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**ASSISTIVE TECHNOLOGY
RESOURCE CENTER
COLORADO STATE UNIVERSITY**

Assistive Technology and Artificial Intelligence to Support Neurodivergent Individuals

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Objectives

- Demonstrate how OTs in higher education enhance executive function and occupational performance for neurodivergent students using AI and AT
- Highlight the impact of AI and AT in supporting neurodivergent individuals' well-being and occupational participation
- Explore how these technologies can be adapted for use in other OT settings



Why This Matters

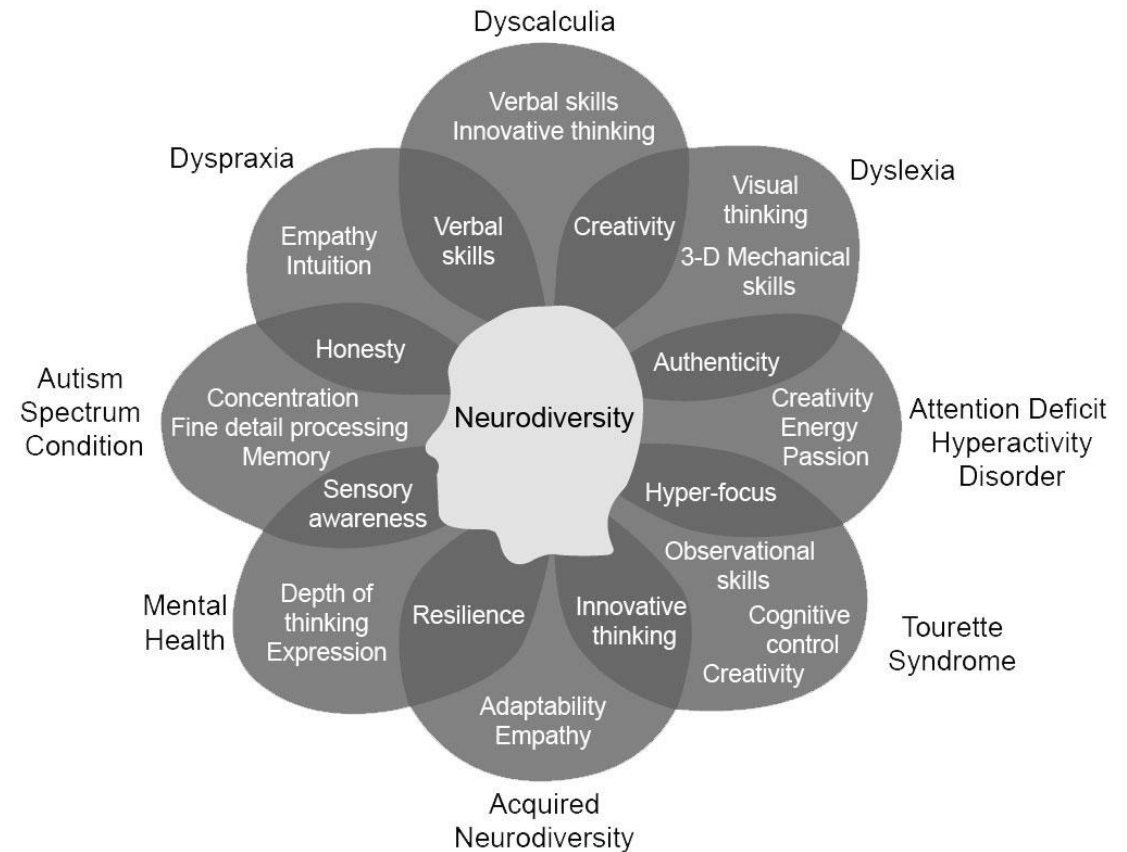
- This is already happening and it works! OTs work in higher ed with neurodivergent students (and many other diagnoses). Opportunities for more OT.
- AI is already embedded in clients' daily lives.
- OTs are uniquely positioned to guide ethical, functional, occupation-centered use of technology across practice areas.
- More than 2.5 billion people worldwide require at least one AT device. Expected to reach more than 3.5 billion by 2050 (WHO & UNICEF, 2022).



What is Neurodiversity?

“Neurodiversity describes the idea that people experience and interact with the world around them in many ways, with no one "right" way of thinking, learning, and behaving, and differences are not deficits.

Neurodiversity refers to the diversity of all people, but it is often used in the context of autism spectrum disorder and other neurological or developmental disorders such as ADHD or dyslexia. Referring to someone as neurodiverse or neurodivergent is a way to focus on the positive aspects of their differences and what that can bring to the group setting” (National Institute of Health)



The Overlapping Skills and Strengths of Neurodiversity. Credit: Created by Nancy Doyle, based on work by Mary Colley. [Neurodiversity - National Cancer Institute Division of Cancer Epidemiology and Genetics](#)

What is Assistive Technology?

- Any item or product that supports the capability of people with disabilities
- Mobility devices
- Computer access and adaptations
- Mobile and desktop devices
- Alternative and augmentative communication
- Environmental Controls



AOTA Assistive Technology Position Statement

AT is within the scope of OT across all settings, ages, and diagnosis.

When properly used, AT tools can considerably enhance an individual's independence, safety, and participation.

OT Professionals uniquely evaluate AT in context driven by occupation, aligning with the Human Activity Assistive Technology (HAAT) model.



WFOT Assistive Technology Position Statement

Core Competency within OT practice for optimizing the fit between a person's abilities and desire to engage in occupations

OTs have an integrated perspective of AT in relation to a person's abilities, the occupation, and the environment, which supports understanding the barriers and enablers to access and adoption.

Advocates for OTs to develop flexible, specific strategies to increase access to high quality, affordable AT worldwide.



Assistive Technology Resource Center @ CSU

- Provides assistive technology supports and services for students and employees with disabilities
- Consults, advocates, and conducts research on issues related to electronic inclusion
- **Students** are referred by Student Disability Center or CSU Health Network
- **Employees** can self-refer or go through Office of Equal Opportunity



The OT Process @ ATRC

Client centered, holistic, evidence-based

Evaluation:

- Identify contexts, facilitators, barriers, and current technology
- Assess motivation and performance skills
- Establish occupation-based goals

Intervention:

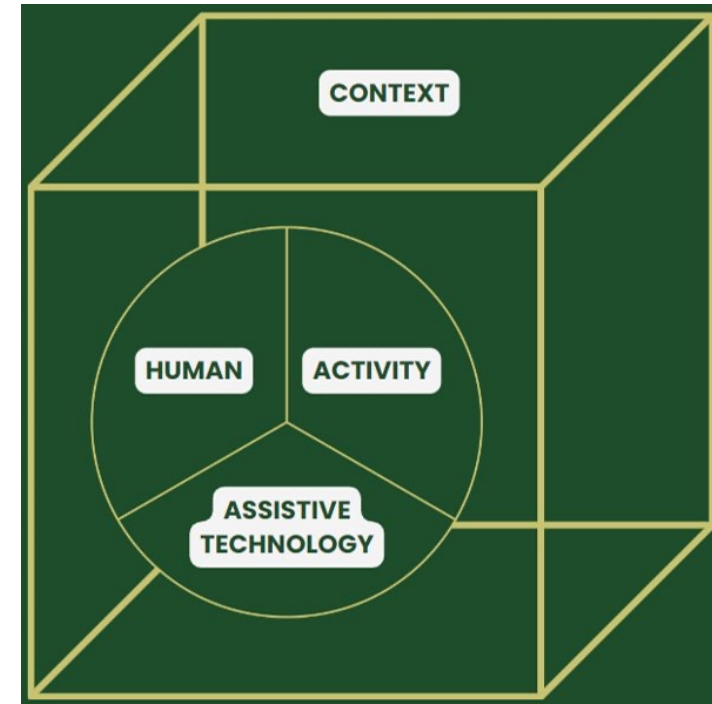
- Customize device features to support functional goals
- Provide training to client and caregivers as needed

Outcomes:

- Support access, independence, engagement, and participation

Reassessment:

- Monitor effectiveness
- Adjust as needs change



(Cook & Polgar, 2008)



Occupational/Functional Challenges for Neurodivergent Students

- Executive function
- Initiation & task breakdown
- Time blindness
- Organization of materials and thoughts
- Communication (emails, self-advocacy)
- Reading speed & comprehension
- Ties directly to occupational performance->academics, self-care, routines, participation



Where AI & AT Fit

- Reframe AI as Assistive Technology
 - External cognitive supports
 - Scaffolding
 - Personalized and adaptive
- Examples
 - AI planners/task breakdown
 - Writing & communication supports
 - Reminders, prompts, scripts
 - Text-to-speech tools
 - Rewording apps
 - Predictive Text



Case Example: Executive Function

- Student profile: student with ADHD struggling with task initiation and time management.
- Used AT with built in AI to:
 - Break assignments into steps
 - Generate realistic time estimates
 - Create weekly schedules
- AI/AT tools used
 - Goblin tools
 - Motion AI planner
- OT's role
 - Assessment, education and training on AT, ongoing support
- Outcome
 - Improved follow through and assignment completion, reduced overwhelm



Case Example: Reading Supports

- Student profile: student with dyslexia struggling with completing and comprehending course readings
- Used AT with built in AI to:
 - Read assignments aloud while following along visually
 - Generate summaries of specific reading areas
 - Reword complex sections
- AI/AT tools used
 - NaturalReader
 - Rewordify
- OT's role
 - Assessment, education and training on AT, ongoing support
- Outcome
 - Improved reading comprehension, reduced time spent re-reading, improved grades (participation and performance).



Student Feedback & Outcomes

Themes:

- Increased confidence
- Reduced cognitive load
- Greater academic participation and performance
- Ties directly to **OT Outcomes, not pushing tech**



Practice Implications Across OT Settings

- Pediatrics: homework routines, transitions
- Mental health: regulation, routines
- Voc Rehab: task sequencing, communication
- Community living: schedules, IADLs
- Dementia: benefits include decreased stress, fewer medication errors (Kruse et al., 2020).
- Vast applications for low vision, mobility, neurological impairments, hearing loss, etc.
- If it supports executive function, it's OT relevant everywhere



Report on Assistive Technology (WHO & United Nations Children’s Fund [UNICEF], 2022)

“Older adults and persons with chronic conditions—specifically, those with musculoskeletal disorders—are among the most common users of AT. There are many other diagnoses that may benefit from AT, including (but not limited to) learning disability, neurodivergence, spinal cord injury, dementia, cerebral palsy, muscular dystrophy, and stroke.”



How to become confident using these tools?

What OTs Already Know (PEOP)

Person –Performance skills, motivation, routines, preferences, values, beliefs

Environment-physical, social, cultural, digital

Occupation-

Performance- Participation in meaningful tasks

How That Translates in AT (HAAT)

Human-Client factors, performance skills, performance patterns

Activity- meaningful task

Assistive **T**echnology-Tool for a human doing an activity in context

Context- Physical, social, cultural



Same clinical reasoning

Build a toolkit of free/low-cost AT

- Goblin tools
- Motion app
- Text-to-speech
- Live captions
- Rewordify
- ToDoist
- Leverage tools like chatgpt, google gemini, Microsoft copilot as executive functioning supports.



OT Role, Ethics, & Clinical Judgement

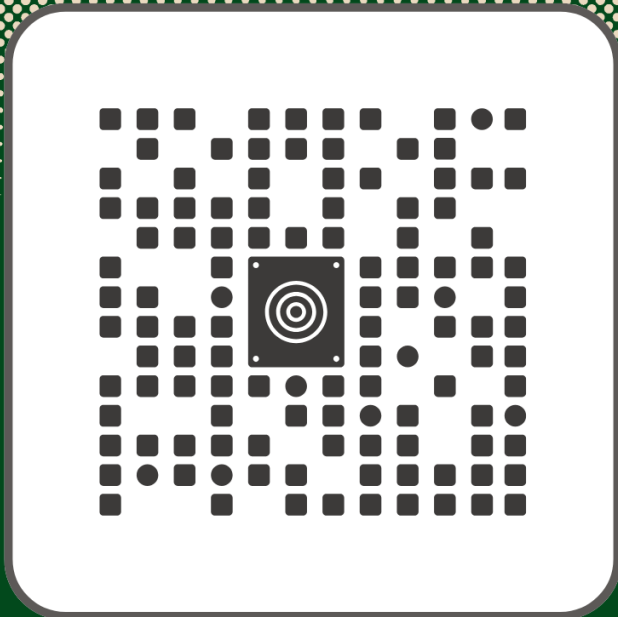
- Privacy & Consent
- Accuracy & Over-Reliance
- Equity & Access
- OT Value
 - HAAT model
 - Tool Selection
 - Customization
 - Teaching how to use it
 - Scaffolding & generalization



Conclusion/Contribution to OT Profession

- Integrating AI and AT enables OTs to adopt innovative strategies, improve outcomes, shape the future of occupational therapy
- AI is already a part of our clients' occupations. OTs bring clinical reasoning and purpose to its use
- AI + AT can expand participation when used intentionally
- AI can be a tool in our toolbox. Makes work scalable, personalized, and accessible.

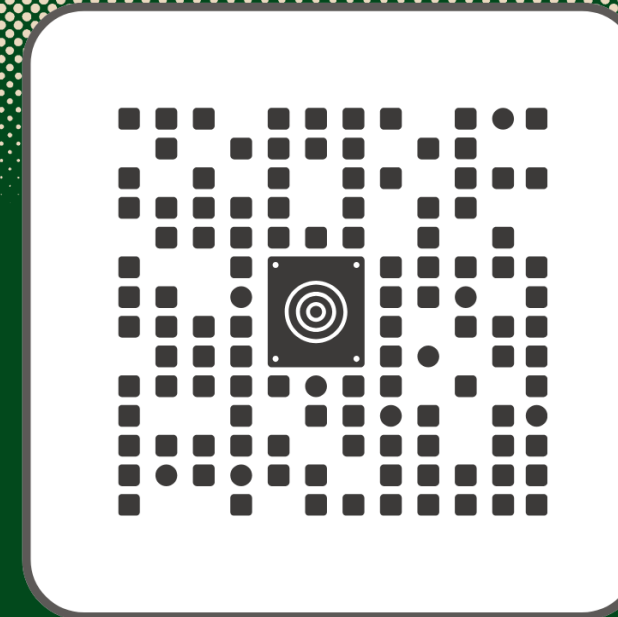




***Assistive Technology for
OTs***

[Tools for OTs - Assistive Technology Resource Center](http://www.chhs.colostate.edu/atrc/tools-for-ots/)

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***Apps for Academic
Success***

[Apps for Academic Success - Assistive Technology Resource Center](http://www.chhs.colostate.edu/atrc/assistive-technology-resources/quick-start-guides/apps-for-academic-success/)

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Thank you!

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www.chhs.colostate.edu/atrc/

