



Mainstream Gaming With Disabilities: Accessible Solutions

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Tools for Life | AMAC Accessibility

College of Design | Georgia Tech

September 2018

Introduction

Ben Jacobs, Accommodations Specialist



Ben Jacobs is a retired Staff Sgt. serving 10 years in the United States Air Force. During his time in the USAF he provided information technology support and network security at Langley Air Force Base in Virginia, Osan Air Base Republic of South Korea, and Peterson Air Force Base in Colorado. Focused on Special Projects at Tools for Life, Ben brings his knowledge and drive for technological advancement to the team. His experience with network management, Android OS and devices, along with subject expertise on the Internet of Things (IoT), drives his passion for enhancing independence for people of all ages and abilities. His focus on universal design and mainstream technologies that can be leveraged by people with disabilities provides a unique perspective on the use of assistive technology for everyday living. An avid gamer himself, Ben advocates for education on the importance of gaming and its effect on social connectedness. Ben is originally from Maine and currently resides in Alpharetta, GA with his wife, his Xbox, and PlayStation.

If you would like to connect with Ben directly, please send an email to: ben.jacobs@gatfl.gatech.edu.

Quotes about play

“We do not stop playing because we grow old, we grow old because we stop playing”

~Benjamin Franklin

“Life is more fun if you play games.”

~ Roald Dahl

Today's Agenda



- Gaming Myths
- My Accessible Gaming Philosophy
- Built in Console Accessibility
- Console Accessibility Solutions
- PC Accessibility Solutions
- Tabletop Accessibility Solutions
- Virtual/Augmented Reality
- Other Resources
- Questions

Myth #1



Playing video games is a wasteful past time with no real benefits and is detrimental to one's health and mental well being.

Why is gaming important?



- Increased Cognitive Function
- Pain Management
- Stress Reduction
- Hand-eye coordination
- Memory
- Attention
- Mood
- Decision Making
- Social Connectedness

Shirley Curry



- Shirley is an 82 year old grandmother who loves to play a role playing video game called Elder Scrolls: Skyrim.
- She operates a YouTube channel where she uploads her gameplay and commentary to share with the world
- Her videos have over 5 million views and she has 250k subscribers.

Myth #2



Games are an invention of the modern age, our ancestors didn't play games. They were always productive and found better ways to spend their time.

Gaming Throughout History



- Senet (Game of Passing)
 - 3500 BC
- Chess
 - 280-550 AD (Modernized in 15th Century)
 - Miniature Wargaming
 - Dungeons & Dragons

Myth #3



People with disabilities should focus on playing less complex games like [Elf Bowling](#). Playing mainstream games is impossible for someone with a disability.

Simple Games



- The Good
 - Easily operated
 - Easily Understood
 - Fun
- The Bad
 - Little to no depth
 - No social aspect
 - Becomes a passive activity

My Accessible Gaming Philosophy: Productivity is not enough.



- Living and working independently is not a whole fulfilling life
- Recreation and social interaction are a necessity
- For many this comes in the form of playing games
 - Console
 - PC
 - Mobile
 - Tabletop
 - Other

My Accessible Gaming Philosophy: No Game Matching



**CHOOSE YOUR
OWN ADVENTURE®**

Built in Accessibility: Xbox One



- Narrator
- Magnifier
- High Contrast
- Closed Captions and Game Chat Transcription
- Button Mapping
- Co Pilot

Built in Accessibility: Playstation 4



- Text to Speech
 - Speed and Volume Adjustments
- Zoom
 - PS Button and Square zoom in
 - Move enlarged area using d-pad or thumbsticks
 - Cancel by pressing circle
- Invert Colors
- Large/Bold Text (System Menu)
- Closed Captions
- Button Mapping
- Voice Commands

Built in Accessibility: Nintendo Switch



- While Nintendo opened up the world of gaming to many people through the addition of simple motion controlled games, accessibility options have largely been missing from the systems.
- Touchscreen
- Joycons

Xbox One Elite Wireless Controller



- First party controller with accessibility features.
- Modular construction includes multiple thumbsticks, directional pads, and paddle buttons.
- Remap any input to any button.
- Highly customizable.
- \$150

Xbox Adaptive Controller



- Two large buttons
- 3.5 mm ports for each controller input
- USB port
- Ergonomic Design
- 2 years development
- [1 year development of packaging](#)
- Available now
- \$100

CronusMax Plus



- Cross Over Gaming
 - Xbox 360, One, One S
 - PS3, PS4, PS4 Pro, PSTV
 - Android
 - Windows PCs
 - Wii and Wii U, Controllers only
- Mouse and Keyboard Control
- Controller Modifications
- Macros and Scripts

Accessible Controller Modifications



- A few different companies have been specializing in providing controllers modified to be accessible for people with disabilities.
- Some of these companies include
 - www.broadenedhorizons.com
 - www.evilcontrollers.com
 - www.thecontrollerproject.com
 - www.scufgaming.com
- We are also currently identifying controller modification solutions that can be 3d printed



- Foot controller
- Joystick emulation
- Keyboard Emulation
- Control movement
- Browse the web
- Access Microsoft Windows programs

QuadStick



- Mouth operated game controller for Quadriplegics.
- Joystick, four sip and puff sensors and a lip position sensor.
- Compatible with PS3, Android, and PC.
- USB adapter allows control of Xbox 360, Xbox One and PS4.



- TrackIR is an optical motion tracking game controller for Microsoft Windows
- Tracks head motion with up to 6 degrees of freedom.
 - Forward/Backward
 - Left/Right
 - Up/Down
 - Roll
 - Pitch
 - Yaw

Open Sesame



- Nominated for Best Accessibility App Google I/O 2018
- Control your phone using minor head movements
- Tap, swipe, drag and drop
- Easy to configure
- 7 day trial, \$19.99/mo
- <https://sesame-enable.com/>



- Wireless device that controls smartphones and tablets using your external switches or the driver controls of your power wheelchair
- Can interface wirelessly with head array
- The only switch interface that works with both iOS® and Android mobile devices.

Android OTG Adapter

- Android devices support mouse and keyboard as well as most other USB devices through a USB OTG (On the Go) Cable
- Other supported devices include
 - Printers
 - Controllers
 - Hard drives and thumbsticks
 - Microphones and Cameras
 - Midi Controllers



Playing Card Solutions



- Scrabble Rack
- Playing Card Holder
- Dungeon Master Screen



More Tabletop Solutions



- Roll20
 - Virtual Dice
 - Character Sheets
- <http://www.64ouncegames.com/>
 - Low/No Vision Accessibility Kits
- Digital Assistants
 - “Hey Google...”, “Hey Siri...”, “Alexa...”

Virtual/Augmented Reality



- What is the difference?
- Virtual Reality
 - Fully Immersive
 - Simulated Reality
- Augmented Reality
 - Informative overlay
 - Enhanced Reality

Limitations of Virtual Reality



- Controls
 - Head movement
 - Motion controls
- Cut off from real world
 - Safety

Benefits of Virtual Reality



- Immersion
 - Increased analgesic effect
- Immersion
 - Increased brain activity
- Immersion
 - New experiences

Examples of Virtual Reality Uses



- Therapeutic
 - Painting
 - Meditation
 - Relaxation
- Experiential
 - Virtual Tourism
 - New Perspectives

Examples of Augmented Reality Uses



- Wayfinding
 - Navigate a grocery store
- Person/Object Recognition
 - Medication
- Gaming in the real world
 - Pokemon Go

Other Resources



- Dagersystem.com
- Ablegamers.org
- Craig Hospital



- Annual convention in Atlanta, GA since 1987
- Geek culture celebration
- 80k+ attendees
- In 2014 held first Disability and Gaming Panel
- Expanded to two sessions

Questions

