



# ANNUAL REPORT 2021

**TECH KIDS  
UNLIMITED**  
TECHKIDSUNLIMITED.ORG



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*"We've used a lot of services, camps, etc. Nothing comes close to the quality, professionalism, and patience you guys have. You guys have been the best!" - Parent of D., Age 13*



# MISSION

Tech Kids Unlimited (TKU) is on a mission to empower neurodiverse students' lives by teaching them computer science thinking and technology skills; we harness their passion, provide work-based learning experiences and expose them to careers in the field. Based in NYC, with a new online presence in 25 states, TKU inspires students with autism and other related disabilities to create with the tools of tech in a supportive small community. Addressing the gaps in access to tech, TKU is dedicated to changing the trajectory for education and employment for neurodiverse\* students. TKU's work-based learning model for teens/young adults creates a pathway for future employment.

*\*Neurodiverse refers to an individual who thinks and learns differently. The term was coined in 1998 by sociologist Judy Singer, who helped popularize the concept along with journalist Harvey Blume.*



## YOUTH SAY:

*"I think it was great and I felt I learned a lot. It was really helpful and I'm glad I was a part of it." - I., Age 12*

*"I really enjoyed this week's edition of TKU. I learned a lot of new things about coding. I had always wanted to learn to code, but never had the chance to. This was my first time using code from a blank slate, and being able to type it in, as I had been using Scratch before to code with blocks. I am very fortunate to have come here." - K., Age 13*

## TEENS + YOUNG ADULTS SAY:

*"I think TKU is amazing. I love that I get to learn new softwares in animation and gaming, meeting new people and much more." - M., Age 19*

*"I enjoyed every last bit of it. I have learned about a lot of game mechanics and how to program many different behaviors, objects, animations, etc. There were many problems that I had in my game, but I solved many of them by experimenting, and testing things out. It was a great experience." - C., Age 17*

## PARENTS SAY:

*"The benefits of TKU are a gift that keeps on giving!"  
- Parent of E., Age 13*

# FROM OUR BOARD PRESIDENT:

Dear Friends of TKU,

On behalf of the TKU board, I want to thank you for your interest in our organization.

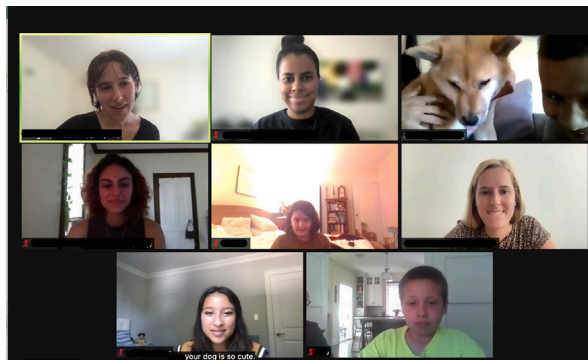
In 2020, TKU reacted decisively to challenges that we could not have foreseen. In 2021, under Beth's leadership and with the support of incredible staff, we took what we learned and forged a new path for the organization that has enabled us to grow and thrive in the new learning environment in which we find ourselves. This year we saw students in 25 different states participate in TKU's virtual workshops - a geographic reach that was previously unthinkable. That so many young people in our community are now able to experience the unique curricula we have built - and the incredible learning environment that TKU has created - reinforces our belief that the mission of our organization is something that is needed on a national level.

This year we also doubled down on our work-based learning programs and on our commitment to finding places for our talented students to use their skills in the workplace. TKU's Digital Agency, Creative Tech Internship and CRISP (Career Readiness Internship Summer Program) are pioneering programs in this area and our work in 2021 provides a solid platform on which to build.

We are excited to let you know that TKU's plan for 2022 is to offer programs for neurodiverse students as a hybrid model—in-person and virtual. In this way, TKU will continue to evolve and expand as we remain passionate about the need to teach neurodiverse students digital media skills for future employment.

Sincerely,

*David Rosenberg*  
Board President, TKU



Students share in a virtual class during show and tell. ↑

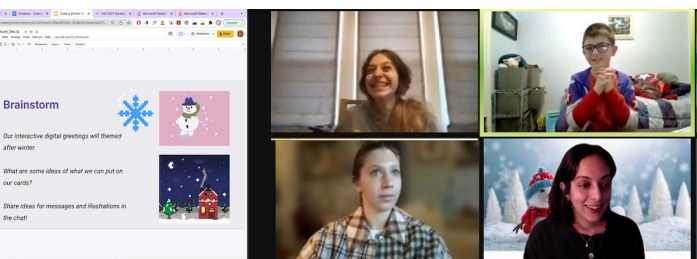
# FROM OUR EXECUTIVE DIRECTOR:

Dear Friends,

It's hard to believe that 2021 is TKU's eighth year of programming. We are still in the midst of Covid and TKU's work with students and families is needed more than ever. It is absolutely essential that our neurodiverse students get the opportunity to learn technology skills which they need to survive in the world today. I am amazed at the creativity of TKU students, grateful for incredible staff-Cristina, Jessye, Halenur, Ellen and Sam along with 20 creative technology teachers, thankful for parents willing to share their precious cargo of children with us and truly appreciate the support that TKU gets from foundation, corporation, government and individual supporters to make teaching technology to students who learn differently possible. TKU will not stop until we make the world a better place for neurodiverse students. Curtis Mayfield, the American singer-songwriter and one of the most influential musicians behind R&B and soul music said it best:

Just move on up towards your destination  
Though you may find from time to time complications  
Move on up and keep on wishing  
Remember your dream is your only scheme so keep on pushing.

TKU will continue to push equality for all, with special focus on our neurodiverse students. Join us!



Students brainstorm holiday cards during a virtual class. ↑

Sincerely,

*Beth Fisher*

Founder and Executive Director

**\*Note: Board President David Rosenberg is unrelated to Executive Director Beth**



# OUR REACH

- **500+** Unique students
- **67%** Students received needs-based financial aid
- Students from **26** States
- **65%** Students of color
- **12** Programs:  
100 workshops = 1,000+ hours of computer science thinking and technology skills taught.

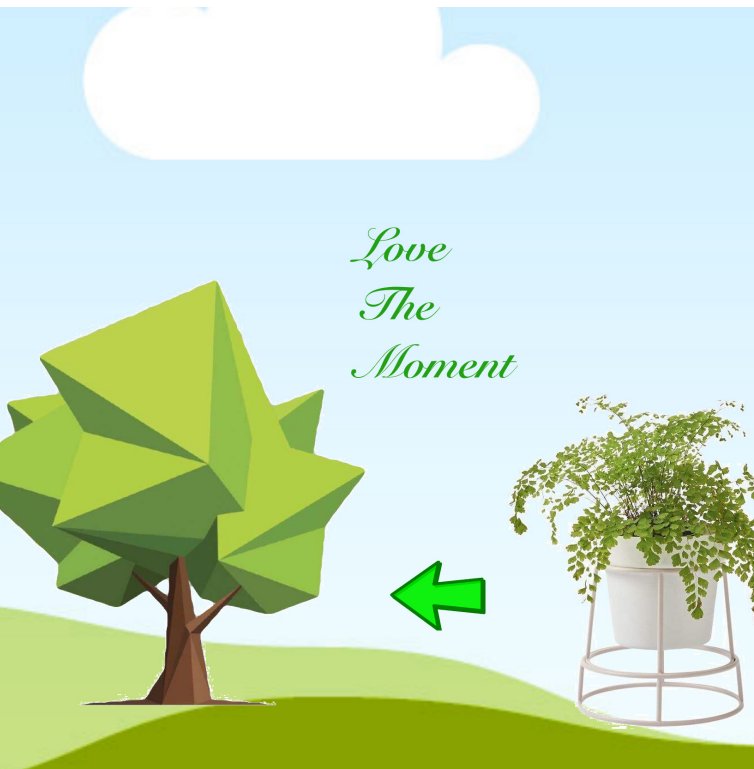
"This program is a great opportunity for him to do what he enjoys while learning and having fun. He wants to do these programs"

- Parent of M.R., Age 17

- **13** Partnerships:



- » Carnegie Hall x NeON Arts
- » CUNY College of Staten Island
- » Hive NYC Council
- » IDMGrow
- » Museum Access Consortium
- » NY Stem Academy
- » NYC Mayor's Office of People with Disabilities
- » NYU Ability Project
- » New Jersey Office for Persons with Disabilities & Special Needs (Elizabeth, New Jersey)
- » PASE (Partnership for Afterschool School Education)
- » Regional Center for Autism Spectrum Disorders/Hassenfeld Children's Hospital at NYU Langone
- » The Summit School
- » Winston Prep Transitions





All programs were taught virtually using Zoom Pro, thanks to TKU's partner, The Ability Project at NYU Tandon School of Engineering.

## SUNDAY TECH WORKSHOPS

26 Sunday afternoons during the school year, students participated in two-hour long workshops focusing on games, animation, coding, video editing and more.

## WEDNESDAY AFTER-SCHOOL WORKSHOPS

On 17 Wednesdays, students attended this FREE after school program where they were introduced to new tech skills, played games, and socialized in a relaxed online environment.

## TEEN TECH SOCIALS

At 10 socials held once a month on Friday evenings teens got to hang out, play games and talk about tech.

## SUMMER WEEKLONG TECH WORKSHOPS

32 workshops over 8 weeks taught students 21st century technology skills. Workshops were divided into two groups: youth and teens/young adults in both AM and PM sections.

## SCHOOL BREAKS

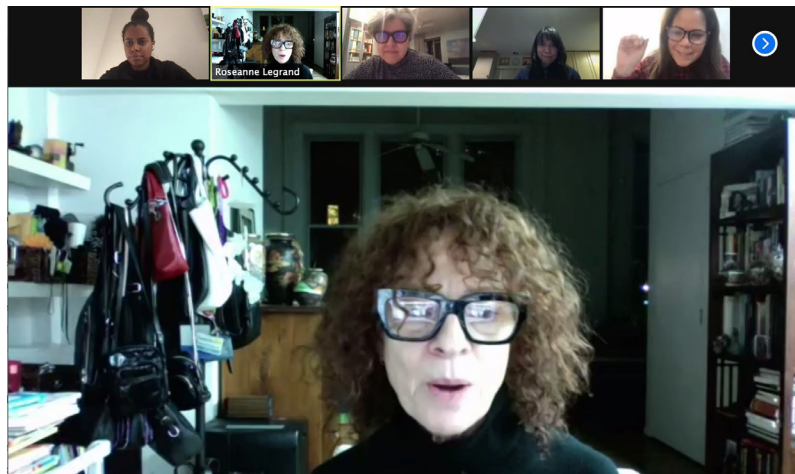
2 multi-day workshops offered during Winter and Spring Breaks; students ages 10-15 learned a variety of tech skills.

## ANNUAL HACKATHONS

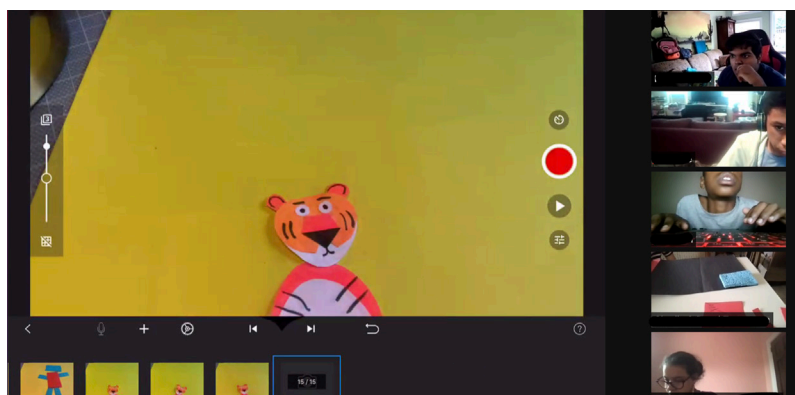
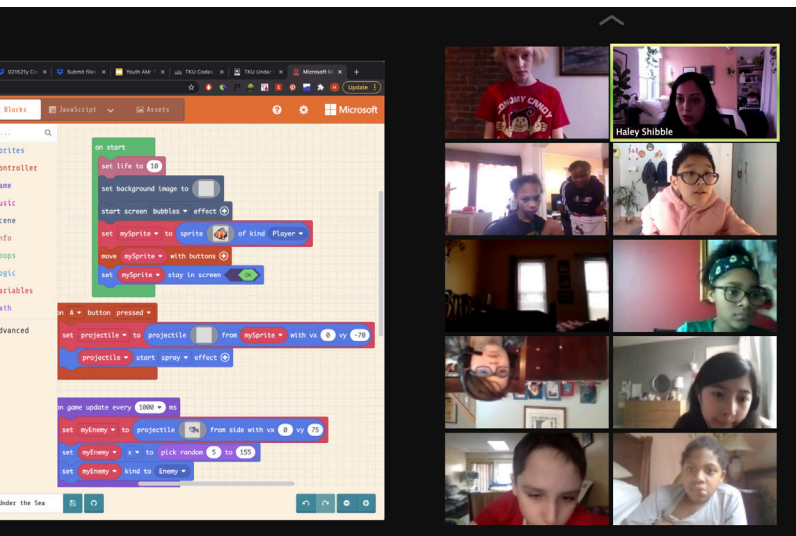
2 special one-day events for students to learn and create projects around specific themes. (Spring: #TKU Codes/ Fall: #BeKindtotheMind)

## PARENT PROGRAMS

9 general parent talks and 5 Teen Transition to Independence talks led by guest lecturers about the journey of raising a neurodiverse child.



Board Member and Speech Language Therapist, Roseanne Legrand hosts a parent talk. ↑



Students create stop motion animation projects during a Summer workshop. ↑

Students code during #TKUCodes Hackathon. ↑



# TKU CAREER LADDER: WORK-BASED LEARNING PROGRAMS

## TKU DIGITAL AGENCY

3 cohorts of a 12-session after-school program for students (ages 15 to 21) with advanced skills who work on real client projects and get paid stipends.

### CLIENTS:

- » Gezoont: Social Media Ads
- » Tech Kids Unlimited/LOLA app (lolapp.com): Research and Data Analysis
- » Child Welfare Fund: New Website
- » The Berk Foundation: Updated Logo

LEARN MORE AT  
[WWW.TKUAGENCY.COM](http://WWW.TKUAGENCY.COM)

## CREATIVE TECH INTERNSHIP (CTI)

37 CTI interns in 2 cohorts met weekly September to June to work together on various deliverables for client-based projects and received school credit. Internships were for teens/young adults aged 16-21 interested in work or study in creative tech-based fields acts as a bridge between school experiences and workplace environments.

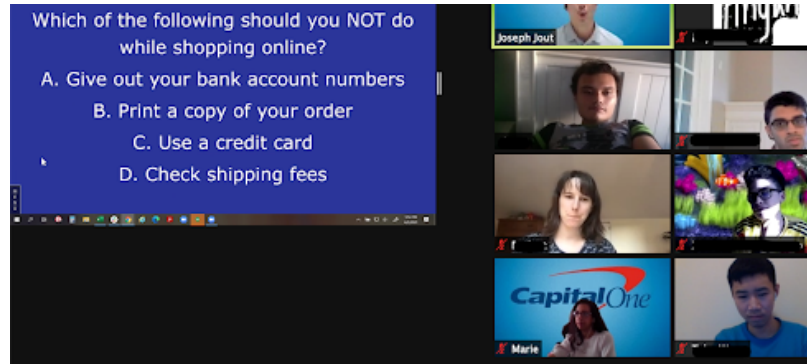
## CAREER-READINESS INTERNSHIP SUMMER PROGRAM (CRISP)

14 interns worked two or three days a week at external sites matched to their skillset in a 5-week internship program for college bound/college-age advanced students. Alternate days were spent with TKU staff learning career readiness skills, engaging with guest lecturers, and building portfolios.

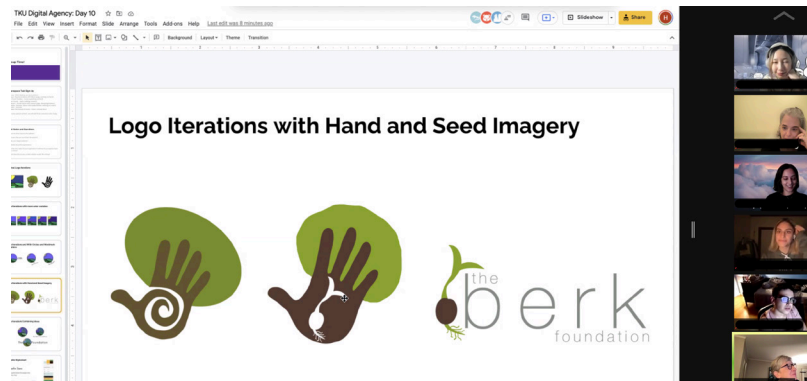
*"This experience has taught me things like self-advocacy, financial planning, gender equality, gender pronouns, and also other subjects like how to build a website, how to build a portfolio, workplace ethics, etiquette, and how to write professional emails. I have learned and experienced a lot and I'm definitely grateful." - L., Age 19*

## COLLEGE ACCESS PROGRAM

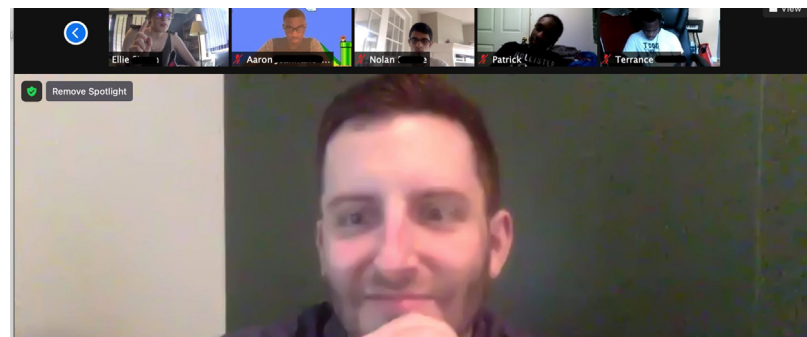
2 cohorts of 34 students met for 12 sessions in a supportive environment which provides a space to explore college options and build college-readiness skills.



Students create stop motion animation projects during a Summer workshop. ↑



Digital Agency participants share their logo iterations with client. ↑



CRISP Career Spotlight with Board Member Alex McKay, Director of AI Labs, BlackRock. ↑



A Three-Year Grant Awarded to The Ability Project at NYU Tandon School of Engineering, CUNY College of Staten Island and Tech Kids Unlimited, August 2020

- » Promoting Engagement in Informal STEM Learning as a Path to Employment for Adolescents with ASD
- » Year One: 42 Students
- » Free game design workshops were held July 12 - July 23 and August 9 - August 20, 2021.

## OBJECTIVES:

1. Identify evidence-based strategies to engage youth with ASD in informal STEM learning opportunities that are well matched to their attentional profiles,
2. Determine if engaging youth with ASD in informal STEM learning opportunities increases their STEM self-efficacy, and
3. Determine if engagement with STEM internship activities is associated with increased interest in STEM careers and career decision-making self-efficacy.

**Collaborative Strategies Research: Promoting Engagement in Informal STEM Learning as a Path to Employment for Adolescents with ASD**

Kristen Gillespie-Lynch<sup>1</sup>, Amy Hundt<sup>1</sup>, Beth Rosenberg<sup>2,3</sup>, Jessy Henrich<sup>1</sup>, Elana Grossman<sup>1</sup>, Shariq Bhowas<sup>1</sup>, Eunjy Pak, Cristina Urena<sup>1</sup>, Ariana Riccio<sup>1</sup>, Jin Delos Santos<sup>1</sup>, Patrick Dwyer<sup>1</sup>, Sergey Shevchuk-Hill<sup>1</sup>, Wendy Martin<sup>1</sup>, Lillian Hwang-Godder<sup>1</sup>, Bela Kolter<sup>1</sup>, Rheaisha Faye Concedo<sup>1</sup>, Theresa Major<sup>1</sup>, Saumya Dava<sup>1</sup>, Kyle Gravitich<sup>1</sup>, & Terrence Bobb<sup>1</sup>

<sup>1</sup>College of Staten Island & Graduate Center, <sup>2</sup>Tech Kids Unlimited, <sup>3</sup>Educational Development Center, University of California, Davis

**BACKGROUND**

- In collaboration with an award-winning not-for-profit, informal technology education program, Tech Kids Unlimited (TKU), we aim to empower autistic youth to obtain their dream jobs.
- Autism is associated with strengths, including heightened attention to details and patterns.<sup>1</sup>
- However, autistic people are chronically underemployed, despite often heightened interest in computers and STEM fields and a growing need for STEM professionals.<sup>2,3</sup>
- Given the barriers people with disabilities face obtaining STEM careers,<sup>4</sup> strategies to help autistic youth engage specifically with STEM curricula are sorely needed.
- Universal Design (UD) places the burden of adaptation on curricula rather than learners.<sup>5</sup>
- Although often described as evidence-based, UD does not yet have a strong evidence-base.<sup>6</sup>
- Indeed, research suggests that the UD principle of providing multiple paths to representation might, at least sometimes, overwhelm learners.<sup>7</sup>
- Mayer's Redundancy Principle in Multimedia Learning suggests that adding text to animation and voice decreases learning by distracting people.<sup>8</sup>
- Adapting the number of instructional supports to student needs may be more motivating than instruction paired with all supports or no extra supports.<sup>9</sup>

**AIMS AND HYPOTHESES**

The goal of our project is to develop strategies that effectively engage autistic adolescents in informal STEM learning opportunities that promote the self-efficacy and interest in STEM careers that will empower them to seek out career opportunities in STEM fields.

The research aims are to:

1. Identify evidence-based strategies to engage autistic youth in informal STEM learning opportunities that are well matched to their attentional profiles.
- Hypothesis 1: Pedagogical strategies vary in how engaging they are for people with diverse attentional profiles; people with more focused attention prefer unimodal instruction and people with less focused attention prefer multimodal instruction.
2. Determine if engaging youth in informal STEM learning opportunities increases their STEM self-efficacy.
- Hypothesis 2: Engagement with informal STEM learning opportunities promotes STEM self-efficacy.
3. Determine if engagement with STEM internship activities is associated with increased interest in STEM careers and career decision-making self-efficacy.
- Hypothesis 3: Engagement with STEM internship activities promotes interest in STEM careers and career decision-making self-efficacy.

**REFERENCES**

1. Gillberg, M., Simon, J., Svanen, B., Svanen, C. P., Svanen, G. E., & Månberg, L. (2009). Evidence-based parenting guidelines for high-functioning children. *Human Brain Mapping*, 30(7), 4382-4397.

2. Schopler, E., Mesibov, G. B., & Mesibov, A. (1988). *Autism: A developmental disability*. New York: Springer.

3. Volk, A., Jarrold, W., Skuse, D., Mowday, M., & Scerif, J. (2015). Science, technology, engineering, and mathematics (STEM) participation among college students with an autism spectrum disorder. *Autism*, 49(1), 139-144.

4. Hodson, K., Dunbar, C., Hedgesell, S., & Andrews, G. (2019). Science, technology, engineering, and mathematics (STEM) careers: A review for the Department of Education, Division of Professional Practice and Standards. 2019, 04/05.

5. North, D., Rai, K., Conroy, A., Gardner, J., & Moore, D. (2019). Recommendations for a national research agenda in UD. *Canadian Journal of Occupational Therapy*, 76(1), 17-18.

6. Meyer, J., & Moreno-Roa, A. (2012). Cognitive load theory: What principles are most useful for design? *Journal of Educational Psychology*, 104(1), 183-192.

7. Plass, J., Van Gorp, P., & Hattie, J. (2010). Designing the instructional material design process: A review. *Journal of Educational Psychology*, 102(1), 1-12.

8. Mayer, R. M., & Moreno-Roa, A. (2012). Effectiveness of multimodal design: A review of research on the design of instructional materials. *Educational Technology Research and Development*, 60(5), 512-525.

**METHOD**

- Year 1: To identify pedagogical techniques that motivate youth with diverse attentional profiles to engage with STEM curricula, we conducted two 2-week game design workshops with 20 students each in Summer 2021.
- Students rated their engagement with different social structures and modalities using an adaptation of the AAPE (a measure of engagement developed by our participatory research team and drawn by autistic artist: Riccio et al., 2021).
- Conducted 2 probes of each pairing of social structure and modality.
- Instructors and researchers rated student engagement using the interested subscale of the AAPE.
- Adapted instructional strategies based on findings from workshop 1 before conducting workshop 2.
- Year 2: Guided by data from Year 1, we will adapt the initial 2-week curriculum to develop a month-long curriculum consisting of 3 weeks at TKU and 1 week of internship with a job coach. We will examine potential improvements in STEM self-efficacy, career interest and decision making self-efficacy among 20 autistic teens.
- Year 3: In a pilot randomized controlled trial design, we will assign 40 autistic youth to 1 of 2 concurrent workshops in July and 40 youth to two workshops in August. We will use the same assessments as in Years 1 and 2.

**INITIAL FINDINGS: WORKSHOP 1, YEAR 1**

- Consistent with Mayer's redundancy principle, autistic students rated video + voice more engaging than video + voice + text and then video alone (p = .00).
- Unexpectedly, preferring video + voice over just voice was higher among students with better attentional control (p = .04).
- Self-determination (p = .02), but not video game self-efficacy, STEM career self-efficacy or computational thinking, improved from pre to post-test.
- Unexpectedly, spatial planning also improved (p = .05).
- Findings provide initial support for Mayer's Redundancy Principle but suggest that individual differences must be considered.
- Coding of interview data and students' games in progress.

**Far left: Participatory research meeting, Center left: Guest talk Laura Miche; Right top: Student Flowlab games, Right bottom: Guest talk Vanessa Castañeda Gil (Social Cipher); Far right: Interest + Confused dimensions of AAPE**

Research poster submitted to NSF website for conference. ↑

**ACCESSIBILITY-FOCUSED RESEARCH TEAM WILL STUDY HOW BEST TO ENGAGE STUDENTS ON THE AUTISM SPECTRUM IN STEM**

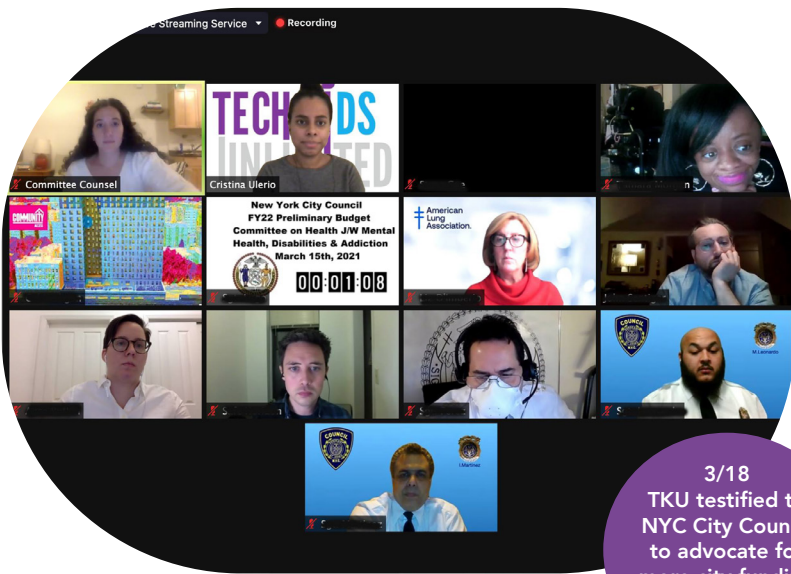
POSTED: OCTOBER 21, 2020



Website feature about research on NYU Website. ↑

"I want to thank you for including J. in this workshop. It has been amazing on many levels. J. has been going through a very rough time with the pandemic and the loss of his routines. This is the first time he has been able to stay engaged in something and he has really enjoyed it. I am amazed that he has been able to remain focused and on task for 3.5 hrs a day and willing to share his viewpoints and advocate for himself. We are definitely going to look at other classes for him. Thank you again for the opportunity."

- Parent of J.R., Age 18



3/18  
TKU testified to NYC City Council to advocate for more city funding for students with ASD.



8/17  
TKU student Aaron helped organize and presented with other students for Disability Youth Panel: Back to School.

\*This panel was a collaboration between TKU, Deaf Kids Code, and Thriving Blind



1/24  
TKU staff attended teacher training from Seachange Collective about anti-oppression facilitation.

3/5  
TKU students presented at CUNY Neurodiversity Conference.

Programs Overview | Our Approach | Sample Day & Projects | **Student Panel** | Q&A

### Panel Discussion

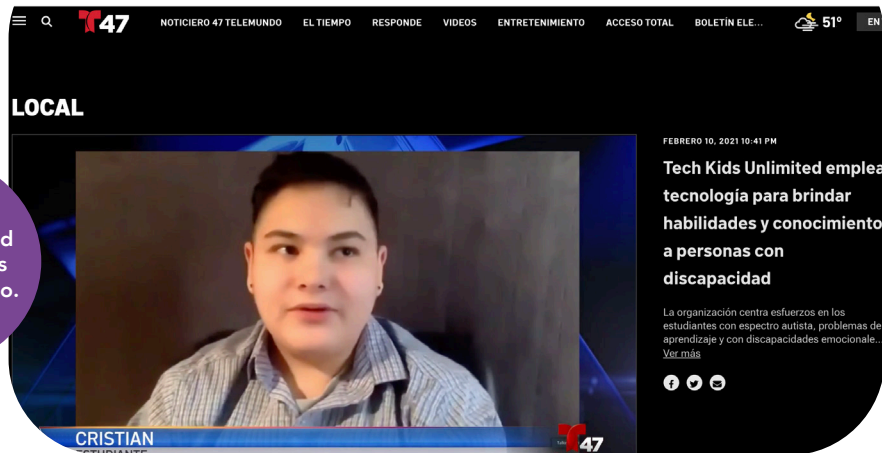
- How are learning experiences at CTI or Digital Agency different from those at school?
- What do you think is the most helpful part of CTI or Digital Agency for you personally?
- How do you think working on client and/or assigned projects (as opposed to personal projects) has helped prepare you for work?

How do you feel CTI or Digital Agency is preparing you for having a job in the future?

How does your experience with neurodiversity impact your perception of the workforce and how you work as a person?\*

\*This question was suggested by Panelist, Ty.

2/10  
TKU was featured on Spanish news station Telemundo.



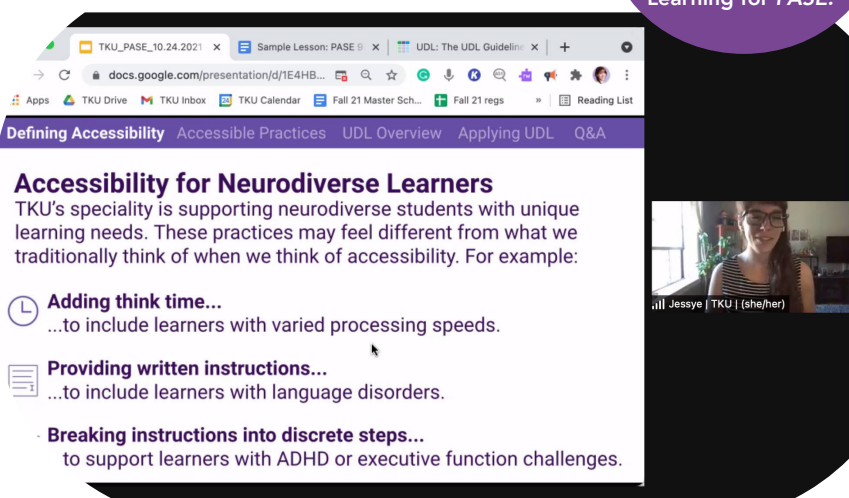
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**“We love that you have kept many of your programs virtual, since we live across the country.” - S., Parent of D., Age 13**

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9/24  
Education  
Manager Jessye  
Herrell presented  
about Universal  
Design for  
Learning for PASE.



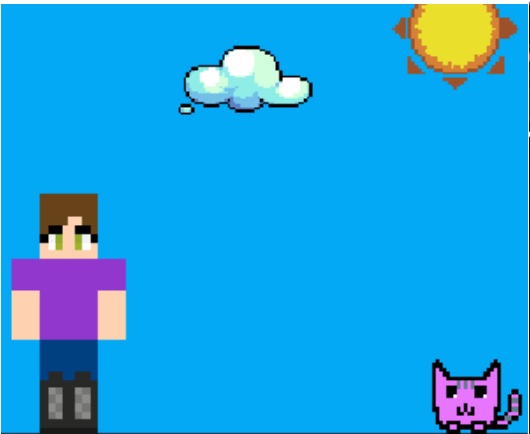
2/5  
Director of  
Operations  
Cristina Ulerio  
was featured on  
Gezoont.



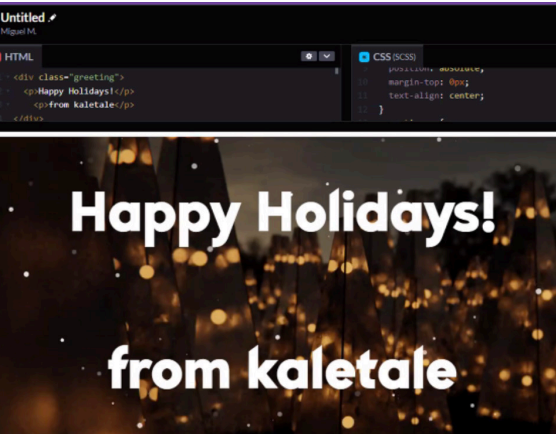
9/19  
Students played a  
scavenger hunt at  
an in-person tech  
social.

**CHECK OUT OUR  
STUDENT WORK  
ONLINE EXHIBITION  
HERE!**

## STUDENT WORK



M., AGE 8  
DIGITAL ANIMATION



M., AGE 19  
CODE A WINTER GREETING



A., AGE 18  
DATA AND DESIGN

## Thank you to all our supporters for 2021!

- » Adolph and Ruth Schnurmacher Foundation
- » Autism Speaks/GameStop
- » Berk Family Foundation
- » Capital One
- » Con Edison
- » Council Member Stephen Levin, NYC Council Discretionary Fund
- » The Doug Flutie Jr. Foundation for Autism
- » Elephant Rock Foundation
- » Goldman Sachs Gives
- » Harman Family Foundation
- » Infosys Foundation USA
- » J.E. & Z.B. Butler Foundation
- » John H. & Ethel G. Noble
- » Joseph H. Flom Foundation Charitable Trust
- » Kupferberg Family Foundation
- » Meringoff Family Foundation
- » National Grid Foundation
- » NBC Project Innovation Grant
- » NYSCA–NY State Council on the Arts
- » NYU Community Fund
- » PwC Charitable Foundation
- » Stem Society for Science
- » The FAR Fund
- » The New York Community Trust
- » The Omer Foundation
- » The Taft Foundation
- » TD Bank
- » Valentine Perry Snyder Fund

» **Individuals**



## OUR TEAM

### BOARD OF TRUSTEES: OFFICERS

- President: David Rosenberg, Director of Strategy, Snapchat
- \*Note: Board president David Rosenberg is unrelated to Executive Director Beth Rosenberg.
- Vice President: Alex McKay, VP, AI Labs, BlackRock
- Treasurer: Joel Bencosme, Tax Partner, PriceWaterhouseCoopers
- Secretary: Ryan Linden, Head of Solutions Delivery, MURAL

### BOARD OF TRUSTEES: MEMBERS

- Beth Rosenberg, Founder/ Executive Director, Tech Kids Unlimited, Adjunct Professor, NYU Tandon Integrated Design and Media Program
- Dr. Jonathan Hill, DPS, Dean, Seidenberg School of Computer Science at Pace University
- Erik Dykema, J.D., IP Attorney & Entrepreneur
- Luke Dubois, Ph.D., Co-Director of the Integrated Design and Media Program at NYU Tandon School of Engineering
- Roseanne Legrand, Speech/ Language Pathologist & Learning Specialist

### STAFF

- Beth Rosenberg, Executive Director
- Cristina Ulerio, Director of Operations
- Ellen Goldstein, Development Strategist
- Halenur Komsul, Education Coordinator
- Jessye Herrell, Education Manager
- Samuel Bromfield, LCSW, Social Worker Intern Supervisor

### CONSULTANT

- Ariana Riccio, Ph.D, Evaluator