



**Makers Making
Change**
A Neil Squire Program



GAME CHECKPOINT TRAINING

– BEST PRACTICES

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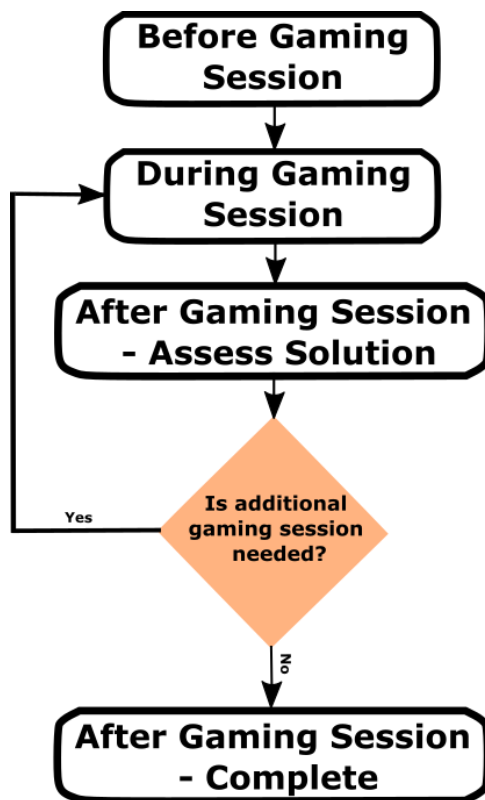
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Introduction

Gaming and using assistive technology is a highly personalized experience. Therefore, best practices around adaptive gaming are intended to be recommendations that may help in some cases. The following booklet breaks down the recommended practices through Makers Making Change's experience in gaming and working with close partners such as Stan Cassidy Centre for Rehabilitation. This booklet will cover best practices in a gaming session along with general tips and tricks on maintaining and using the gaming gear.

Gaming Session

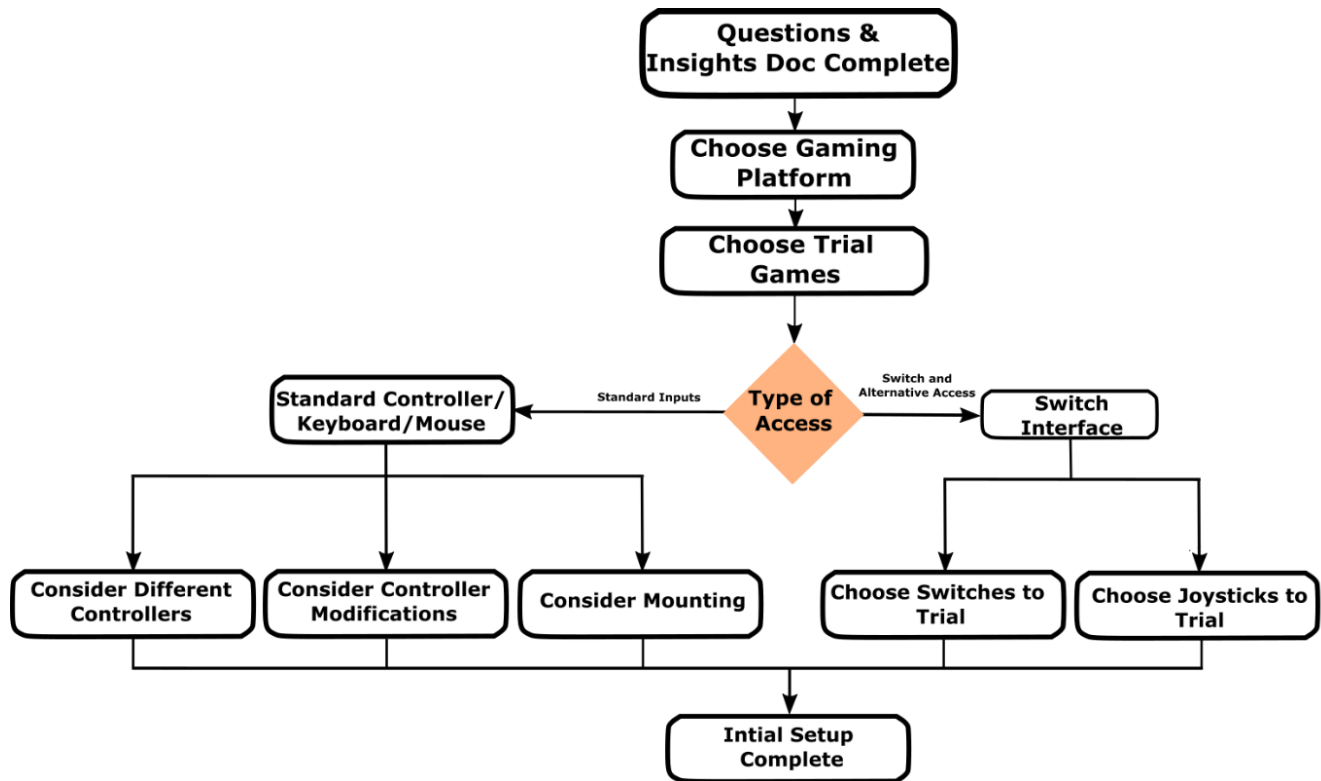
Allowing a user to try out various adaptive gaming gear without having to buy it first can be crucial in finding an adaptive gaming setup that works for them. The following section is meant to help guide this gaming session, as well as the prep before and follow up after the session. **Depending on your centres needs and goals, your gaming session may or may not look as described below, and that is ok. This gaming session can be customized to fit what works for your centre.**



- **Before the gaming session**
 - Gather information and prepare initial solutions to test.
- **During the gaming session**
 - Test various combinations of gaming gear and software settings to find the best fit for the user.
- **After the gaming session while assessing the solution**
 - This solution will be assessed, and if not all of the barriers were addressed, and there is an opportunity to bring the user back to try something else (depending on your centres resources) then you may decide at this time to schedule another gaming session.
- **After the gaming setup is complete**
 - once a gaming setup is finalized, often this is documented and process will be determined for user to receive the equipment if desired.

Before Gaming Session

A flowchart describing the process prior to the gaming session can be seen below:



Initial Information

Before the gaming session, information should be collected from the gamer to give insight into what system use, what games to play, and what type of controller to use. This can be done by using the *Questions and Insights* document located in the appendix. This document contains a list of recommended questions to ask the gamer prior to the session to help prepare. The insights provide context to the GAME Checkpoint lead for reasoning on why the question is asked. Depending on the setting, this information could also be collected informally at the start of the gaming session.

Support teams such as caregivers, family, or medical teams are great to have in the gaming session if possible. Encourage these folks to become comfortable with the technology as well as it will increase the chance of success in the gaming setup.

Choose Gaming Platform

The first decision to make is what gaming system will be used for the gaming session, based on the user's questionnaire or by asking them at the start of the session.

If they already have:

- **One gaming system**
 - o Use this system if possible
- **More than one gaming system**

- Use the system they play the most
- OR use the system where they experience more barriers
- **No gaming systems**
 - Ask their preferred gaming system
 - Consider if they would like to play with friends online
 - Consider types of games
 - If they do not have a preferred system:
 - Try system you think will work best with native controllers or types of games, and assess this during the session
 - Consider trying more than one system and ask their preference after

If the preferred gaming system is not available:

- Try a controller native to the preferred system on the available system using adapters
 - For example, if the preferred system is PlayStation, but the system available is Xbox, try a PlayStation controller on the Xbox using an adapter for the gaming session. In this situation, the user will be able to use the same controller used in the session on their PlayStation without adapters.
- Try the controller you think will be best for them on the available system, and recommend an adapter so it can be used on the preferred system
 - For example, if you think the XAC will be the best fit for them, but the PlayStation is the preferred system and is unavailable for trial, use the XAC with the Xbox or PC for the gaming assessment, and recommend an adapter so the XAC can be used on the users PlayStation at home.
- **Note:** not all controllers are compatible on all systems, even with adapters. The “Adapter” section should be consulted for compatibility.

Choose Trial Game(s)

Based off of the preferred system identified above, the next step is to identify some initial games to try. Questions in the Questionnaire can again guide this decision, or by considering the points below.

If they:

- **Already game**
 - Identify a game they would like to play the most
 - OR identify a game where they face the most barriers when playing
- **Don't already game**
 - Ask if they have any specific games they are interested in playing
 - Ask if they have any specific genres they are interested in playing
 - Ask if they have any games they have played in the past that they have enjoyed

Note: The user may have more than one game that they want to play with their adaptive gaming setup. It is recommended to start with one game to focus on. If they have multiple games they would like to play, whichever has the highest number of inputs or is the most fast paced can be the end goal, but this should be worked up to gradually.

Keep in mind which game is their end goal, but try to start where the user is at. If they are currently unable to game at all, start with a game with simple inputs, and once they are successful with this, then move to a more complicated game. Do this gradually so that they experience success, and don't become frustrated.

Selecting a Gaming Goal:

- **If a specific game was identified as a preference or a goal:**
 - Consider the genre of the game, and compare to the genres of the games that are available
 - For example, if they want to play a sport game, such as NHL but you don't have it, consider trying a different sport game that you have such as FIFA.
 - Consider the number of inputs required for the preferred game, and compare to the number of inputs required for the games that are available. This may require some research into what controls are required for the preferred game.
 - For example, if they want to play a world exploration game that requires 4 button inputs and 2 joysticks, try a world exploration game that also uses 4 button inputs and 2 joysticks. Some world exploration games may require 2 joysticks, one for walking and one for view, and some may have a view that follows you and therefore only requires 1 joystick. Trying a game with similar controls provides a much more accurate gaming session to what the user will be doing in their preferred game.
- **If a genre was identified (not a specific game):**
 - Try an available game in that genre. If there is more than one:
 - Consider if they have different number of required inputs.
 - Consider if one is slower paced.
 - Ask the user their preference.
- **If the user has not played video games before** and you are unsure where to start, consider trying a platformer (such as Brawlhalla) or a racing game as a start to try a game with a low number of inputs

Selecting an initial game:

When starting out with adaptive gaming, sometimes a user won't be able to start out with their goal game. It is important to start where the user is at and consider their current gaming abilities.

- **Consider starting with a different initial game than the goal game if:**
 - There is a large gap between the user's current gaming abilities or number of inputs they can access, and the number of inputs that their goal game will require,
 - The user's gaming setup is going to need to change significantly from their current setup.
 - Ex. If they use a standard controller but are going to try a switch interface.
- **Consider starting with their goal game if:**
 - They are close to being able to play their goal game with their current gaming setup, but only need a slight increase in access (Ex. One more button)

If selecting a different initial game than their goal game:

- Set intermediate goals that will help give the user success and build their abilities towards their goal game.
- Start with a game with simplified inputs, then slightly more complex inputs, until the goal game can be played.
 - o For example, if they are new to using switch inputs and would like to play a first person shooter (with two joysticks and multiple buttons), consider starting with a game with one joystick and a few buttons, then work up to a slow paced game with two joysticks (such as a world exploration game) and a few buttons, then work up to the first person shooter game.

Choose Type of Access

The next decision that needs to be made is the controller or keyboard and mouse that the user will try. This will be based off of what system they will be using and what games they will be playing will also be considered.

- **If the user already games or has gamed in the past:**
 - o Ask what barriers they have faced with a traditional controller.
 - Consider if a 3D printed controller modification could address these barriers.
 - If larger or less buttons would help, consider trying a switch interface.
 - If a different size controller or different button layout would help, consider using a controller for a different system or a third party controller.
 - If the user has problems holding the controller, consider mounting the controller.
- **If the user has not gamed in the past:**
 - o Try one of the following options, based on their abilities. Consider asking the user which they think would work better for them.
 - A standard unmodified controller to assess barriers.
 - Switch access with a switch interface.

Considerations for the different controllers:

- **Standard controllers**
 - o Start with the controller native to the system.
 - o If this does not work well for the user, consider using a controller for a different system with an adapter, or using a third party controller.
- **3D printed controller modification**
 - o If you think a 3D printed controller modification may be helpful for the user and you have access to multiple controllers, consider setting up one or more of the controllers in advance so they are ready to try.
- **Switch interface**
 - o Start with the minimum number of switches and joysticks necessary to play the game.
 - o Think about which switches may work best based on size and force, but have all switches near to try.
 - o Think about which joystick may work best based on size, force, and range of motion, but have all joysticks and topplers near to try.

Note: consider the game that the user will be playing when selecting the controller, but also consider if they would like to play more than one game/type of game. If so, consider if the setup can be used for multiple games or can be easily altered to use with another game.

Choosing Any Additional Hardware or Software Options

Additional hardware or software options may be beneficial for the user to game successfully.

- **Hardware options**
 - Adapters (See adapter section in Booklet 2 to help with selection)
 - For cross platform gaming (using a controller other than what is native to the system).
 - For turbo function
 - This helps users that have difficulties with quick repeated button presses.
- **Software options**
 - Button remapping
 - This can be done either in the system settings or game settings, depending on the system, controller, and game. See relevant sections in Booklets 2, 3, and 4.

Setup

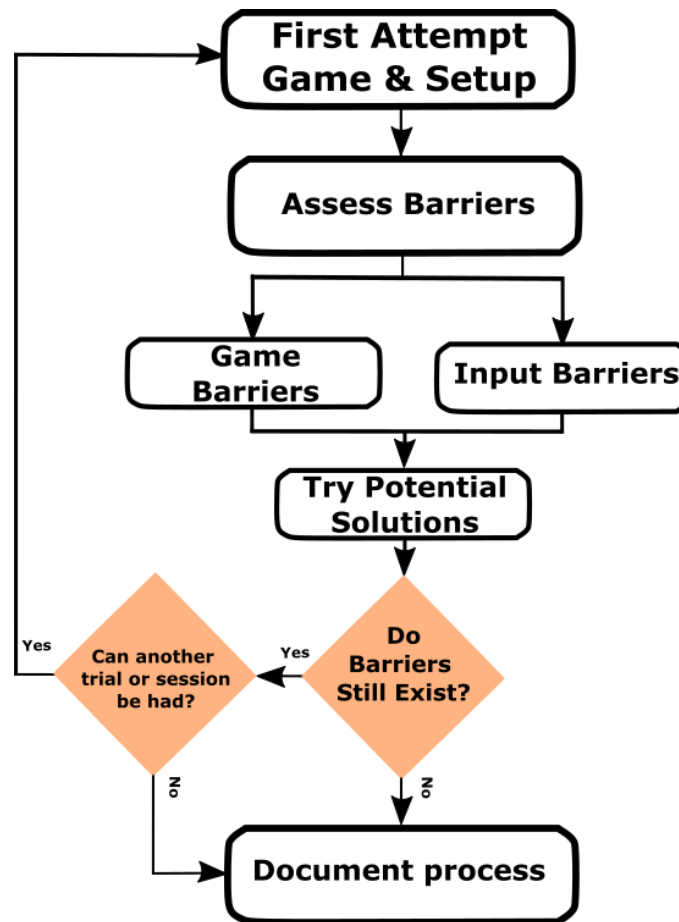
If possible, it is often a good idea to set up your gaming space before the gaming session.

This includes:

- Opening the game to check for updates, sometimes these files are large and take a long time to download.
- If the game has been previously played, check if it is in a good place for the user to begin playing (if the intro is long consider saving at a point after the intro, if it has been saved at a place that is really difficult to get past consider restarting the game, etc)
- Get out all of the gaming gear you think you might use (controllers, games, mounts, etc) and make sure nothing is missing.

During the Gaming Session

A flowchart describing the process during the gaming session can be seen below:



Try Initial Setup

Using the controller and game identified beforehand, try out the gaming setup with the user. Some considerations to keep in mind:

- **Allow the user to practice in a low stakes environment if possible.** Consider trying a practice/training mode or tutorials to start. If not, play offline and set difficulty to easy while the user gets used to the controls.

Identify barriers and difficulties

While the user is playing with the initial setup, identify what is working well, and what barriers and difficulties are still present. Try to identify whether the main barrier has to do with the game or the controller. Examples of game barriers are: game is too face paced, game requires too many inputs, game requires quick response time, etc. Examples of controller barriers are: cannot reach all required buttons/switches, controller joystick is not in an ideal position, switches are too big or too small, switches require too much force, external joysticks require too much force or too large of a range of motion, etc.

- **Game barriers**
 - Try different in game settings.
 - Try different play modes.
 - Try playing with them on co-pilot as one character (if they have someone at home that they could play with).
 - If unable to address game barriers, consider trying a different game. This could be a game that is slower paced, requires less inputs, or one where the character doesn't die. Trying a different game could be temporary while the user gets used to the controller, or could be a better fit for the users gaming needs long term.
- **Controller barriers**
 - **Standard controller**
 - Consider different button mapping options.
 - Consider a 3D printed controller modification.
 - Consider a different standard controller.
 - A different controller meant for that system (such as one with more customization options or a different shape).
 - A controller meant for a different system, used with an adapter (see the adapters section in booklet 2).
 - A third party controller.
 - Consider mounting the controller.
 - Consider using a keyboard and mouse instead of a traditional controller.
 - When gaming on a console, some games support keyboard and mouse, some will require an adapter (see the adapters section in booklet 2).
 - If none of these options address the barrier, consider trying a switch interface.
 - **Switch interface**
 - Switch barriers
 - Consider different switches, consider size and force when selecting.
 - Consider re-arranging the switches.
 - For some users, consider using body parts other than just the hands/arms. Less frequently pressed buttons like the menu button can go in less convenient locations.
 - Consider using more or less switches.
 - **Joystick barriers**
 - Try a different joystick. Consider force and range of motion.
 - If game requires two joysticks, but using two joysticks is a barrier, consider trying a different game that only requires one.
 - **Repeated quick button presses**
 - Consider using an adapter that has the option for a turbo setting. See the "Adapters" section in Booklet 2.
 - Some games in-game settings may allow for various settings to reduce the amount of button presses, holds, or inputs needed.

Continue identifying barriers and trying different controller options or different games. The best way to know what will or will not work is to try things and to ask the user for their feedback. If the user ultimately wants to play more than one game, and time permits, it can be good to try the setup with more than one game type.

Note: When trying different controller options, consider the users setup at home. For example, if using a switch interface, consider where the user games. This could change what gear is required, for example if they game in bed they may need a lap desk or an over bed table for this solution to be used. Or another example could be if they prefer to mount their controller, in this case it is important that where they game at home there is a surface for mounting to.

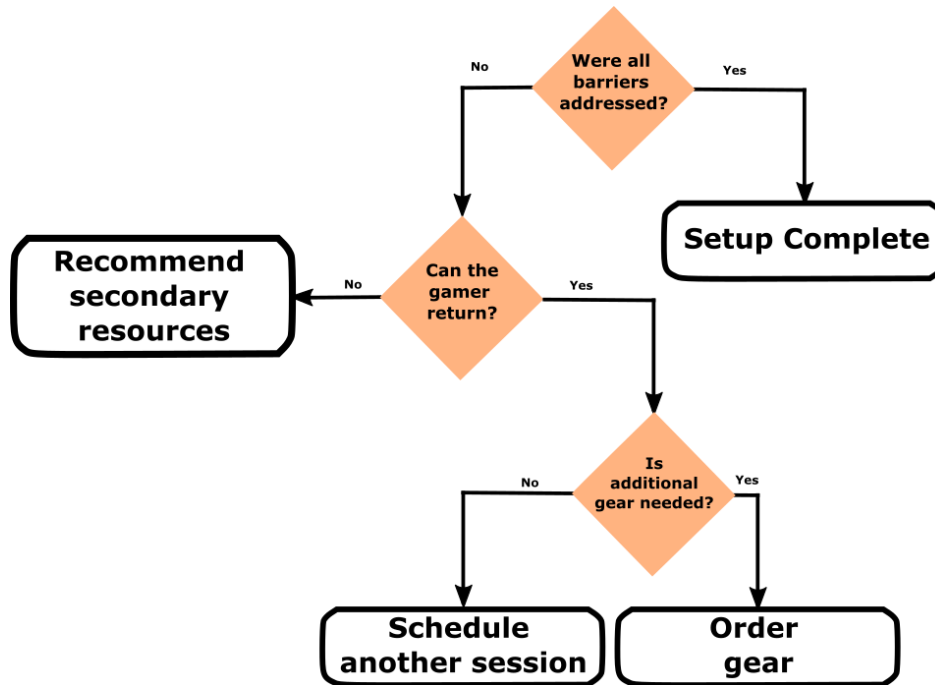
Make record of setup

Towards the end of the gaming session, whether an ideal gaming setup has been identified or the scheduled time for the gaming session is over, record what did and did not work for the user.

- **Barriers were addressed, ideal gaming setup identified**
 - Make note of what gaming gear was used (what console, what controller, what cables, if switches were used what types, if joysticks were used what types, etc)
 - Make note of how this setup will be used at home, for example if additional gear is required such as a lap tray.
 - If needed, take a picture to remember the layout. This is especially useful for a switch interface setup.
- **Barriers were not addressed**
 - Make note of the unaddressed barriers.
 - Make note of what was tried and why it did not work for the user.
 - Make note of possible future solutions that were identified.

After the Gaming Session – Assess Solution

A flowchart describing the assessment process of the gaming setup after the session can be seen below:







If the user's gaming barriers were addressed, and they were happy with the gaming setup identified, then you can move to the next section.

If not, is there an opportunity for the user to come back? If so, it could be a good idea to schedule another gaming session to try to address the remaining barriers, and try out some more solutions. This could involve trying other combinations of the gaming gear that you currently have, or looking into other solutions. If additional equipment is identified that could help the user, your center could provide it depending on your centre's resources or you can direct them to the appropriate info below.

Secondary Resources

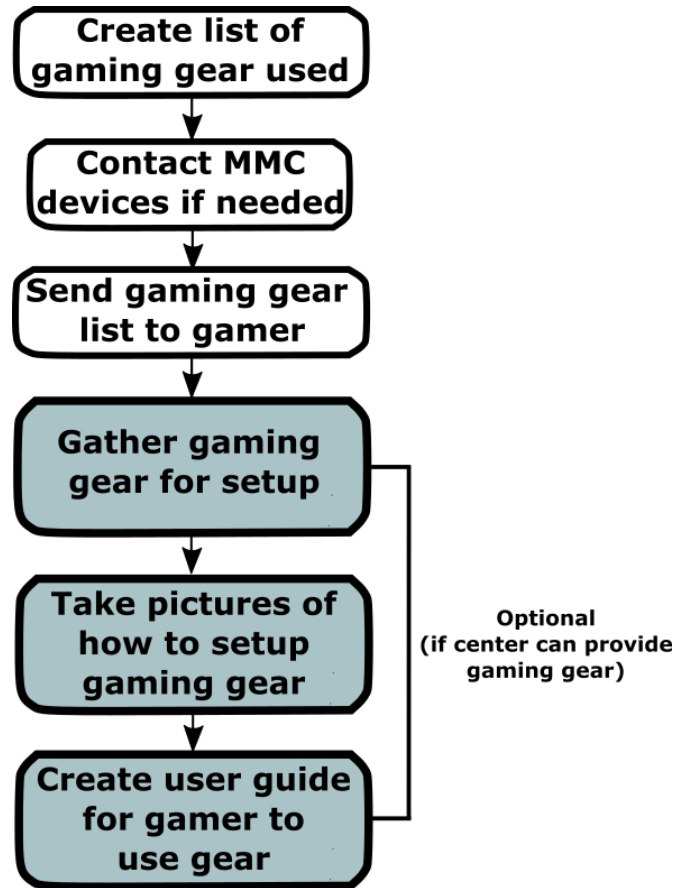
If there is not an opportunity for the user to come back, create a list of the equipment that was tested and potential ones that may have been tested in the second section. If they are looking for external resources, reference them to the below secondary resources. Makers Making Change is able to support requests that come through our website for devices that can be found on our website. The AbleGamers Charity is able to support custom setups through their ticket process.

The following resources information can be sent with the user for their own purpose of requesting assistive technology or research in adaptive gaming options.

Resource	Purpose	Link	QR Code
Makers Making Change – Request a Device	<ul style="list-style-type: none"> Search AT Library for requestable devices. Put in request for 3D printed open source devices. 	https://makersmakingchange.com/assistive-devices/	
Makers Making Change – Submitting an Idea	<ul style="list-style-type: none"> Submit idea for a device you do not see available onto the volunteer forum. 	https://makersmakingchange.com/submit-an-idea/	
Makers Making Change – Adaptive Gaming Resources	<ul style="list-style-type: none"> 4-part crash course on adaptive gaming for self research. 	https://makersmakingchange.com/resources/?_sft_resource_category=adaptive-gaming	
The AbleGamers Charity Ticket Request	<ul style="list-style-type: none"> Individualized support for custom gaming setup. Let gamer know to input the GAME Checkpoint they trialed the technology at. 	https://ablegamers.freshdesk.com/support/tickets/new	
Provincial/Insurance/Federal funding	<ul style="list-style-type: none"> This may be an option depending on the center or gamers circumstances. 	N/A	N/A

After Gaming Session – Gaming Setup Complete

A flowchart describing the completion process of the gaming setup after the session can be seen below:



Gaming Setup Equipment List

Once the gaming setup has been finalized, list all of the equipment used in the gaming setup can be created and given to the user. This also is best to include any notes of how the technology could connect to their devices at home if they already have some devices at home. It is helpful to include links here, so that the user knows what to buy and can ensure they are getting the right versions.

The *Gaming Gear Checklist* resource has been created to help check off the devices that the user trialed in a session.

Contact MMC for Open-Source AT

If any open source AT from the MMC website was used in the user's gaming setup, either you as a centre or the user themselves can contact us at Makers Making Change to supply these items. Go to <https://makersmakingchange.com/assistive-devices/> and find the device that is needed, and select "Request" to get matched with a maker in your area.

Send information to User

At this point, send the information to the user that they will need to be able to get all of their needed gaming gear. Send the equipment list that was made above, any pictures of their setup taken during the session, information about requesting open source AT from MMC, and anything else they might need.

Optional – Delivery

Depending on the centre, you may have opportunities for funding for gamers. If so, collecting the gear and delivering it with a detailed User Guide for the user's gaming setup. Sometimes when the user takes home the equipment they are unsure how to set it all up, and this can be very helpful. If you are creating a user guide:

- Gather all of the equipment used in the user's final gaming setup.
- Take pictures showing how to setup the gear, including what needs to plug into where. Labeling these locations can be helpful.
- Put the photos into a document with the instructions.
- List what settings the user needs to change, whether those are in the system's settings or the games settings, and how to navigate to them.
- Send this user guide to the user, or print it off to give them with their gear.

Tips and Tricks

This section is a summarized point form list of some of the key recommendations for adaptive gaming. These are suggestions that may work in some cases and can be used as a brief summary found in the other booklets.

Prioritizing Game Experience

When working with a gamer, ensure that the main focus is on their goals and experiences they want to have gaming. Whether that be genre based, community based, or getting back into a previous hobby.

- Prioritize the gamer's goals and requests. If the exact game is not available, find similar games or genres.
- Fatigue and pain play a large role in gaming. Ensure that gaming is not a "work out" or causing pain.
- Caregiver/support team may potentially be necessary for starting or setting up the system. Make sure they are brought into the conversation. <https://smarthomesmadesimple.org/how-to-get-it/building-your-support-team/>



- Do not overlook the menu navigation when using the platform or game. If access points are available for these independence is increased.

Starting Small/Challenge by Choice

There are many barriers someone can face when gaming from access, cost, unfamiliarity, or personal nuances. When starting with gaming, meet the gamer where they are at in their journey whether that is brand new or coming from experience.

- Start off on a reliable game that everyone is comfortable with to test inputs and have a low stakes trial.
- Progress into the experience the gamer wants to have and check in with their comfortability.
- Structuring the session with a "challenge by choice" mentality allows the gamer to have their perspectives driving the session.
- Games often have the ability to limit controls or all controls are not necessary. Start with the core controls and introduce other inputs when available.

Using AT in Game Setup

Utilizing AT in gaming comes with many challenges such as compatibility. Feeling comfortable with the technology can take a while, and this is okay.

- It is likely that gamers need multiple forms of AT or adaptations to their gaming setup. Combining options such as alternative access, software, and controller modifications can be a powerful option.
- Ensuring that the mounting of the assistive technology is stable is important.
- Customizing gaming gear is often desired in the gaming world. Take this into consideration and ask gamers their style preferences.

Maintenance on Gear

Gaming is inherently changing and adapting with thousands of games coming out every year and consoles developing. It is important to prep the equipment as unforeseen updates can be required.

- Prior to the session, trail the setup for any connectivity errors, updates, or red flags that come up.
- Joystick drift is common on controllers after time. This means the thumbsticks input will become uncalibrated and input motion when not desired. Be aware of this as it can require calibration.
- Consoles and PC's have fans on them that can collect dust on the internal electronics. Keep notice of this and dust them when possible.
- When downloading or buying physical games, storage can be an issue. Often there are options for "cloud" storage or external hard drives.

Making your own DIY solutions

It is important to remember that open source 3D printing or DIY solutions can enhance or be the key to an effective setup. Depending on your centers resources, consider designing and developing solutions in house or contacting MMC for suggestions on devices. There are plenty of cost effective ways to get starting with DIY AT solutions. Please reach out to your representative MMC staff if you are interested in this.

Gaming Setup Examples

The following examples have been documented by adaptive gaming organizations. This section is intended to show real life examples of using the approaches discussed in the booklets. If you are looking for more examples check out the following resources:

- [SpecialEffect's GameAccess](#)



- [AbleGamers](#)



- [Gaming Readapted](#)



Links to the full breakdowns have been added to each of the sections for a controller modification, combined approach, and software solution.

Controller Mod - Example 1

Link to full article: <https://www.gamingreadapted.com/gamer-examples>



Gamer Goal:

This gamer had noticed that they were fatiguing faster playing games, was not able to push down the thumbsticks, and reaction time to the buttons was slower. This person is a long time gamer and previously had played with a standard controller. They want to get back to the same level and duration of play as before. This person also has Duchene's muscular dystrophy and played using a standard Xbox controller.

Solution:

The approach was taken to keep the standard controller approach but look for other options that would result in less fatiguing and more accessibility to the buttons. The chosen decision was to use Evil Controllers Lightweight Xbox controller (no longer available). This controller is significantly lighter than the standard Xbox controllers and features a set of buttons on the bottom side. This means, various buttons can be remapped to a more comfortable position for the gamer. Using a modified Xbox controller also means connectivity and compatibility is the same as the gamers previous controller.



Controller Mod - Example 2

No article created.

Gamer Goal

They wanted to play games available on their Nintendo Switch one handed. They have access points on the right side of their body with the preference of using their left hand to play games. They had no current solution since their injury and used to play lots of Nintendo Switch prior.

Solution

Attempt 1:

There were two main attempts to try to find a gaming solution. The first was a trial of the One-Handed Adapter for Joy-Con. Both left and right handed options were attempted as they only use different angles. Links to devices can be found below:



<https://makersmakingchange.com/project/one-handed-adapter-for-joy-con-right/>



<https://makersmakingchange.com/project/one-handed-adapter-for-joy-con-left/>

The gamer had a hard time using this adaptation with their left hand and was not satisfied with the result. They found it difficult to interact with all the buttons in one hand and it was not stable.

Attempt 2:

The next approach was to look into other one handed controller modifications that have a different style to see if the gamer was interested in trying them out. This would require the use of an adapter to connect a different controller to connect to the Nintendo Switch. After showing the gamer a few options, they wanted to try the One-Handed Adaptation for the Xbox Series X|S Controller. This was 3D printed and attached to the controller and connected to the Nintendo Switch using the [Mayflash Magic-S PRO 2](#) adapter.



<https://makersmakingchange.com/project/one-handed-mod-xbox-series-xs-controller/>



The gamer found success with this solution. They reported it took a few days to get used to the new layout but once they did they are able to game at the same level they did previously.

Combined Approach – Lucy

Link to full article: <https://gameaccess.info/lucys-adapted-gaming-controller-case-study/>



Gamer Goal

Lucy reached out to SpecialEffect to get a setup that would allow her to play console games like she had before injury. The initial goal was set to play *The Legend of Zelda: Breath of the Wild* on the Nintendo Switch.

Solution

The solution required a combination of adaptive switches, switch interface, adapter, mounting, and co-pilot.



Lucy first tried using a standard controller with the switch but was unable to press the back four buttons, gripping the controller, and using the thumbsticks when holding the controller. Adaptive switches were used for the R, L, ZR, and ZL buttons. Mounting the controller on a laptop tray and elevated on foam aided in the grip and allowed Lucy to interact with the joysticks. The switches and controller were paired using co-pilot with the Xbox Adaptive Controller. Finally, the Xbox Adaptive Controller was connected to the Nintendo Switch using an the [Titan 2 adapter](#) (no longer available).

Software

Link to full article: <https://www.playstation.com/en-ca/games/the-last-of-us-part-ii/accessibility/>



Gamer Goal

There is no specific gamer for this section but rather a showcase of in-game settings. *The Last of Us 2* game is often renowned for its in-game settings with its variety as well as relying on the adaptive gaming community for input. This game is a story action-adventure game that relies on fast paced combat and a diverse set of controls.

Solution

The Naughty Dog studio developed a larger number of configurable options for players to customize their experience. With settings around vision, hearing, and motor accessibility the in-game settings allow gamers to play the way they want to. A photo of the high contrast display can be seen below as an example:

