



# Assistive Technology for Computer Access and Adaptive Gaming

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# Disclaimers

- Information in this presentation is for educational purposes only
- I do not endorse any product, brand, service, or intervention
- I cannot provide specific recommendations to any individual without a formal evaluation
- This presentation will not be an exhaustive list of all technology available for computer or gaming access, only a sampling of a few options

# The Center for Inclusive Design and Engineering (CIDE)

- Academics
- Research
- Assistive Technology Clinic
- Industry Services
- Community Programs



# Community Programs

- [Colorado Tech Act Program](#)
  - [AT Funding Sources](#)
  - [AT Exchange](#)
- [Surviving in Place \(SIP\)](#)
- [Emergency Prep](#)
- [SWAAAC](#)
- [Tech for Tykes](#)
- [Project Include & Colorado Early Learning](#)



# Assistive Technology Clinic

- OT, PT, SLP outpatient clinic
- Assessment, trial, training, customization and adjustment
- AAC
- Computer access
- Adaptive gaming
- Nighttime positioning
- Wheelchair seating and mobility
- Ergonomics
- Learning and cognitive aids
- Smart home technology



# What is Assistive Technology (AT)?

“Assistive technology is any item, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities” (Assistive Technology Industry Association [ATIA], 2014).



# Why use AT for computer access or gaming?

Standard controls for computers and video games can be difficult or impossible to use for many people with disabilities.



# Adaptive computer access

- Use of tools (other than what the computer comes with) to enable access
- Hardware or software
- Input
  - Alternatives ways to input text
  - Alternatives ways to mouse, navigate, click
- Output
  - Alternatives to traditional screen/display





# Computer Input – Text input

- Alternative keyboards
  - Large print
  - High contrast
  - Alt format (QWERTY)
  - Ergonomics
- Text-expansion
- On-screen keyboard
- Voice typing



# Computer Input - Mousing

- Trackpads
- Joysticks
- Mice controlled by other body parts
- Switch control
- Voice control
- Eye gaze
- Keyboard nav, shortcuts and macros



# Other input access supports

- Mobile arm supports
  - Ex. [JAECO Wrex Arm](#)
  - Ex. [Guided Hands](#)
- Bracing
- Styluses
- Mounting/positioning of the computer itself



# Computer Output options

- Magnification
- Contrast
- Text-to-speech
- Screen shades
- Screen readers
- Braille



# Ergonomic options

- Ergonomics
  - Joints in neutral
  - Comfort
  - Dynamic
- Prevention of joint, muscle, or nerve pain and fatigue with repetitive movement/positions
  - People with FSHD may be at higher risk
- Split keyboard
- Tenting keyboard
- Wrist rests
- Vertical mouse
- Central mouse
- Good comfortable and adjustable chair
- Monitors at eye-level

# Demo – Computer Access

Using a trackpad and switches for mousing on MacBook

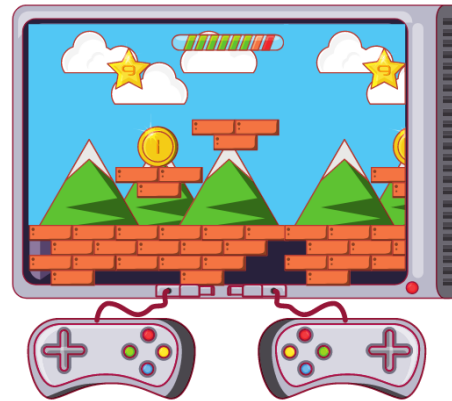
Using Voice Typing in Google Docs

Text to speech with Read & Write



# Adaptive gaming

- Controllers
- Game or system accessibility features
- Co-pilot
- Choosing the right system and game



# Controllers

- One-handed controllers
- Lightweight controllers
- Adaptive controllers
  - [Xbox](#)
  - [Play Station](#)
  - Nintendo: [Hori Flex](#)
- Adaptive controllers can be used with other accessories
  - Switches
  - Joystick
  - [Quadstick](#)





# Game or system accessibility

- Some systems or games allow:
  - Adjustable difficulty
  - Narrated game menus
  - Custom volume control
  - Large text
  - Color or contrast options
  - Steady camera
  - Subtitles
  - No button holds
  - Adjustable input sensitivity

# Co-pilot

- Allows two players to control the same character
- Allows players to divide controls
- Promotes teamwork



# References and additional resources

- [AbleGamers Adaptive Gaming Equipment: What You Need to Know](#)
- [Can I Play That?](#)
- [Craig Hospital's Resources for Universal Video Game Access](#)
- [Craig Hospital's Computer Access Resources](#)
- [Gaming Readapted](#)
- [Makers Making Change Intro to Adaptive Gaming](#)