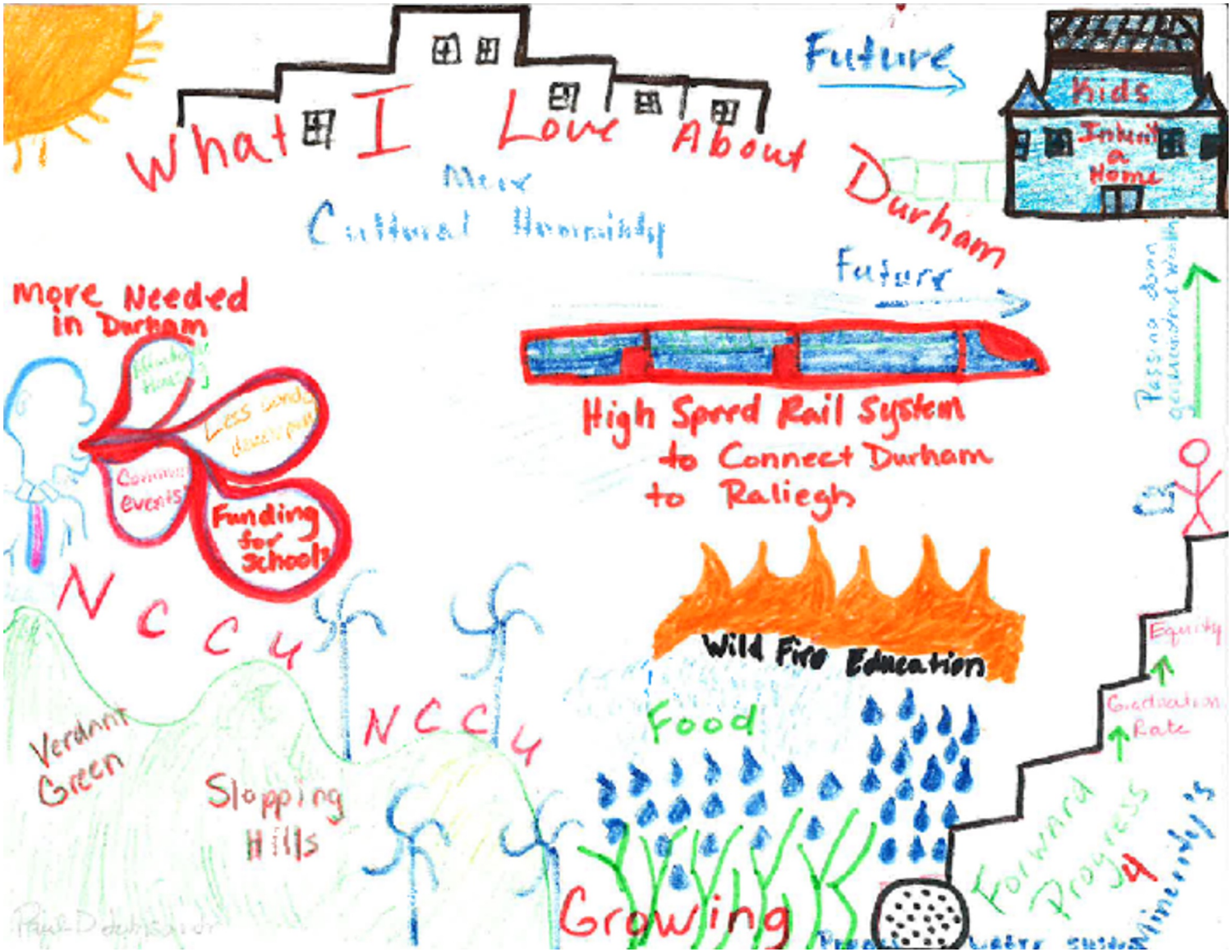

The Legacy of Hayti...

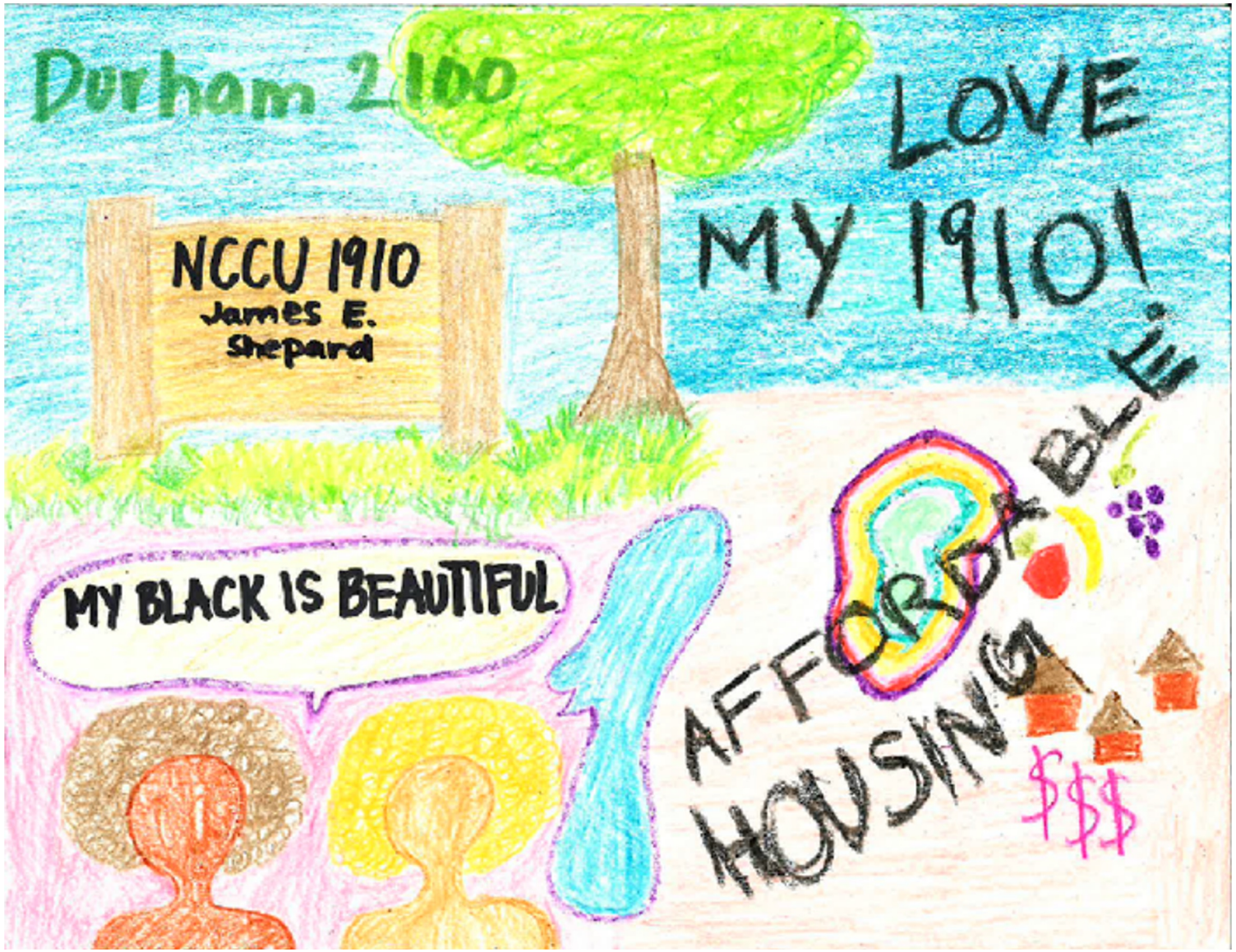

People
Sun
moon
Amiya
no
home work
for everyone
that's nice would

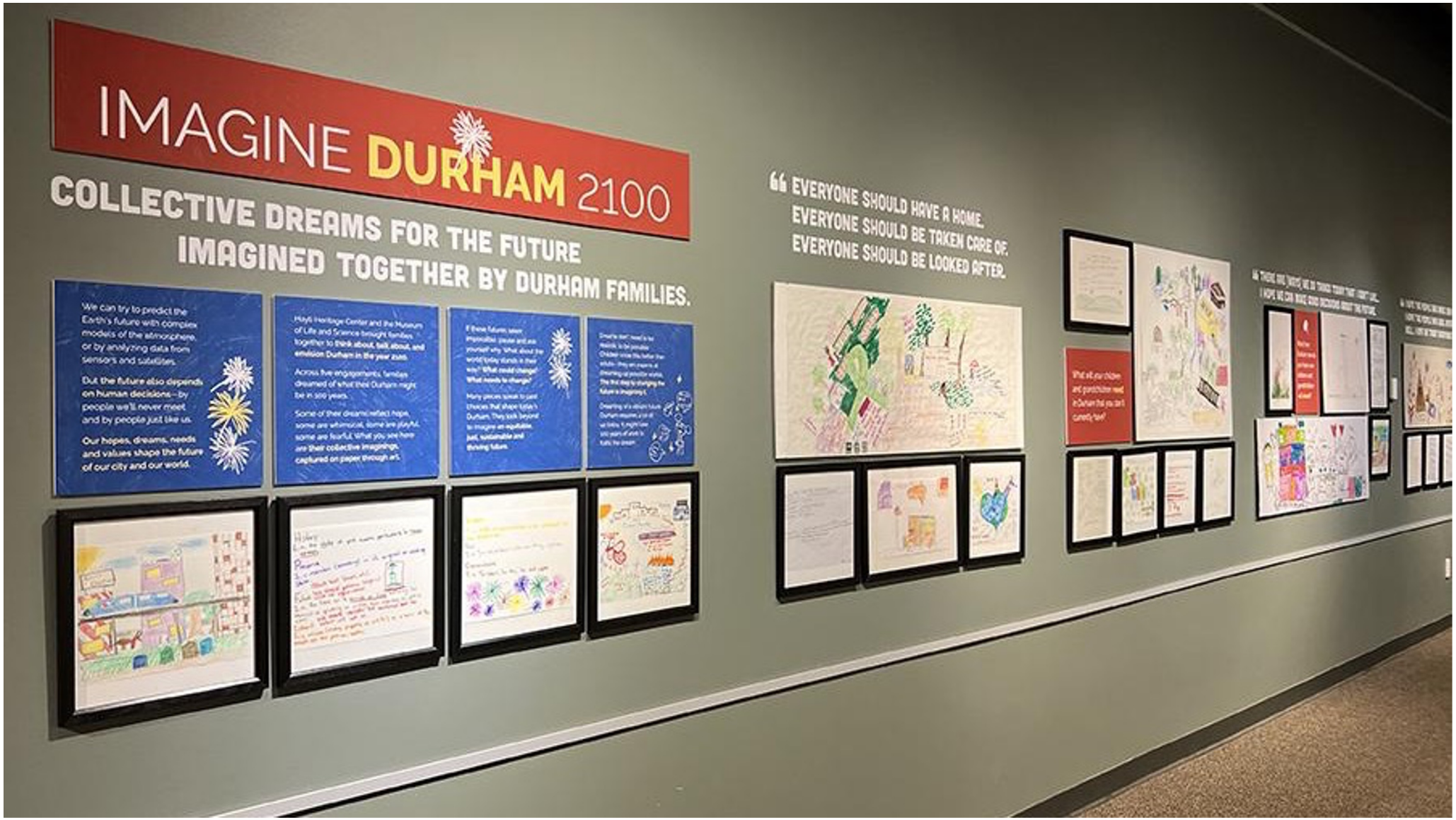

2100 = 1 Word
Unrecognizable
Garden
Water System
Rain H20
Waste

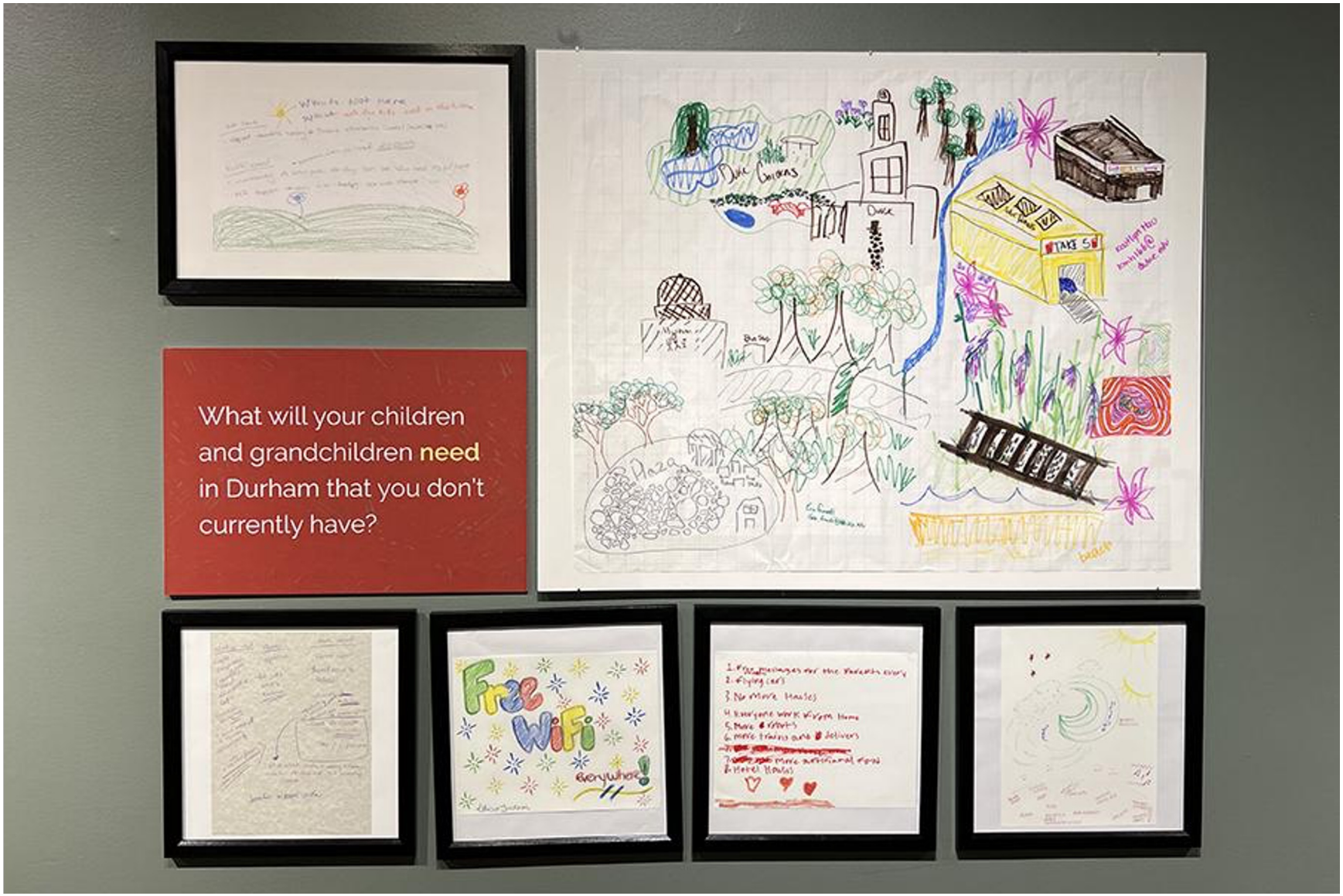

Electric
2100
Tree
big malls
monthly spa treatments
free tuition
free health care


In the future of
durham I want more
quality food in schools
and more schools for kids
with disibility's and a donation
center for all needs and
cleaner environment using clean energy
School
Donation Center

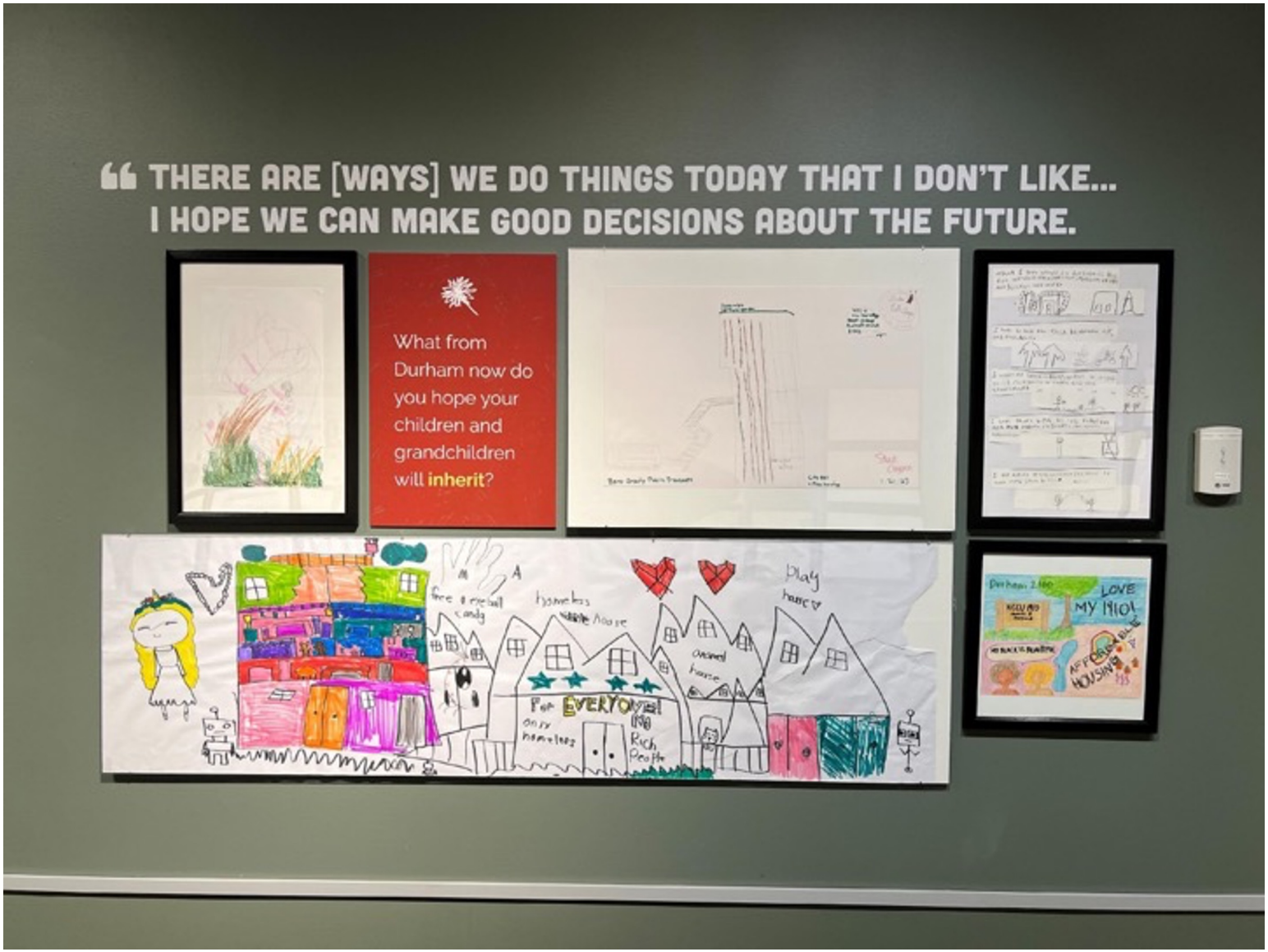

What I Love About
More Cultural Humanity
Future
Durham
Kids
Intuit a Home
Future
More Needed in Durham
Less
Common Events
Funding for schools
High Speed Rail System to Connect Durham to Raliegh
NCC4
NCC4
Wild Fire Education
Food
Verdant Green
Slopping Hills
Growing
Equity
Graduation Rate
Forward Progress


Durham 2100
NCCU 1910
James E.
Shepard
LOVE
MY 1910!
MY BLACK IS BEAUTIFUL
AFFORDABLE
HOUSING
$$$


IMAGINE DURHAM 2100
COLLECTIVE DREAMS FOR THE FUTURE
IMAGINED TOGETHER BY DURHAM FAMILIES.
We can try to predict the Earth's future with complex models of the atmosphere, or by analyzing data from sensors and satellites.
But the future also depends on human decisions—by people we'll never meet and by people just like us.
Our hopes, dreams, needs and values shape the future of our city and our world.
Hayti Heritage Center and the Museum of Life and Science brought families together to think about, talk about, and envision Durham in the year 2100.
Across five engagements, families dreamed of what their Durham might be in 100 years.
Some of their dreams reflect hope, some are whimsical, some are playful, some are fearful. What you see here are their collective imaginings, captured on paper through art.
If these futures seem impossible, please ask yourself why. What about the world today stands in their way? What could change? What needs to change?
Many groups speak to past choices that shape today's Durham. They look beyond to imagine an equitable, just, sustainable and thriving future.
"EVERYONE SHOULD HAVE A HOME. EVERYONE SHOULD BE TAKEN CARE OF. EVERYONE SHOULD BE LOOKED AFTER.
What will our children and grandchildren need in Durham that you don't currently have?

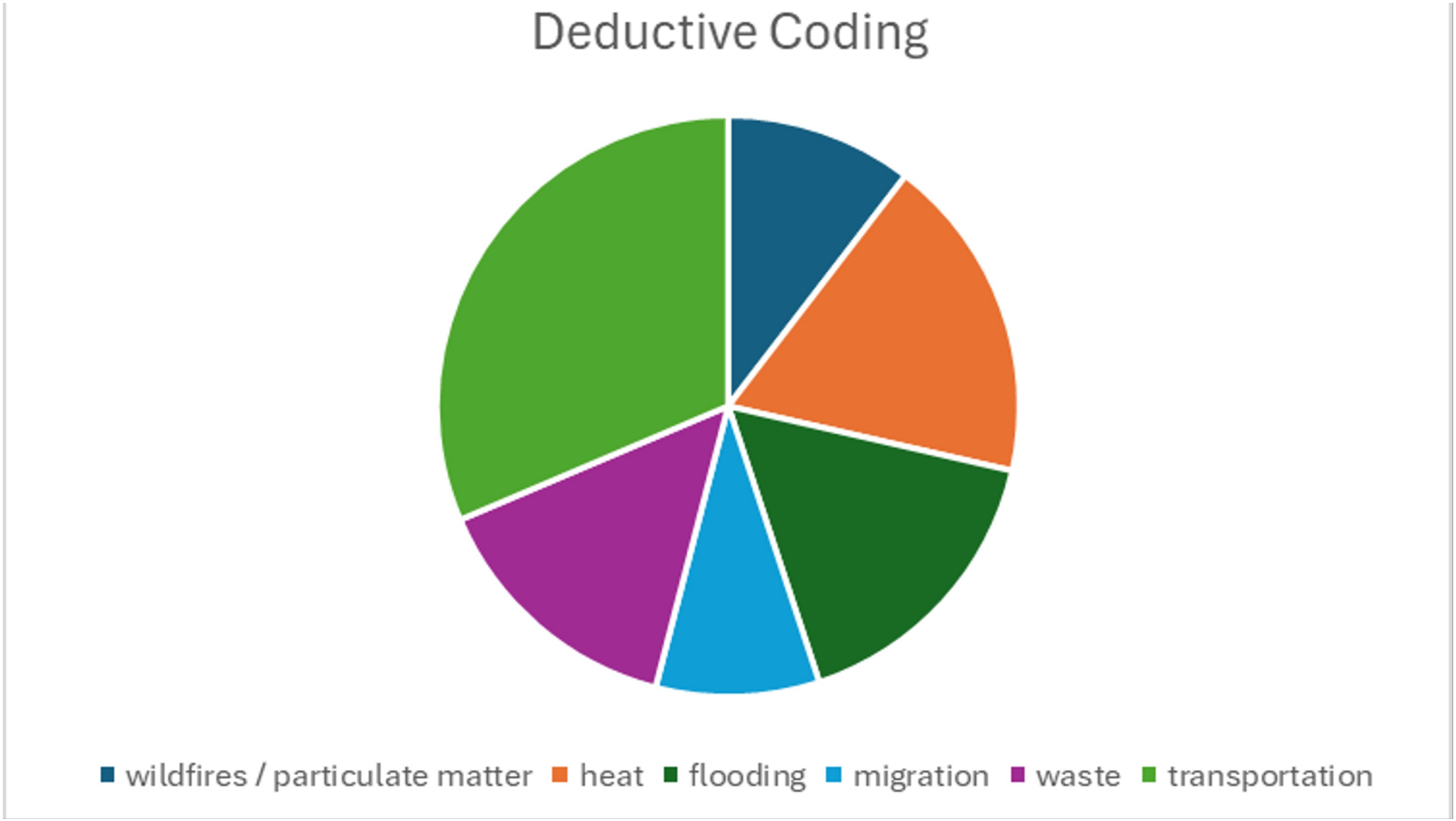

What will your children and grandchildren need in Durham that you don't currently have?
TAXI
Free WiFi
everywhere!

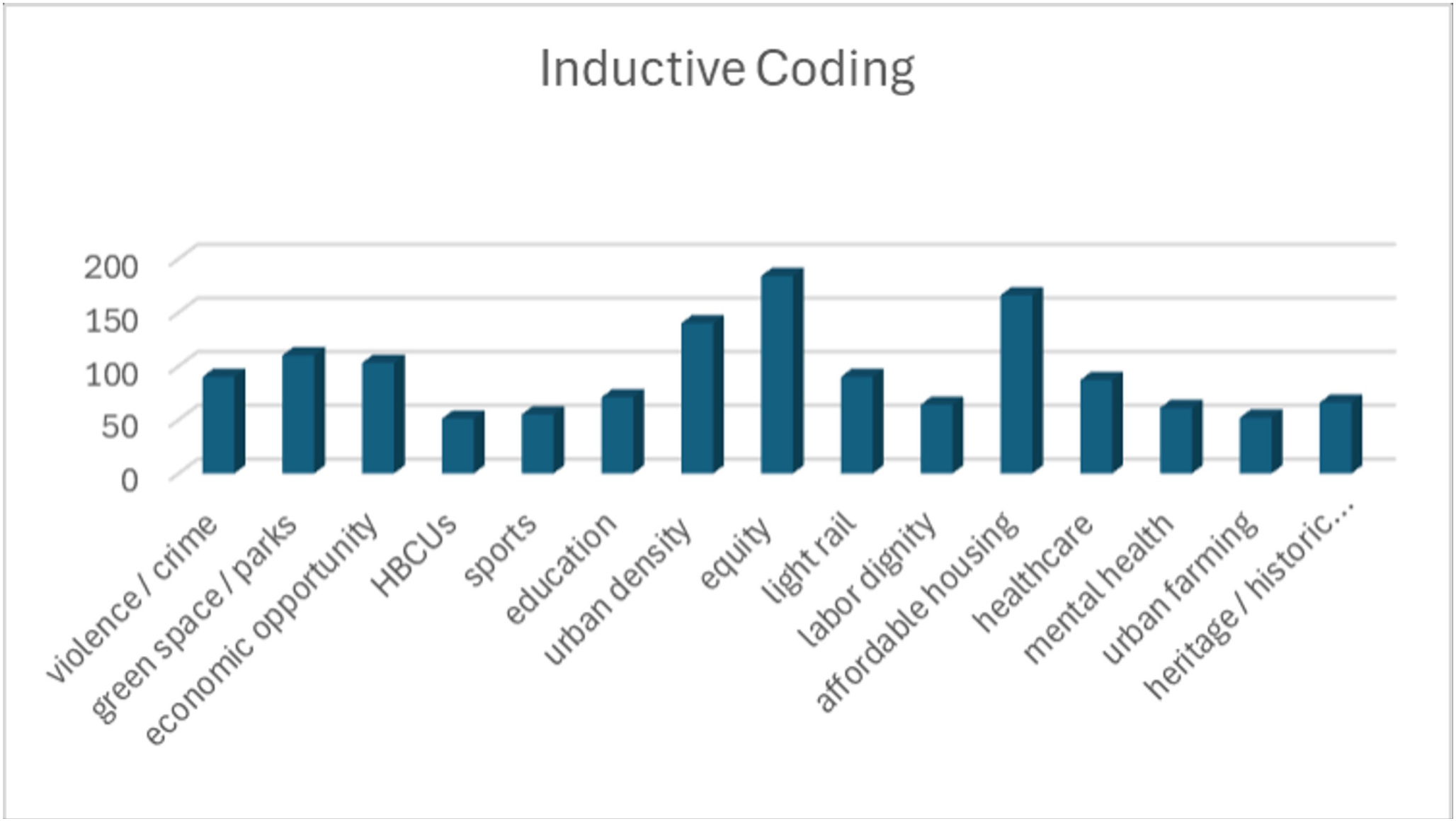

Where does your trash go today? Where should your waste go in the future?
How would you like to get to school or work in the future?
SAVE WATER
USE RENEW-ABLE RESOURCES
ZOE C
“I HOPE THE DURHAM OF THE FUTURE IS FOR EVERYONE.


“ THERE ARE [WAYS] WE DO THINGS TODAY THAT I DON’T LIKE...
I HOPE WE CAN MAKE GOOD DECISIONS ABOUT THE FUTURE.
What from Durham now do you hope your children and grandchildren will inherit?
LOVE MY MOM

I HOPE THE PEOPLE WHO DEAL WITH OUR TRASH ARE TREATED WELL. I HOPE WE TREAT EVERYONE FAIRLY IN THE FUTURE.


NO MORE


Deductive Coding
wildfires / particulate matter
heat
flooding
migration
waste
transportation


Inductive Coding
200
150
100
50
0
violence / crime
green space / parks
economic opportunity
HBCUs
sports
education
urban density
equity
light rail
labor dignity
affordable housing
healthcare
mental health
urban farming
heritage / historic…


IMAGINE
DURHAM
2100

Darrell Porcello

Director of National STEM Networks
Children's Creativity Museum, San Francisco, CA
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What do you think about future tech?

How would you design future tech?

What do you think about your future creation?

Memory Eraser

Run this device across your forehead to erase the last 24 hours of your memory

TECHNOLOGY SCIENCE FICTION

Radio Wave Shield

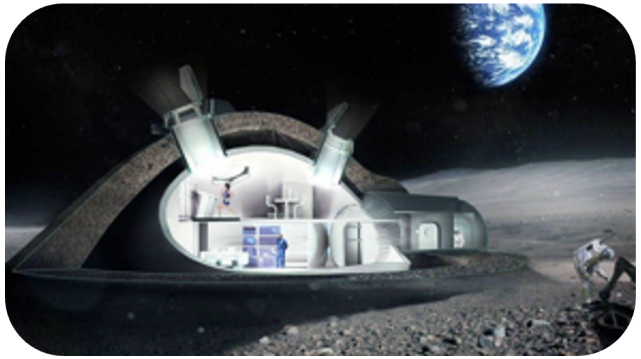
Block the radio waves that carry data in and out of your home or business.

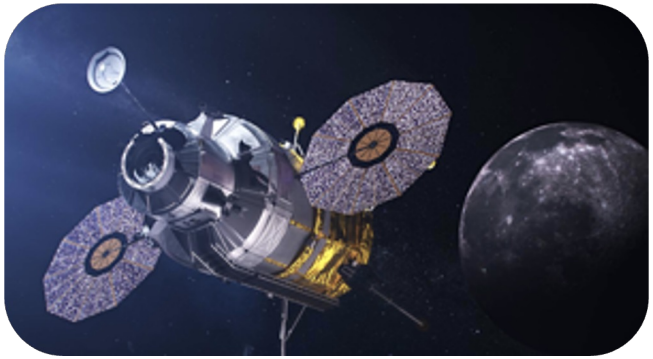
TECHNOLOGY SCIENCE FICTION

Child of Alzheimer's Patient

NAME: Lonnie (she/her)
AGE: 50
HOUSEHOLD INCOME: $$$$
TECHNOLOGY: laptop, smartphone
Pays for home care for her aging father

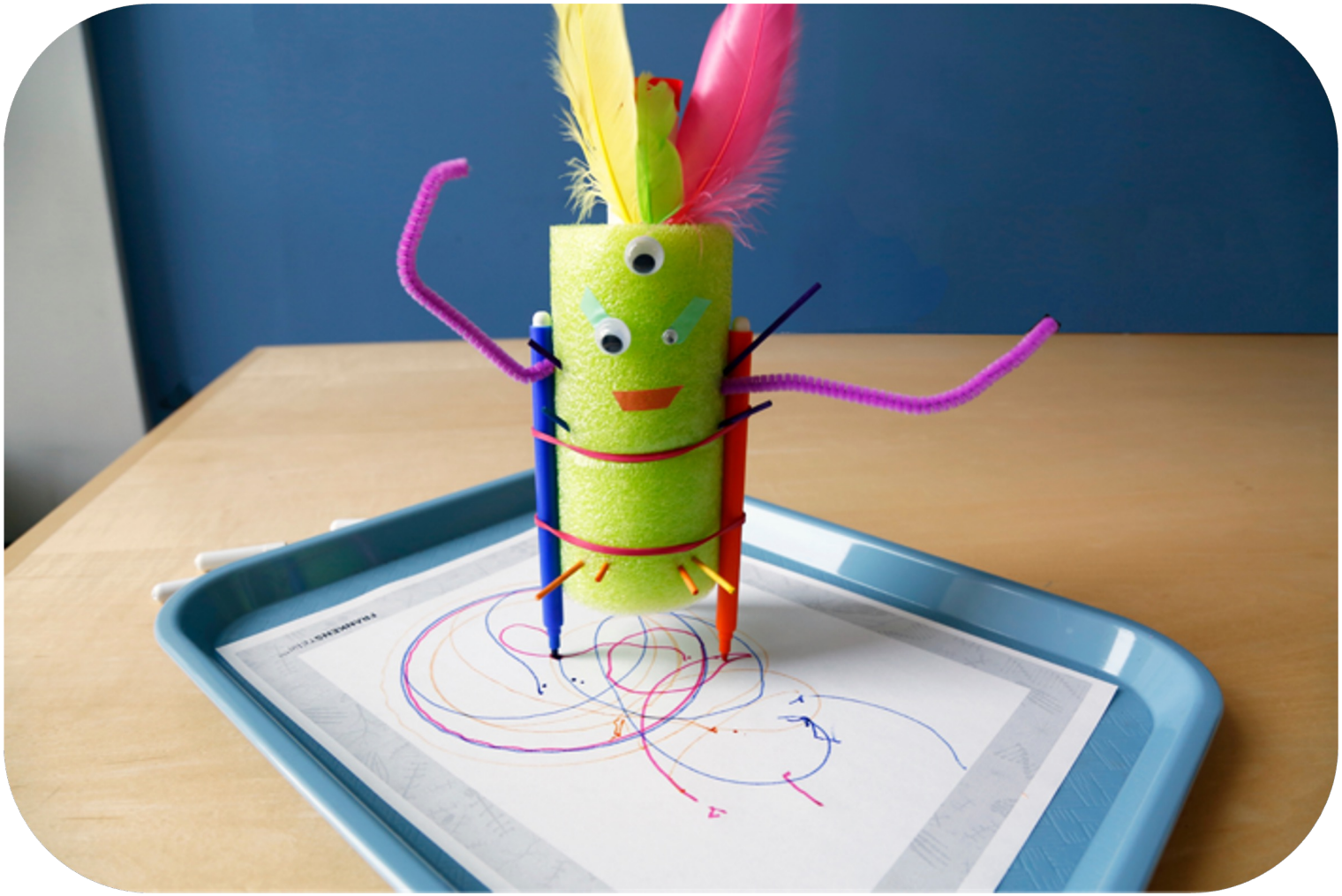
PEOPLE






Survive a Solar Storm


Design your own
ASTEROID MINING MACHINE
EXPLORE SCIENCE
What materials will your machine look for?
What tools will it need?
How does it get the power it needs to run?
How does your machine communicate back to Earth?
It's exciting to imagine what our lives might be like in the future—it's also important.
When you imagine your asteroid mining machine, you're doing a little bit of science. Well before scientists and engineers can start mining, they think up ideas for machines and consider how mining asteroids might change our future.
Learn more about how NASA is studying asteroids:
science.nasa.gov/solar-system
Wally
Name your asteroid mining machine:




Decision-making
Communication
Emotions
Robot Caregiver
This robot helps elderly people live independently by assisting with mobility and household tasks as well as helping to prevent loneliness.
Robot Inventor
This robot develops new technologies and products to make people's lives easier.
Robot Best Friend
This robot is the perfect friend, able to play your favorite games and talk about your favorite things, and is always there for you.
Robot Chef
This robot can prepare hundreds of different meals and even invent delicious new recipes.

NISE Network Science & Society Resources

nisenet.org/society

Frankenstein200

Building with Biology

Sustainability

Radio Futures: I-Spy

Earth & Space: Imaging Life

Nano & Society

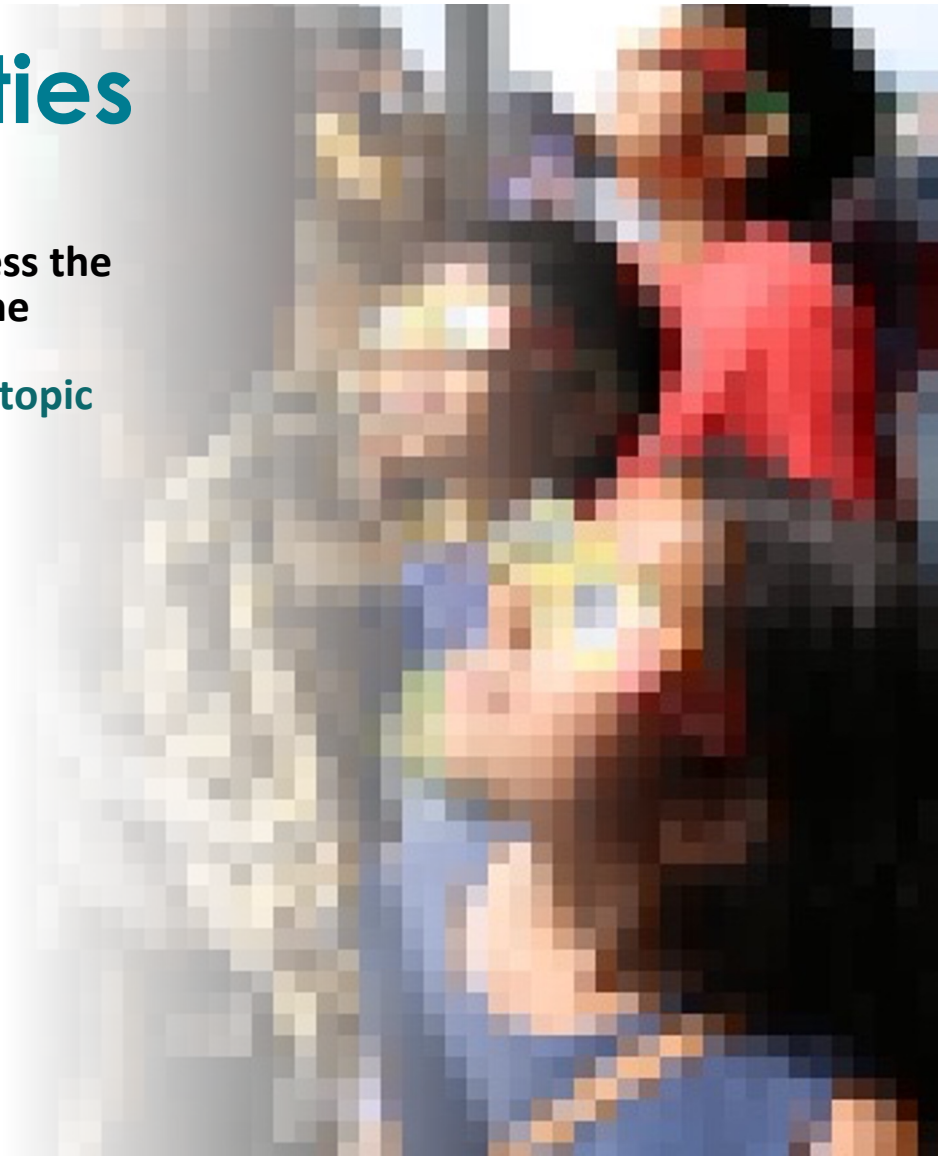
Resources & Opportunities

Learn more and access the NISE Network's online digital resources:
nisenet.org/browse-topic

Read our monthly newsletter
nisenet.org/newsletter

Past Recordings of Online Workshops
nisenet.org/online-workshop-recordings-list

Follow NISE Net on social networking
nisenet.org/social



Next Online Workshop…

Science Festivals & Big STEM Events

Late July 2024
2pm-3pm Eastern / 11am-12pm Pacific

Making Waves with Radio

August 2024
2pm-3pm Eastern / 11am-12pm Pacific

Registration Com

nisenet.org/events

NISE NETWORK
ONLINE WORKSHOPS

Thank you!

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Q&A

Use the raise hand feature or type your question in the chat