

Welcome to the NGCP National Webinar

Neurodiversity in STEM Education

Monday, September 21, 2020

**Please respond to the poll and introduce yourself in the chat.
Use the chat to ask questions, respond to one another, and share
resources.**



NGCP Vision

The National Girls Collaborative Project **brings together organizations** committed to informing and encouraging girls to pursue careers in science, technology, engineering, and mathematics (STEM).



NGCP Goals

1. **Maximize access** to shared resources within organizations interested in engaging girls in STEM.
2. **Strengthen the capacity** of programs by sharing exemplary practice research and models.
3. **Use the leverage of a network** to achieve gender equity in STEM.



NGCP Activities



Increased Collaboration Benefits Girl-Serving STEM Programs

Helped us better serve girls



82%

Increased girls' interest in STEM



78%

Helped my program be more effective



77%

Increased girls' confidence in STEM



77%

Source: NGCP 2015 Annual Survey

National Network of Collaborative Teams



NATIONAL GIRLS COLLABORATIVE PROJECT

Neurodiversity in STEM Education speakers:



Sara Sanders Gardner:
Program Director at Bellevue
College's Neurodiversity
Navigators program



Elinore Gaitan:
Biochemistry student,
Autism Behavior Technician,
and Tutor



BELLEVUE
COLLEGE

Neurodiversity Navigators

Neurodiversity in STEM Education

Sara Sanders Gardner

Neurodiversity Navigators Program Director, Adjunct Faculty



RISE
LEARNING
INSTITUTE

Language

Identity First

- ✓ Grammatically correct
- ✓ Includes disability as part of person
- ✓ Embraces disability
- ✓ Many disabled people prefer identity first language



<http://autisticadvocacy.org/identity-first-language/>

Person First



- Awkward syntax
- Separates disability from person
- Shows a desire to be distant from disability
- Parents and professionals often prefer person first language

<http://www.disabilityisnatural.com/explore/people-first-language>

Ask the person which they prefer if you find you need to use terminology.

Some Definitions

- Neurodiversity – the diversity of human brains and minds – regarded as part of the normal variation of neurocognitive functioning within the human species
- Neurodivergent (ND) – an individual who has a brain that functions in ways that diverges significantly from the dominant societal standards
- Neurotypical (NT) – an individual who has a style of neurocognitive functioning that falls within the dominant societal standards of “normal”

<http://neurocosmopolitanism.com/neurodiversity-some-basic-terms-definitions/>

Neurodiversity Umbrella

Dyslexia

Autism

Tourette's

Dysgraphia

Dyspraxia

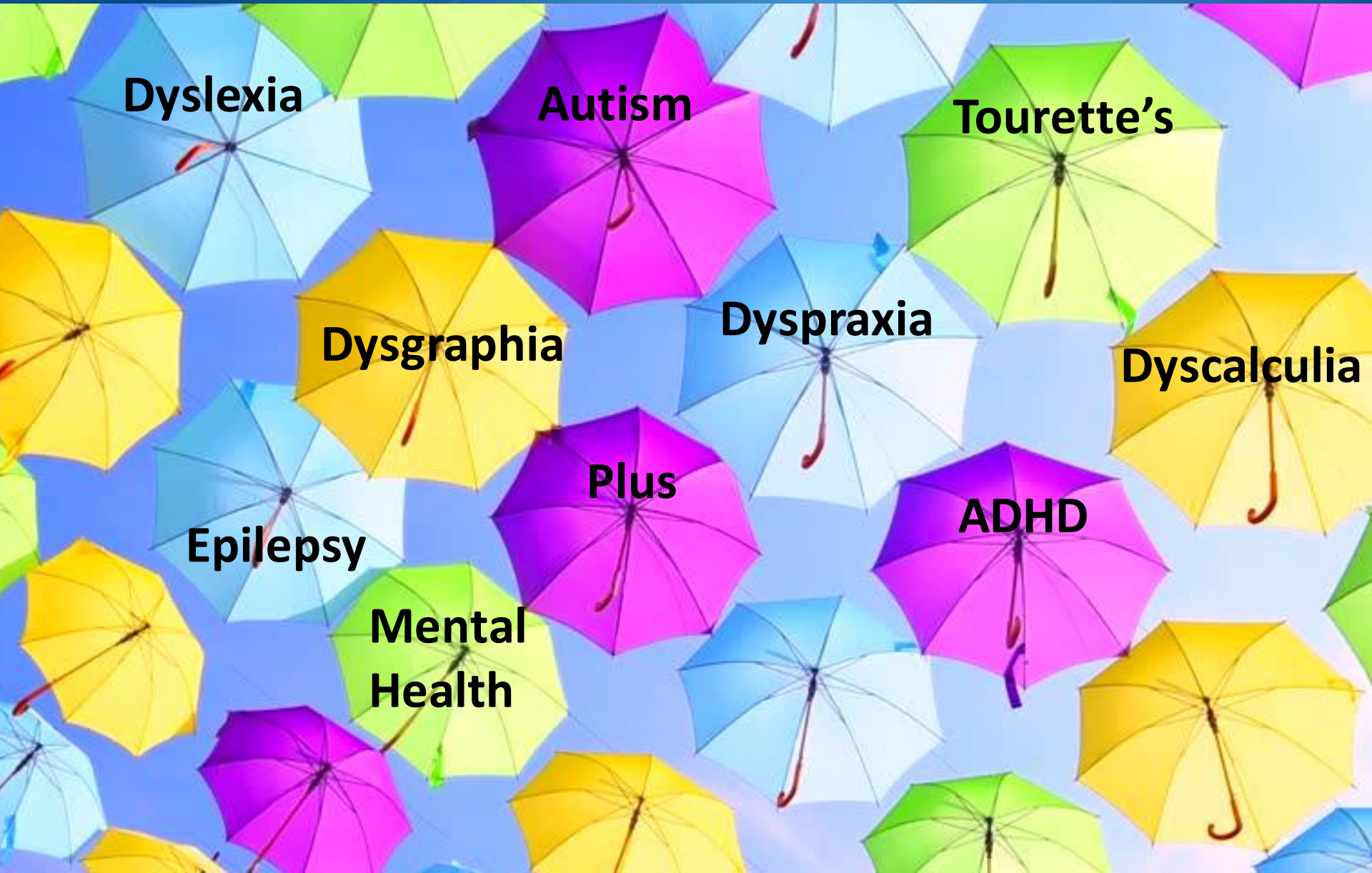
Dyscalculia

Plus

ADHD

Epilepsy

**Mental
Health**





Deficit / Medical Prescriptive Model

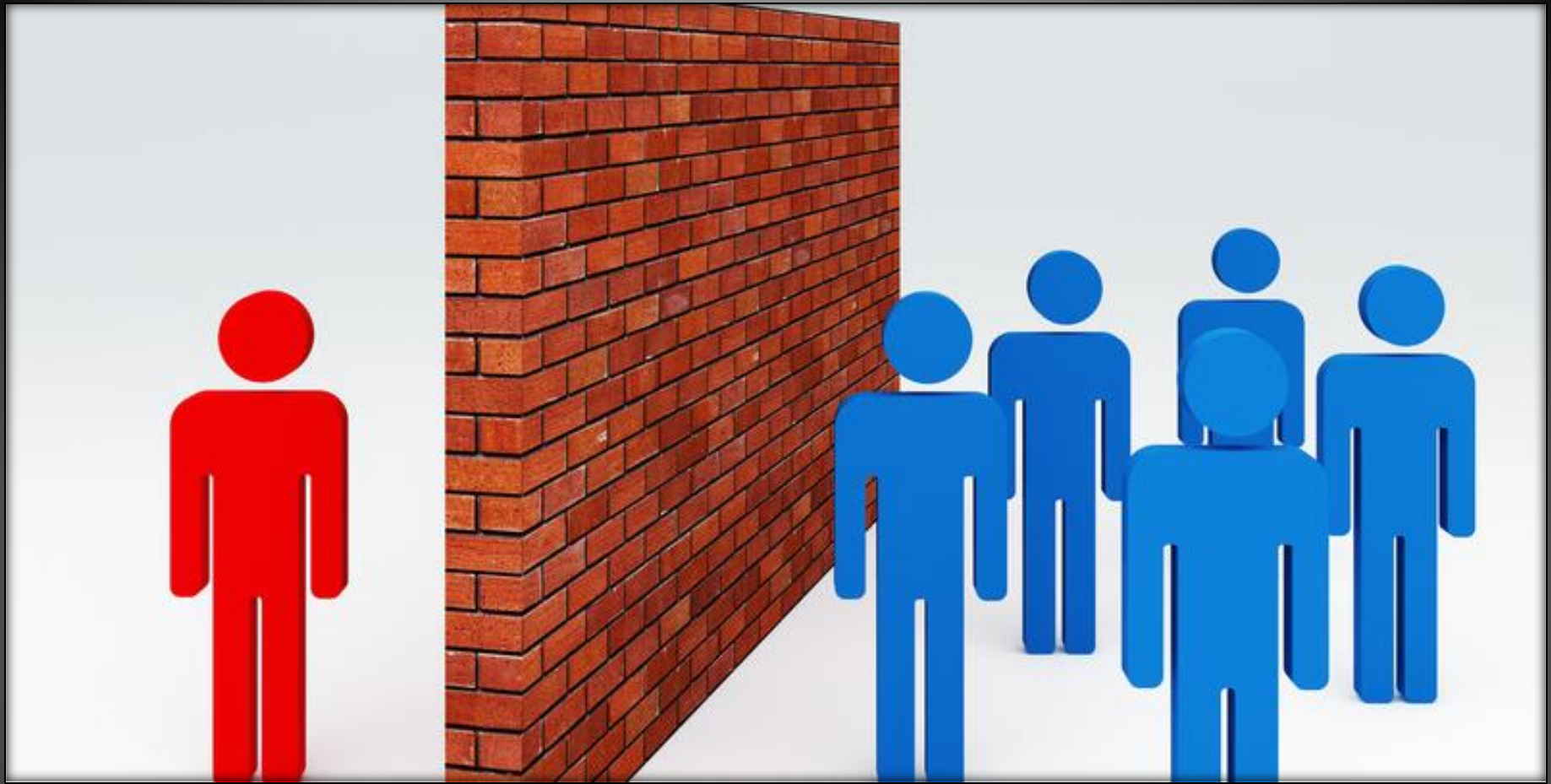
- Seeks to “fix”
- Sees person as the problem
- Believes there is one “correct” or “typical” way of being
- Embraces cultural constraints

Social Justice / Descriptive Model

- Seeks to empower
- Sees barriers to access as the problem
- Believes there are many acceptable ways of being in the world
- Questions cultural constraints



**It's not a disabled dog
It's a cat**



Understanding Barriers >>

Environment, Communication, Culture

Consider the Environment

Everyone benefits from an environment that includes:

- Natural lighting, ability to dim lighting
- Quiet areas and conversation areas
- Sound blocking
- Clear signage
- Options for socializing and meeting participation
- Retreat areas



THE CULTURAL ICEBERG

SURFACE CULTURE

Food
Flags Festivals
Fashion Holidays Music
Performances Dances Games
Arts & Crafts Literature Language

DEEP CULTURE

Communications Styles and Rules:

Facial Expressions Gestures Eye Contact
Personal Space Touching Body Language
Conversational Patterns in Different Social Situations
Handling and Displaying of Emotion
Tone of Voice

Notions of:

Courtesy and Manners
Friendship Leadership
Cleanliness Modesty
Beauty

Concepts of:

Self Time Past and Future
Fairness and Justice
Roles related to Age, Sex,
Class, Family, etc.

Attitudes toward:

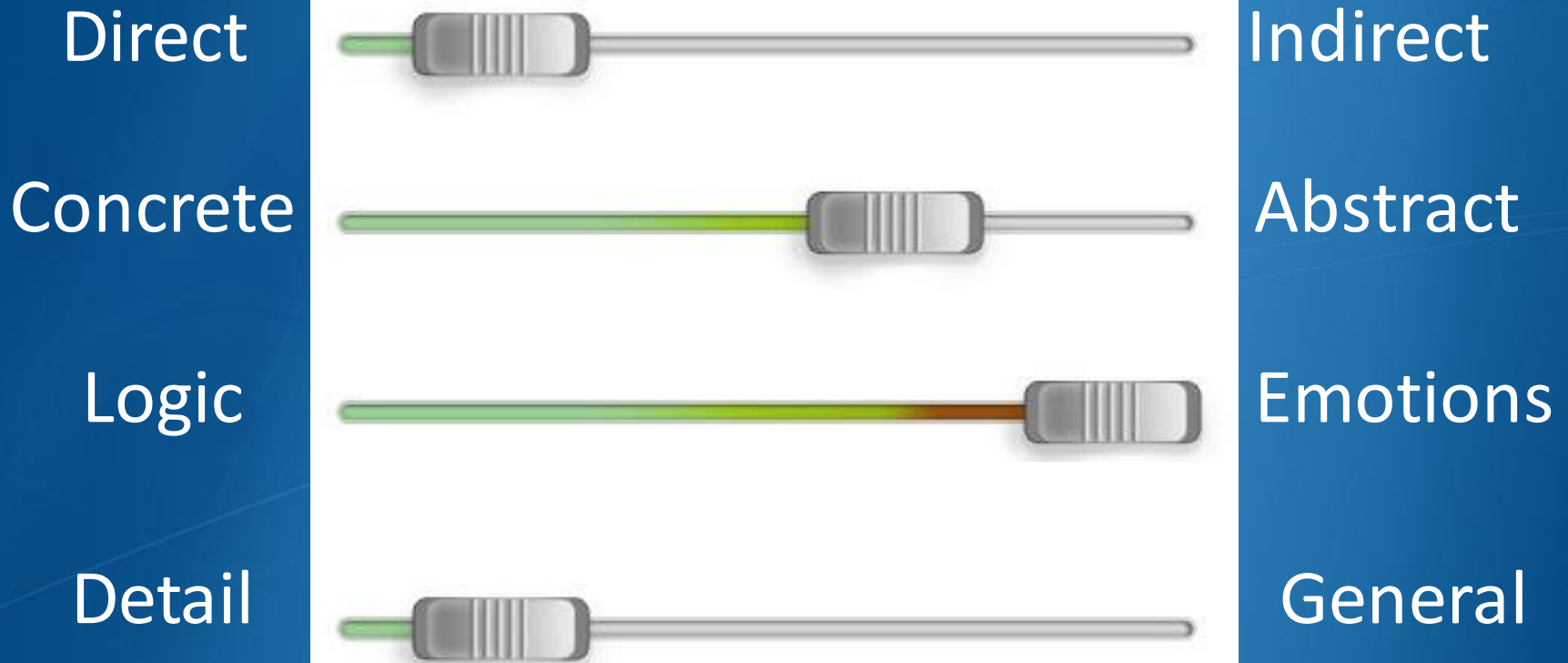
Elders Adolescents Dependents
Rule Expectations Work Authority
Cooperation vs. Competition
Relationships with Animals Age
Sin Death

Approaches to:

Religion Courtship Marriage
Raising Children Decision-Making
Problem Solving

The Cultural Iceberg by
Edward T. Hall

Ways to Communicate



Non-Verbal Communication



- Many elements:
 - Facial expressions
 - Gestures
 - Paralinguistics (tone)
 - Body Language & Posture
 - Proxemics (space)
 - Eye Gaze
 - Haptics (touch)
 - Appearance
 - Artifacts (objects)
 - Humor
- For our purposes: **Unspoken, implied, or hidden meaning within spoken communication**
- *These also vary across cultures and within cultures*

Looking Further at Language & Stress



What is Plain Language?

“A communication is in plain language if its wording, structure, and design are so clear that the intended readers can readily find what they need, understand it, and use it.”

www.plainlanguage.gov

Example

Before

The applicant should submit an official copy of his or her transcript, two letters of recommendation, a resume which includes experience in chemical research, and a short statement of intent to our internship office by April 15

After

To apply, submit the following items to the Internship Office by April 15:

- An official copy of your transcript;
- Two letters of recommendation;
- A resume which includes:
 - experience in Chemical Research;
- A short statement which explains why you are interested in this internship.

Submit via email: intern@state.org

Or mail to: Internship Office

555 State St.

Grant, OR 55555



Best Practices



Communication / Environment

- Be direct / concrete
- Put it in writing: email follow-up, sticky notes, meeting notes
- Ensure person knows where to find written instructions, due dates, etc.
- Encourage multiple means of communication during meetings (UD)
- Create accessible environment
- Provide clear way-finding info

Perception / Mindset

- Remember cultural differences
- Ask for clarification rather than taking offense at tone of voice or direct feedback
- Accept questions readily; encourage asking for help
- Recognize communication difficulties/differences
- Be quick to recognize efforts
- Remain positive

Resources

Stairway to STEM www.stairwaytostem.org/

Neurodiversity Hub www.neurodiversityhub.org/

Autistic Self Advocacy Network <http://autisticadvocacy.org/>

Autistic Women and Nonbinary Network
<https://awnnetwork.org/>

Research on Cognitive Accessibility of Web Technologies
www.w3.org/TR/coga-user-research/#autism

Plain Language www.plainlanguage.gov

Universal Design of Information Technology
www.washington.edu/doit/programs/center-universal-design-education/postsecondary/universal-design-information-technology

Conversations with Elinore

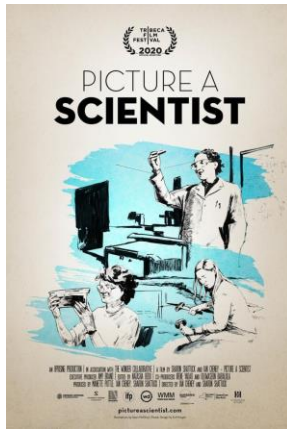


Upcoming NGCP Webinars



Elevating Youth Voice in STEM Programming

Tuesday, October 6, 2020



Picture a Scientist: Bringing Gender Equity in Science to the Big Screen

Tuesday, October 13, 2020

Register on the NGCP website