Wearable Technologies for Active Learning and Sensory Regulation with Dignity

ASU-NERC PARTNERSHIP FOR NEURODIVERSE COMPUTATIONAL THINKING AND TELEMATIC EMBODIED LEARNING


WHO? TEACHERS OF NEURODIVERSE MIDDLE SCHOOL STUDENTS
WHAT? CO-DESIGN ACCESSIBLE COMPUTER SCIENCE-INFORMED CURRICULUM
HOW? BUILD, PLAY & PERFORM WEARABLE DIGITAL MUSICAL INSTRUMENTS

Purpose/goals of session

Explore how technologies are being used to promote active, equitable, and research informed learning with autistic students

Agenda

Who we are

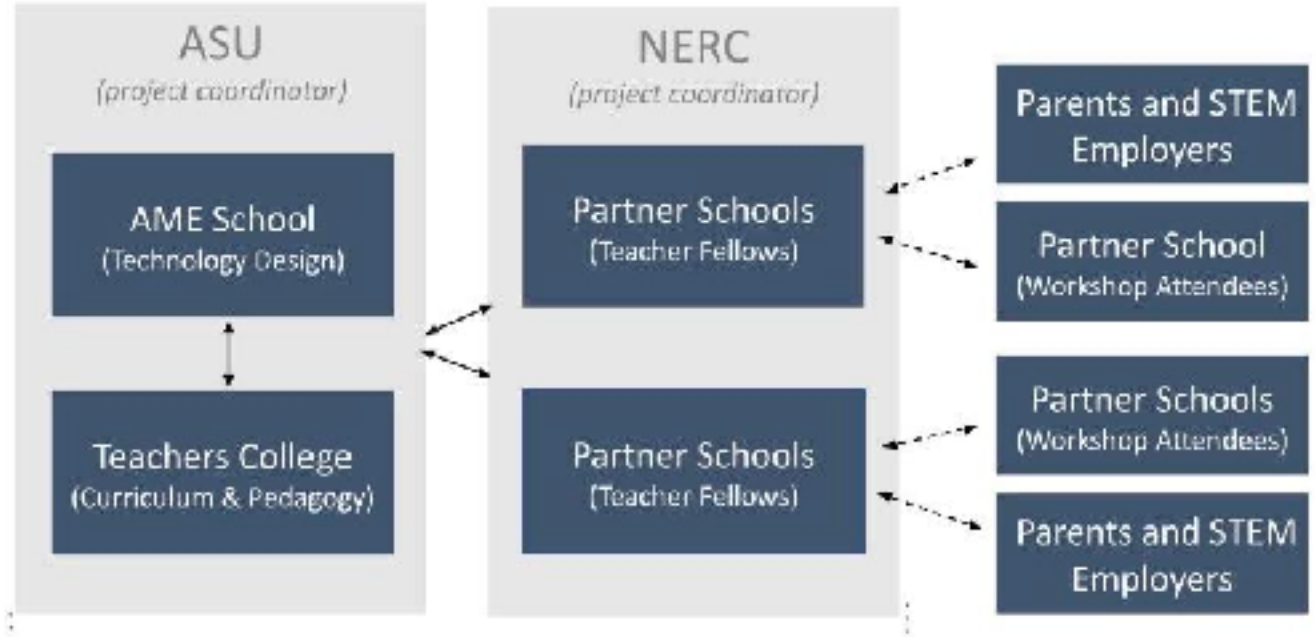
What we believe

What we are doing

How it incorporates HLPs

What else there is to explore

ASU-NERC Partnership



School of Arts, Media and Engineering
ASU Herberger Institute for Design and the Arts
Arizona State University

NEURODIVERSITY
EDUCATION RESEARCH CENTER

ASU Mary Lou Fulton Teachers College
Arizona State University

Presenting Today

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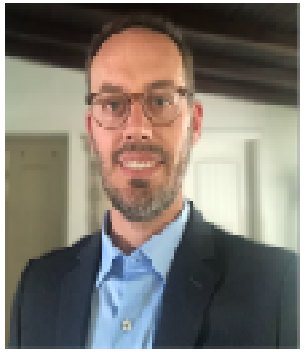

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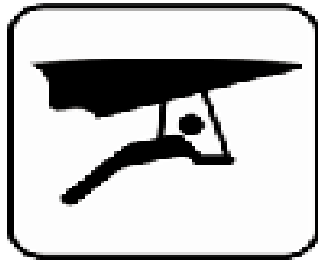
Project - Research Practice Partnership

- Exploring computational thought as it intersects with neurodiversity and the arts.
- Working with embodied technologies and constructivist pedagogy
- Striving to build rich, inclusive computational learning experiences for all students

Co-designing



Pilot Testing

Scaling

National Science Foundation
WHERE DISCOVERIES BEGIN

Partnership

Science Prep Academy

Sacaton Middle School

And additional partners coming soon!

Core Principles

Neurodiversity is fundamental to inclusive education

- Independence → Interdependence

Creative expression boosts social and emotional wellbeing

- Linearity → Creativity

Embodied movement is central to understanding

- Cognitivism → Embodiment

Neurodiversity

Everyone has a ‘differently-wired’ brain and their own unique way of thinking, interacting and experiencing the world.

Neurological variances should be recognized and respected just like any other human variation, such as gender, race or sexual orientation.

(Silberman, 2016)

Active Learning

- *Active Learning Theory* refers to the ability for learners to construct or build their own understanding of concepts or topics

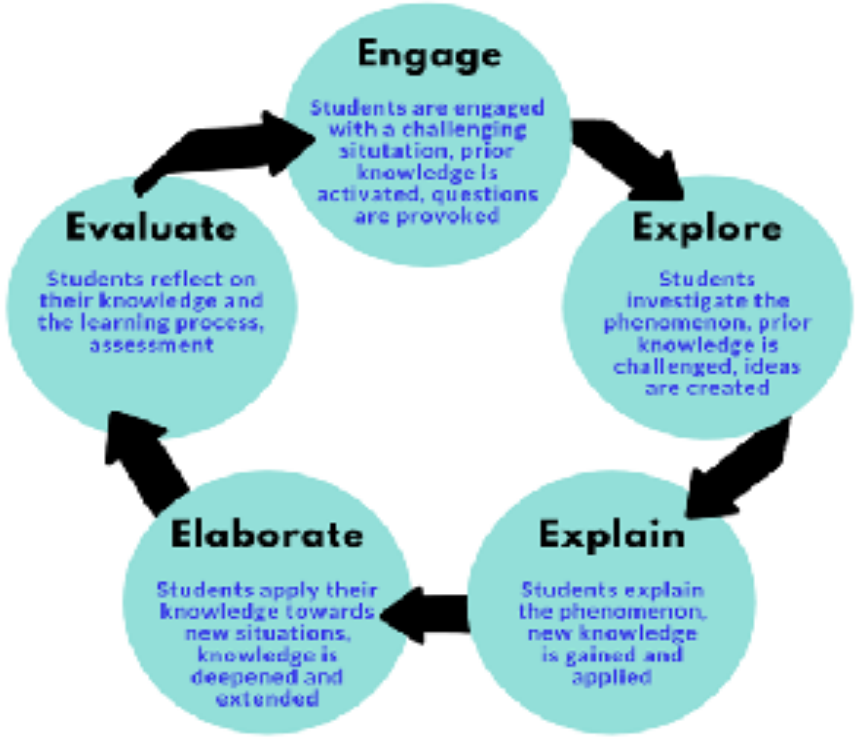
- Active learning is derived from two basic assumptions
    1. learning is by nature an active endeavor
    2. that different people learn in different ways

(D'Silva, 2010)

Active Learning

Inquiry based (5E lessons)

- How people learn
- Explore before explain
- Concept then procedure/skill



https://knowledgequest.aasl.org/the-5-es-of-inquiry-based-learning/

Social Emotional Learning

Collaborative for Academic, Social, and Emotional Learning's (CASEL) five dimensions of SEL

Strengths of SEL

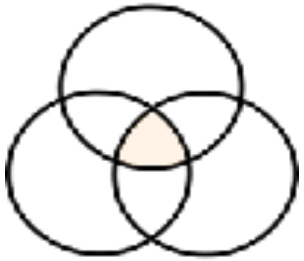
- Inquiry/play and SEL
- Intersection of culture/race, disability and trauma

Discipline

Democratic practices

- Co-created classroom expectations and consequences.
- Shared maintenance of expectations
- Conflict resolution over punitive discipline

Discipline



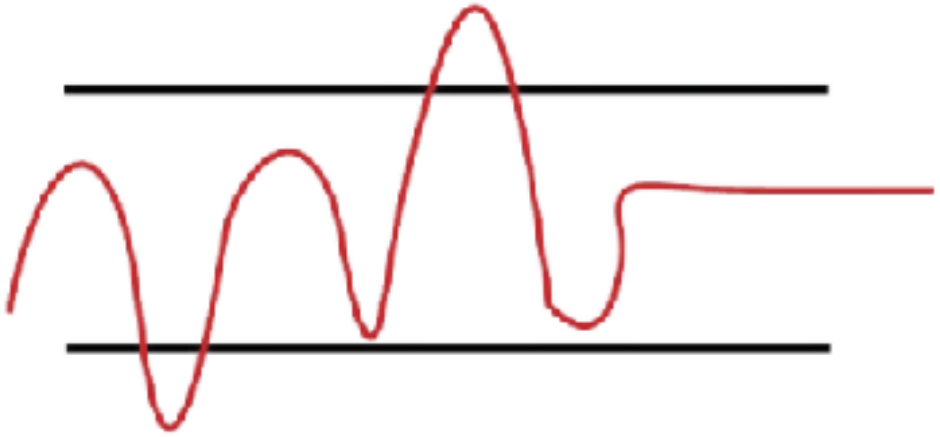
Positive Behavior Intervention Supports

- Systems-based
  - School/class-wide approach
- Practices
  - Draw on research-based interventions
- Data-informed
  - Monitor, evaluate, and revise practices

Dysregulation

Window of Tolerance

When our body goes above or below our tolerance level for emotions,
we automatically enter flight, fight or freeze.



Window of Tolerance

Flight, fight, freeze

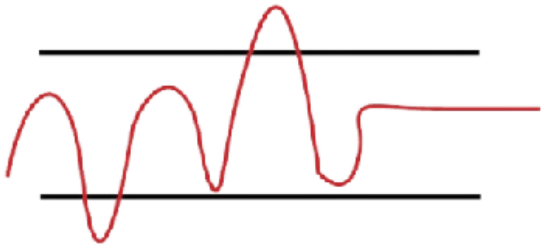
automatic, innate response

protect from threats

Triggered without life threatening situation

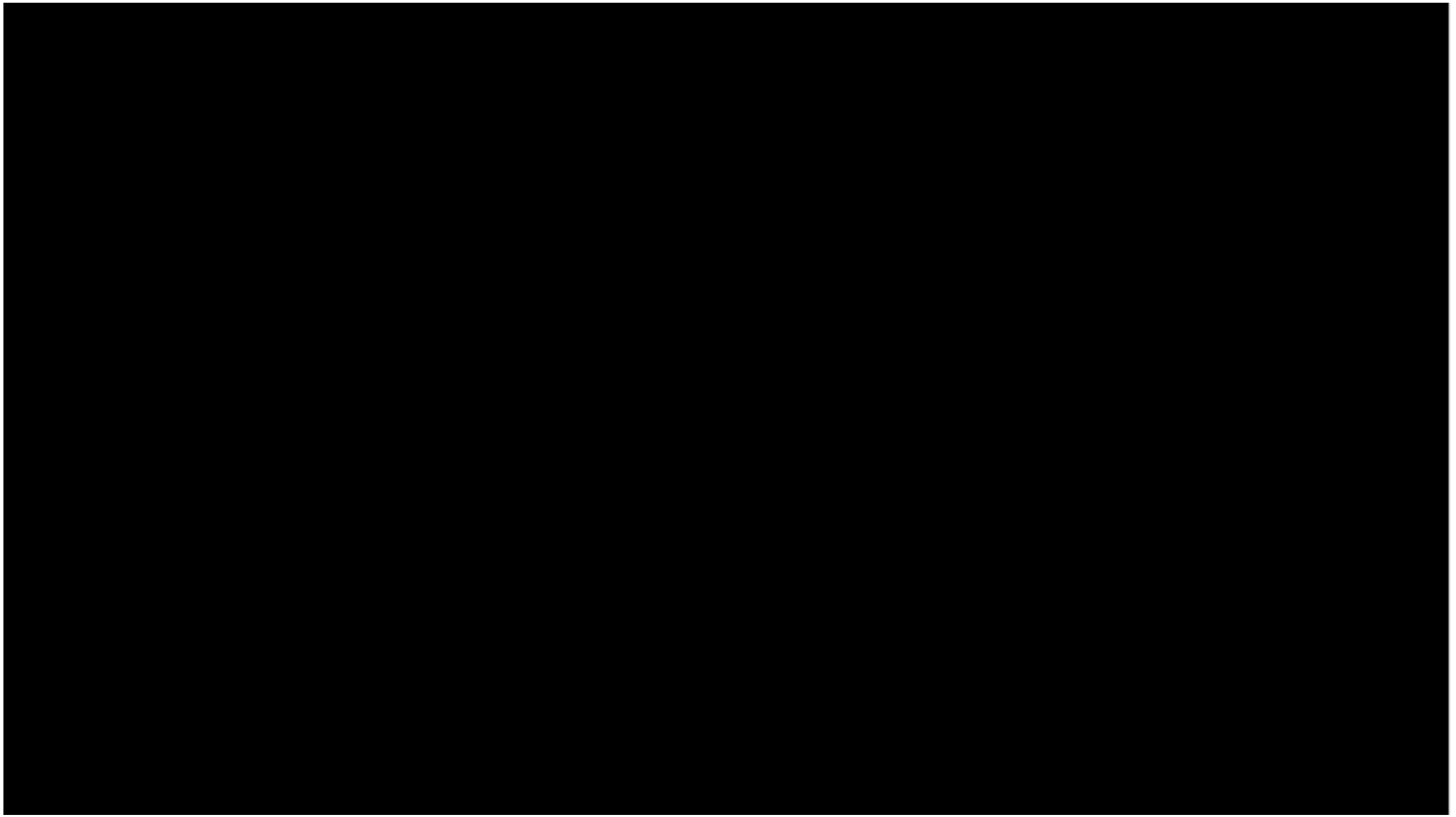
Ability to think, speak and plan are affected

Window of Tolerance



Neurotypical people typically stay within their window of tolerance throughout the day.

Neurodivergent people, especially autistic people, are more likely to be at the top of their window of tolerance and be more likely to be triggered into dysregulation, meltdowns and shutdowns.



HLP Connections

HLP 18: USE STRATEGIES TO PROMOTE ACTIVE STUDENT ENGAGEMENT

Inquiry-based lessons
5E lesson plans
Exploration before explanat
Moving-thinking

HLP 19: USE ASSISTIVE AND INSTRUCTIONAL TECHNOLOGIES

M5Stick Device
Musical Instruments
Computational thinking
Co-design (teachers, students, University)

HLP Connections

HLP 12: SYSTEMATICALLY DESIGN INSTRUCTION TOWARD A SPECIFIC LEARNING GOAL

- 5E lesson plan
- Explore, explain, elaborate
- Content standards
- Computational Thinking concepts
- Performance-based assessment

HLP 15: PROVIDE SCAFFOLDED SUPPORTS

- Explicit teaching for use of tools
- Multiple entry points
- Partners and cooperative groups

HLP Connections

HLP 22: PROVIDE POSITIVE AND CONSTRUCTIVE FEEDBACK TO GUIDE STUDENTS' LEARNING AND BEHAVIOR.

Accessible, positive supports

Student-centered, co-created environments

Engagement

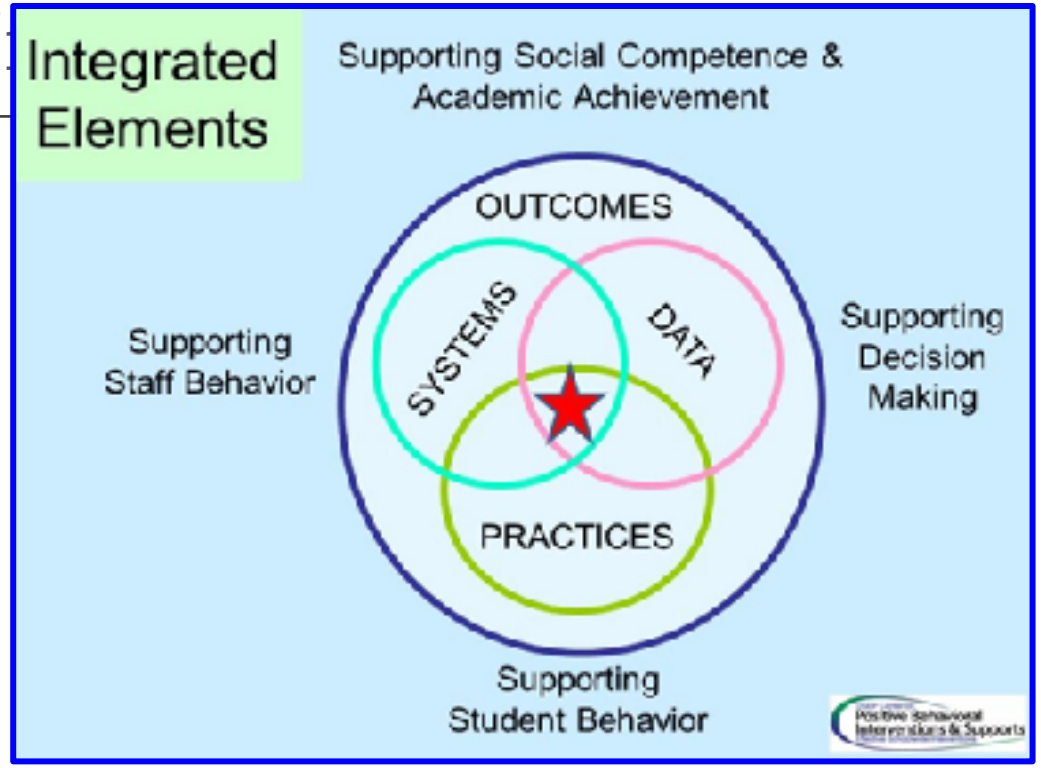
Multiple entry points

PBIS - Positive Behavior I

The key attributes of PBS include

- preventive activities
- data-based decision making
- problem solving orientation.

By drawing from other disciplines, we can enhance its effectiveness in integrated settings.



Butchart, R. E. (1998). Introduction. In R. E. Burchart & B. McEwan's (Eds.) ***Classroom discipline in American schools: Problems and possibilities for democratic education*** **(pp. 1-16). Albany, NY: SUNY Press.**

(Horner,2000; Kincaid, Dunlap, Kern, et al.2016; Lewis & Sugai,1999; Sugai et.al., 2000; Weigle, 1997)

School Year 2021-22 **Daily Point Sheet**

SCIENCE PREP ACADEMY

Name: _____ **Date:** _____

Students may earn up to 50 points daily.

		P	R	I	D	E	Comments:
Mindfulness	9:00 - 9:15						
Period 1	9:15 - 10:00						
Snack	10:00 - 10:10						
Period 2	10:10 - 10:55						
Period 3	10:55 - 11:40						
Lunch	11:40 - 12:15						
Period 4	12:15 - 1:00						
Period 5	1:00 - 1:45						
Period 6	1:45 - 2:30						
Period 7	2:30 - 3:15						

Upcoming Event Schedule:

Parent Signature & Comments:

_____

_____

_____

_____

FUN FRIDAY REWARDS: If you have 45 or more points, congrats you made your day!

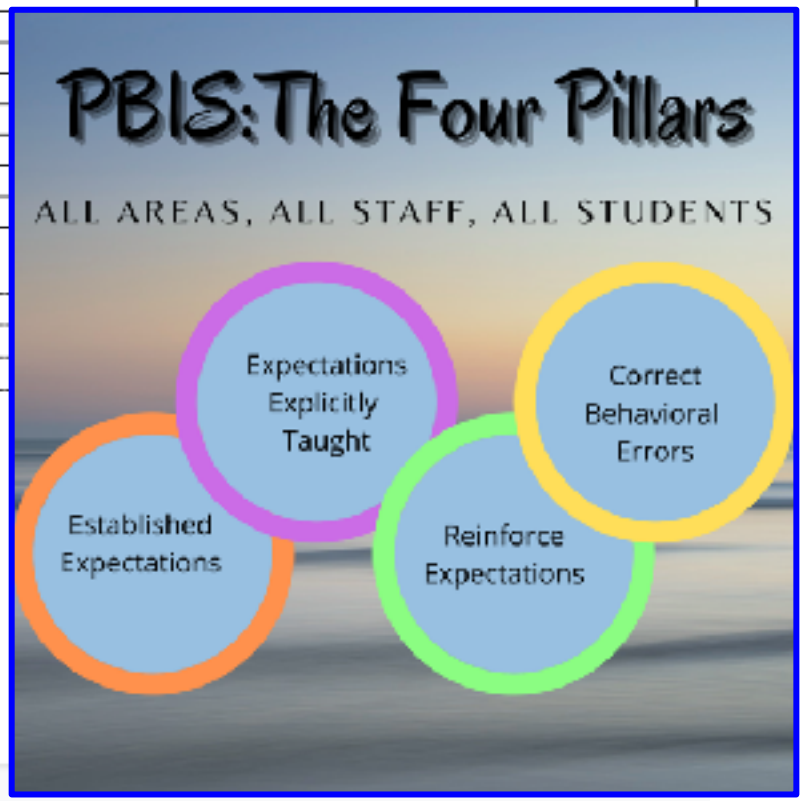
Weekly Level Break Down:

Make your day 4 or more days per week= **Level 3** (Activity Clubs and Social Hall)

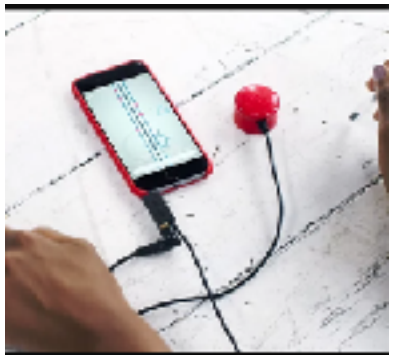
Make your day 3 or more days per week= **Level 2** (Activity Clubs)

Make your day 2 or fewer days per week= **Level 1** (Enrichment and make-up work)

*Remember to follow **PRIDE** everyday to earn your rewards!



More Active Learning Ideas



More Active Learning Ideas

- ODD Ball https://oddballism.com/collections
- Otamaphone https://www.amazon.com/Otamatone-%E6%98%8E%E5%92%8C-Electricals-otamato-n-White/dp/B07QXW6K54/ref=pd_lpo_2?pd_rd_i=B07QXW6K54&psc=1
- Mogees https://www.mogees.co.uk/
- Circuit Playground Express https://www.adafruit.com/product/4060?gclid=Cj0KCQiAkZKNBhDiARIsAPsk0WjKHv1feeFf8RlEmKDYEt3cK5nn7D5r3j1x-2N9AtHGHdQKlz1STnEaAgYSEALw_wcB
- Example approachable programming environment called https://www.microsoft.com/en-us/makecode (game environments, chill down spaces where lights or sound are animated by touch or coordinated touch)

SPECIAL EDUCATION TEACHER FELLOWSHIP (AUTISTIC STUDENTS)

Teachers selected receive:

- $3000 stipend
- Funded Conference (Travel & Hotel)
- Professional Development
- classsroom Resources

For more information, please email nkazan@neurodiversitycenter.org

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