



Diverse Audiences with Diverse Needs - Focus on Neurodiversity

Dr. Laura Peticolas, Sonoma State University
Dr. Ariana Riccio, Education Development Center

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www.n3.sonoma.edu



Today's Presenters



Dr. Laura Peticolas
Sonoma State University
Associate Director, EdEon STEM Learning



Dr. Ariana Riccio
Education Development Center
Senior Researcher

Other N3 Personnel: Prof. Lynn Cominsky (PI, SSU), Dr. Wendy Martin (Co-I, EDC), Sylvia Perez (Co-I, NYSCI), Naomi Hupert (EDC), Georgette Williams (NYSCI), Dr. Bryan Mendez (UC Berkeley), Dr. Andrew Grillo-Hill (WestEd), Joshua Valcarcel (WestEd)

N3 Program Goals, 2021-2026

Providing a pathway to NASA participation and STEM employment for neurodiverse learners, with a focus on those on the autism spectrum.

- Enabling STEM education for a segment of the population that is significantly underserved by co-redeveloping existing NASA resources with autistic learners.
- Improving scientific literacy for this underserved population by providing authentic NASA experiences
- Providing internships, mentored by NASA Subject Matter Experts, to selected neurodiverse learners.



What does it mean to “co-
design”



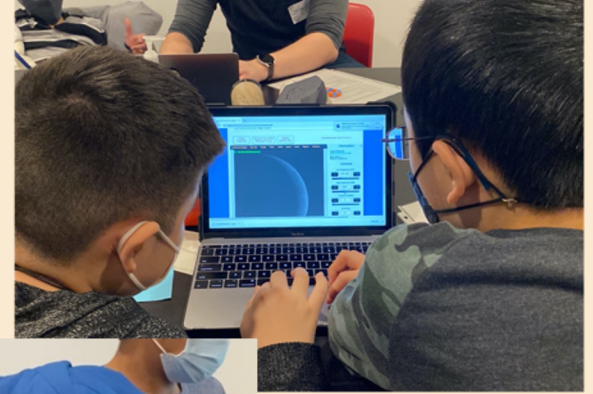
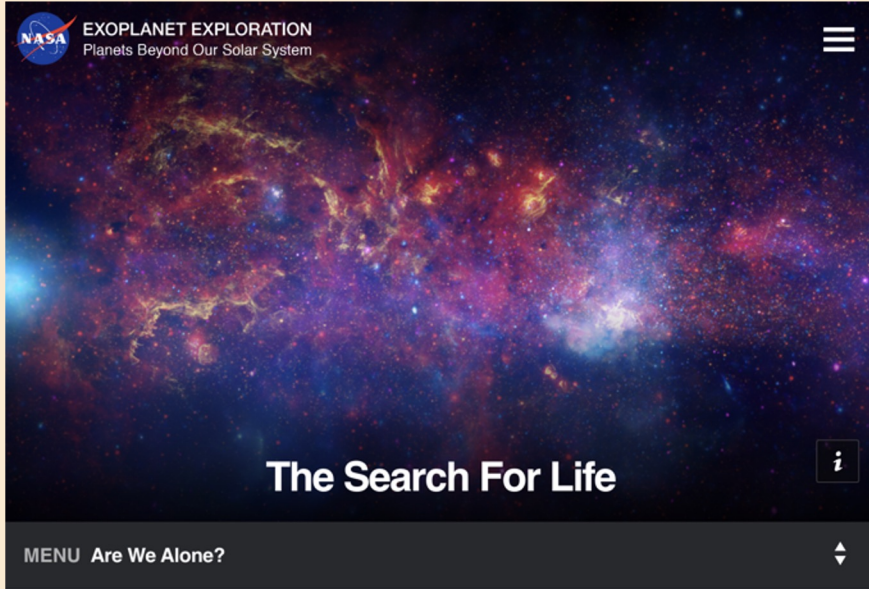
Interested in Participatory Co-Design?

- Autistic people are not usually involved in developing support programs despite evidence that participatory approaches improve their effectiveness.
- Making a program participatory means that stakeholders (i.e. autistic people) are meaningfully involved in developing, enacting, and disseminating research initiatives, programs, and activities.
- Participatory approaches are key to be sure that programs align with the needs of the people they intend to serve. ^{5, 6}

What have we learned so far?

- Astronomy from Home
 - Students and teachers gave critical feedback about the broader context of our AfH curriculum. While activities were fun and engaging, more background information was needed to motivate students and provide a contextual frame.
 - All participants emphasized the need for graphics, diagrams, images, videos, and other interactive methods for teaching these materials.
- Rocketry/Rising Data
 - Similar concerns arose when redeveloping this curriculum - namely the need for an improved visual guide and step-by-step checklists to assist with completing this complex project

Astronomy Example



N3 Rocket Example



*Helping-Hands Tools
Hold Electronics Board
for Ease of Soldering*

Checklist

A. Building the Rocket	
<input type="checkbox"/>	A.1 Assemble the engine mount
<input type="checkbox"/>	A.2 Prepare the fins
<input type="checkbox"/>	A.3 Insert engine mount in main tube
<input type="checkbox"/>	A.4 Attach the fins
<input type="checkbox"/>	A.5 Attach the launch lug
<input type="checkbox"/>	A.6 Shock cord assembly
<input type="checkbox"/>	A.7 Nose cone fit and disk insertion

Checklists Support Success



*Personalized Rockets
Facilitates Ownership*

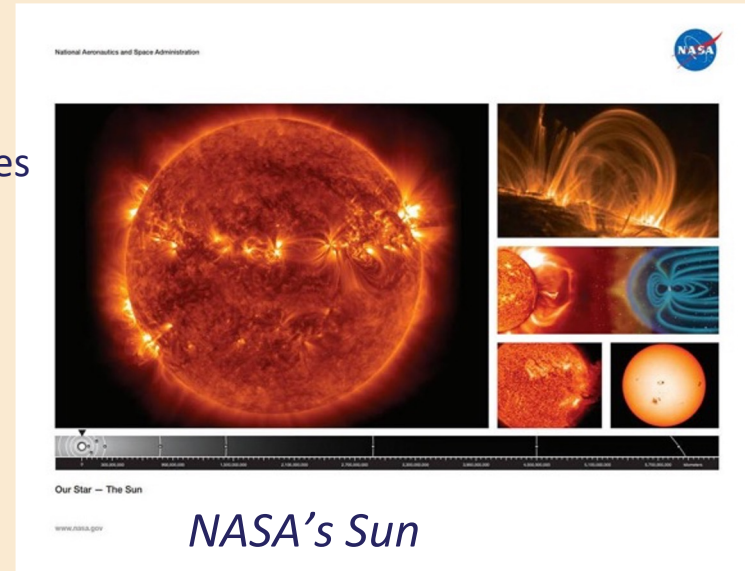
Tips for Supporting Autistic Learners

- Provide a visual schedule
- Prime students for what's to come so they understand the context and process for their learning
- Embed interests
- Establish clear expectations
- Provide supportive visuals and/or other reference materials

N3 Eclipse Program Info 2023-24

- Context: Our Sun as an active star
- Hands on activities:
 - Sunspotter* activities to view sunspots prior to eclipses
 - Safe solar viewing prior to eclipses
 - Positions of the moon and sun in the sky
- Content
 - Solar cycle
 - Sun's layers and atmosphere
 - Effect on Earth's technologies
 - Solar Eclipses
- Eclipse activities
 - Sunspotter used as partial solar eclipse viewing device
 - Pinhole cameras
 - Activities designed for those on the path of totality

*Modified from <https://www.exploratorium.edu/eclipse/video/how-build-sun-viewer>



*NASA's Sun
Lithograph*

N3 Eclipse Program Info 2023-24 (cont.)

- Activities will take place in 2023 and 2024
 - California Partner Schools
 - New York Hall of Science
 - At least one location under the path of totality in 2024
- Watch for activity releases on the N3 Website

<https://n3.sonoma.edu>

Questions?

Dr. Laura Peticolas, Sonoma State University
laurap@universe.sonoma.edu



Dr. Ariana Riccio, Education Development Center
ariccio@edc.org

