Welcome!

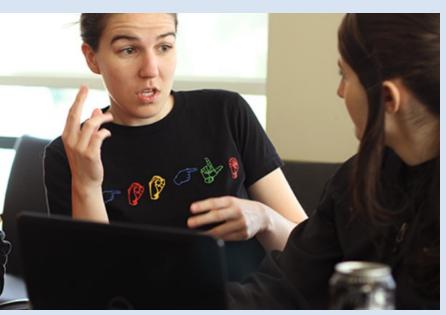


Photo credit: AccessComputing

- Please introduce yourself, organization, and Collaborative in the chat box.
- What experience do you have with accessibility resources in STEM?

November 14, 2018

















Agenda

 The Connectory and AccessComputing CS for All Commitment

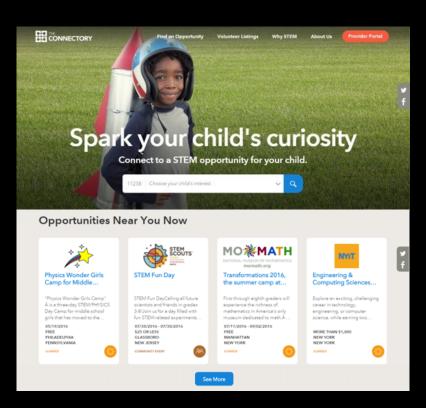
- DO-IT, University of Washington
- Tech Kids Unlimited
- Successes and Challenges
- Updates and closing







DETROIT



The Connectory + AccessComputing

- + Largest and most comprehensive free directory of youth-serving STEM program providers and opportunities
- + Accessible programs and opportunities tagged in The Connectory
- + Outreach to accessible Computer Science program providers

DO-IT, University of Washington



Brianna Blaser, Counselor and Coordinator





Including Students with Disabilities in Computing Education

Brianna Blaser University of Washington blaser@uw.edu

Access Computing

AccessComputing

- Increasing the participation of people with disabilities in computing fields
- Funded by the NSF
- Based at the University of Washington
 - DO-IT
 - Computer Science and Engineering
 - Information School
- Since 2005

Access Computing

Creating change through

- Institutional change
 - Universities and computing organizations
 - Industry affiliates
- Student support
 - Mentoring
 - Professional development
 - Funding
- Teaching accessibility and universal design



AccessCSforAll

- Led by UW and UNLV
- Works to increase the successful participation of students with disabilities in K-12 computing
- Accessible version of Code.org AP Computer Science Principles
- PD for teachers from schools for the blind, deaf, & learning disabilities



W Diversity includes disability

Access Computing

Access Computing

Ability is on a Continuum

Not able Able

see

hear

walk

read print

write with a pen or pencil

communicate verbally

tune out distraction

learn

manage physical or mental health

Barriers in CS Education and Careers

Access Computing

- Inaccessible facilities, curricula, and IT
- Inaccessible programming environments and hardware
- Inadequate academic supports
- Lack of encouragement and role models
- Difficulty navigating technical interviews
- Disability disclosure
- Relocation for internships or employment



Approaches to Access

Accommodations	Universal Design
Reactive	Proactive
One student	Benefits multiple students
Disability-specific	Considers multiple aspects of individuals' backgrounds
	Minimizes need for accommodations



Universal Design

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.





UD of Instruction

Gives students multiple ways to:

- Gain knowledge
- Interact
- Demonstrate knowledge

Examples

- Captioned videos.
- Minimize time constraints.
- Speak aloud content.
- Provide corrective opportunities.



Quorum

- Quorum is a computer programming language
- It was originally designed to make programming easier for the blind and visually impaired
- It is used in K-12 schools in approximately 17 states and about half of residential schools for the blind

Access Computing

Basic Features of Quorum

- Quorum is an "evidence-oriented" language
 - Other programming languages are no better than placebo languages
- We have a variety of features:
 - Gaming (audio and visual)
 - LEGO robots
 - Music
 - ECS & CSP curriculum

Access Computing

Resources

- Videos
- Knowledge Base
- Choose Computing profiles
- Individualized support

uw.edu/accesscomputing accesscomp@uw.edu



Acknowledgements

 AccessComputing and AccessCSforALL are funded by the National Science Foundation (CNS-1539179, CNS-1738252 and CNS-1738259).

Tech Kids Unlimited



Beth Rosenberg, Co-Founder and Director











POPULAR CULTURE & AUTISM SPECTRUM DISORDER

- Core Idea of UDL: Designing for one type of diversity often has benefits for many types
- UDL is a set of principles for curriculum development that give all individuals equal opportunities to learn.

Universal Design for Learning Guidelines

I. Provide Multiple Means of Representation

- 1: Provide options for perception
- 1.1 Offer ways of customizing the display of information
- 1.2 Offer alternatives for auditory information
- 1.3 Offer alternatives for visual information

II. Provide Multiple Means of Action and Expression

- 4: Provide options for physical action
- 4.1 Vary the methods for response and navigation
- 4.2 Optimize access to tools and assistive technologies

III. Provide Multiple Means of Engagement

- 7: Provide options for recruiting interest
- 7.1 Optimize individual choice and autonomy
- 7.2 Optimize relevance, value, and authenticity
- 7.3 Minimize threats and distractions

- 2: Provide options for language, mathematical expressions, and symbols
- 2.1 Clarify vocabulary and symbols
- 2.2 Clarify syntax and structure
- 2.3 Support decoding of text, mathematical notation, and symbols
- 2.4 Promote understanding across languages
- 2.5 Illustrate through multiple media

- 5: Provide options for expression and communication
- 5.1 Use multiple media for communication
- 5.2 Use multiple tools for construction and composition
- 5.3 Build fluencies with graduated levels of support for practice and performance
- 8: Provide options for sustaining effort and persistence
- 8.1 Heighten salience of goals and objectives
- 8.2 Vary demands and resources to optimize challenge
- 8.3 Foster collaboration and community
- 8.4 Increase mastery-oriented feedback

- 3: Provide options for comprehension
- 3.1 Activate or supply background knowledge
- 3.2. Highlight patterns, critical features, big ideas, and
- Guide information processing, visualization, and manipulation
- 3.4 Maximize transfer and generalization

6: Provide options for executive functions

- 6.1 Guide appropriate goal-setting
- 6.2 Support planning and strategy development
- 6.3 Facilitate managing information and resources
- 6.4 Enhance capacity for monitoring progress

- 9: Provide options for self-regulation
- 9.1 Promote expectations and beliefs that optimize motivation
- 9.2 Facilitate personal coping skills and strategies
- 9.3 Develop self-assessment and reflection

Resourceful, knowledgeable learners

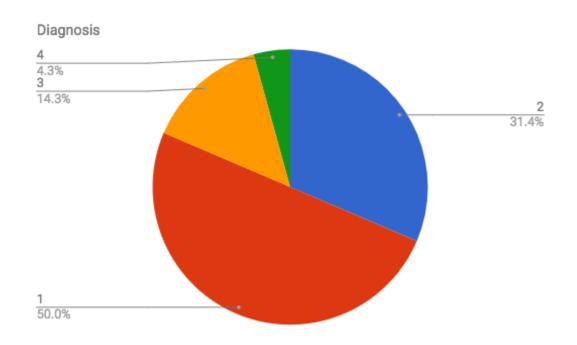
Strategic, goal-directed learners

Purposeful, motivated learners



2011 by CAST, All rights reserved, www.cast.org, www.udlcenter.org APA Citation: CAST (2011), Universal design for learning quidelines version 2.0. Wakefield, MA: Author.

TKU Student Profile: Focus on ASD and ADHD



1 = Autism Spectrum Disorder

2 = ADHD

3 = BOTH ASD and ADHD

4 = Other diagnoses, no ASD

or ADHD

"Symptoms" can become strengths when environments are a "good fit" where students can "learn by doing" tasks they find interesting.



The Need

- Autism costs the nation more than \$35 billion per year
- One out of 68 children is diagnosed as having Autism Spectrum Disorder
- There is a lack of opportunities for this population as they reach adulthood
- Technology jobs are particularly suited to many individuals on the spectrum, and yet there are few training programs geared to this population
- This is where Tech Kids Unlimited steps in...

Our Mission

- Teaching computer science principles and technology to students who learn *differently*.
- Empowering and inspiring the next generation of digital natives to learn, create, develop, and share the tools of technology.
- Building students' resumes with an eye towards employment.





HOME APPLY REPORTING GRANTS~ CONTACT NPO GALLERY



ABOUT US





STUDENT WORK







Eric's Viral Video (10 year old TKU Student)





Testimonials

It's a great opportunity for him to have a meaningful and fun activity, especially on the weekends, when he would otherwise be at home alone in his room.

- Mom of 18-year old TKU student

He has expanded his understanding of coding, website development and video editing - areas he wouldn't have been exposed to without the program.

- Mom of 11-year old TKU Student

I got involved in TKU because I was home doing nothing at all and going to the library every day looking for jobs and doing applications that got me nowhere. I want to continue to learn more from TKU because I use the computer all the time and I want to be a computer game designer.

- J. TKU Student, 20 years old



Successes? Challenges?





General NGCP Updates

- CSEdWeek Activities (12/3 12/7)
 - Twitter Chat, Wednesday, December 5 at 4:00PM Pacific/7:00PM Eastern (#CSEdWeek)
 - Webinar, <u>Bridging the "Encouragement Gap"</u>
 <u>in STEM +C</u>, Thursday, December 6 at
 1:00PM Pacific/4:00PM Eastern
- 2019 Community Meeting Schedule



Upcoming NGCP Webinars

Design Squad Global Inventing Green: Engage Kids in Hands-on Engineering around Sustainability

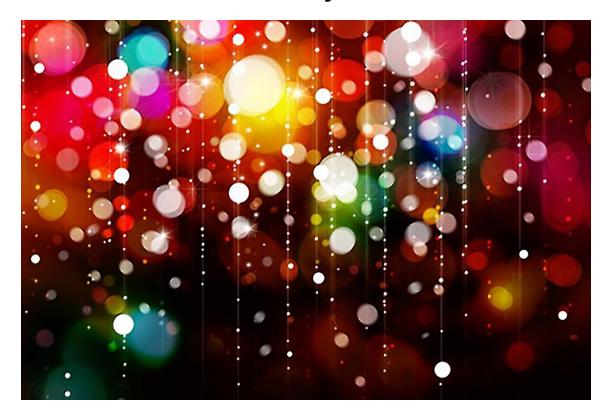


Thursday, January 10, 2019 11:00AM Pacific/2:00PM Eastern

http://ngcproject.org/events



Next Collaborative Leadership Teams Meeting: January 2019



Have a safe and joyous holiday season!

Collaborative Project