

**Capstone Proposal: Is it Feasible to Create an Adaptive Gaming Program on a College  
Campus?**

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### **Abstract**

The Adaptive Gaming Program (AGP) at the University of Missouri helps students with disabilities identify and overcome barriers to a highly-valued leisure occupation: video gaming. By integrating adaptive devices at the Assistive Technology Adaptation and Training Lab, the AGP enhances gaming experiences and promotes inclusivity. Through targeted recruitment, students receive hands-on support to set up personalized gaming solutions. The program's effectiveness is assessed using QUEST 2.0 (Quebec User Evaluation of Satisfaction with Assistive Technology) and PIADS (Psychosocial Impact of Assistive Devices) surveys guided by a licensed occupational therapist. This initiative not only improves gaming accessibility but also sets a model for similar programs nationwide, fostering greater independence and social connectedness for students with disabilities.

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### **Literature Review and Problem Statement**

Video gaming is a valued leisure activity and daily occupation that provides intellectual stimulation, visual perception, social engagement, and more for over 37% of the world population – more than 3 billion people worldwide (Gilbert, 2022). Approximately 92% of people living with disabilities play video games (Mut, 2019). Cooperative or competitive games with friends are played by more than 80% of gamers, which indicates that video gaming can positively impact disabled individuals' quality of life and social connectedness with others (Entertainment Software Association, 2022; Jones & Cotè, 2019). When participation in video games is difficult or inaccessible, individuals with disabilities may feel socially disconnected and dependent rather than connected and independent. Adaptive gaming, which uses various equipment intended to bridge the gap between the game's demands and the person's ability, is important to these individuals (Jones & Cotè, 2019). With the adaptive gaming equipment, they gain a vital occupation and communicative avenue.

Students with disabilities may find it challenging to play video games due to a mismatch between their abilities and the game's demands (Jones & Cotè, 2019). Students with physical disabilities may struggle with handheld controllers featuring numerous buttons. Students who have cognitive impairments or delayed processing may find navigating fast-paced games that require quick decision-making or quick-time events difficult. Colorblind students might struggle to distinguish characters on-screen from the background or items their character can pick up versus static objects. In many instances, even a seemingly 'mild' disability can turn gaming into a more challenging or uncomfortable experience rather than an enjoyable one.

Accessibility concerns in video gaming are generally categorized by three types of demands: visual or sensory, cognitive, and motor (Fagan, 2022). Historically, if any of these

categories were neglected or surpassed the capabilities of the individual gamer, it would result in the gamer being unable to play that video game. In recent years, though, the landscape of accessible gaming has expanded significantly. Initially spearheaded by non-profit organizations such as AbleGamers, Warfighter Engaged, and Makers Making Change, these organizations have been able to reverse engineer video game controllers. With the information gained from reverse engineering, these organizations have been able to modify the controllers for people with disabilities and are readily selling them. The success of these initiatives have prompted major video game companies to follow suit, developing and promoting their own accessible controllers, such as the Microsoft Adaptive Controller for Xbox and the Sony Access Controller for PlayStation.

Outside of hardware components such as these accessible devices, software has been added and expanded upon as well. For example, implementing colorblind software settings and enhanced audio cues has opened new possibilities for blind gamers. Incorporating straightforward in-game toggles, such as extending decision-making time or reducing gameplay speed, can assist gamers with cognitive disabilities in keeping pace with the usually fast-paced action of some video games (Bierre et al., 2022). The quick evolution of accessible hardware and software has allowed a wider range of gamers with disabilities to play video games. However, a significant number of these gamers are unaware of the various types of assistive devices available (Bierre et al., 2022). This unawareness of assistive devices available is a gap in occupational therapy and video gaming literature.

Adapted gaming devices are made specifically to be compatible with modern consoles – the Nintendo Switch, Xbox Series X/S, and PlayStation 5. Many examples of common adaptive gaming devices fall into different categories, including joysticks, foot pedal devices, momentary

activation switches, sip-and-puff devices, and specific handheld controllers. These handheld controllers can have most or all of their buttons and thumbsticks swapped with different controls and thumbsticks that work best for the individual. PlayStation and Xbox also have their own specific adaptive gaming controller that can be purchased separately from their gaming consoles, which are swappable and adaptable to fit each individual's unique gaming needs.

Playing video games can be considered an Activity of Daily Living (ADL) for those who play frequently (Occupational Therapy Practice Framework, 2020). Recreational leisure activities, including video games, can directly and indirectly target issues such as positive effects on health and well-being (Labbé et al., 2019). Recreational leisure activities may result in higher independence levels for disabled individuals and an increased social participation rate (Labbé et al., 2019). These types of recreational leisure activities may also improve an individual's "physical and psychological health, independence", and provide a "sense of belonging and enjoyment" (Labbé et al., 2019). Creating inclusive physical environments within a college campus offers students with disabilities the chance to participate in their preferred recreational activities and seek social support, thereby enhancing their chances of successfully completing college (Abes & Wallace, 2018). Therefore, being able to play video games without barriers is crucial for individuals with disabilities who find enjoyment and leisure out of them.

Many college students play video games, with over 79% saying they occasionally or regularly play them (Young Gamers and Gamblers Education Trust, 2019). Playing video games for as little as 30 minutes has been shown to enhance inhibitory control, working memory, abstract reasoning, decision-making, and problem-solving abilities (Buelow, 2015). Educators have even acknowledged the cognitive benefits of integrating gaming into the classroom and have utilized video games to enhance didactic learning experiences (Zielinski, 2019). This

information holds true even when the game content may not directly correlate with the class (Zielinski, 2019). Video games offer many individuals significant social and cognitive advantages, with particular relevance among college students.

Even though over 9% of students self-identify as having some type of disability, less than half of college students with a disability actually register for formal disability support services through their college (Lechtenberg et al., 2012; De Los Santos, 2019). Students who identify as having a disability are considered more "at risk" of dropping out of college than their peers (Heisserer & Parette, 2002). For students with disabilities, social support is the most common predictor of a positive grade point average and is shown to have the biggest impact on how well they do in college (De Los Santos, 2019).

The University of Missouri–Columbia (Mizzou) opened a new space dedicated to student video gamers at the beginning of 2023 called the Gaming Lounge. Free to college students on weekdays and for a small fee on weekends, Mizzou students can play video games alongside like-minded students and grow social connections and support. The Gaming Lounge also hosts events, holiday parties, social get-togethers outside of the Gaming Lounge, and more. However, some student video gamers on campus have disabilities and have difficulty accessing and playing video games. Currently, there is no adaptive equipment or program that pairs students with disabilities with the specific types of equipment and devices they need to play video games successfully. Therefore, this capstone project aims to answer whether creating an Adaptive Gaming Program is feasible on a college campus.

### **Theoretical Framework**

Creating this Adaptive Gaming Program best fits the Person-Environment-Occupation (PEO) Model. This model involves the dynamic relationships between the person, the varied

contexts with the environment, and the activities, tasks, and occupations (Ambrose & Ghanouni, 2020). It highlights occupational performance that is shaped by the interconnection of the person, the environment, and the occupation (Ambrose & Ghanouni, 2020).

The “Person” component of the PEO Model emphasizes the unique characteristics, abilities, and limitations of individuals (Ambrose & Ghanouni, 2020). This component corresponds to students with disabilities who have diverse needs and preferences. Recognizing and addressing the specific challenges faced by each participant is crucial for tailoring adaptive gaming solutions that align with their abilities and enhance their gaming experience. By focusing on the individual’s capabilities and barriers, we can optimize their occupational performance through adaptive gaming devices and strategies.

The “Environment” component of the PEO Model encompasses the physical, social, and cultural contexts in which individuals engage in occupations (Ambrose & Ghanouni, 2020). The Gaming Lounge environment plays a pivotal role in shaping the gaming experiences of individuals with disabilities. The accessibility, inclusivity, and adaptability of the Gaming Lounge are crucial factors that directly impact students’ engagement in adaptive gaming. While this Adaptive Gaming Program will first begin at the Assistive Technology Adaptation and Training Lab, the results will translate to the Gaming Lounge for future use. Creating a space where individuals with disabilities can connect, share experiences, and access adaptive gaming resources also affects their social environment, which influences their overall well-being.

The “Occupation” component of the PEO Model focuses on activities, tasks, and roles that individuals engage in (Ambrose & Ghanouni, 2020). Playing video games is an occupation, and this project aims to ensure that individuals with disabilities can actively participate in this leisure activity. The adaptive gaming devices and support provided align with the principles of

the PEO Model by enhancing the individuals' ability to perform and enjoy this specific occupation. The measures used for this project reflect the importance of evaluating the impact of the Adaptive Gaming Program on the participants' occupational performance. These measures assess satisfaction with assistive devices, service delivery, and the broader psychosocial well-being influenced by adaptive gaming interventions.

In summary, the Person-Environment-Occupation Model is well-suited for this program as it considers the dynamic interplay between individuals, their environment, and the specific occupation of playing video games (Ambrose & Ghanouni, 2020). A holistic and person-centered approach to address the unique needs of students with disabilities in the gaming context is emphasized by incorporating this model.

### **Goals for Capstone Project**

The first goal of my capstone project was to establish an overall evaluation protocol. The protocol included creating templates for documenting successful gaming setups and training materials so that staff and future occupational therapy students feel equipped in this unique area of practice. I trained occupational therapy students who are actively participating in the Assistive Technology Adaptation and Training Lab adaptive gaming portion so that they can assist with the AGP.

The second goal of my capstone project was to create an Adaptive Gaming Program at the Assistive Technology Adaptation and Training Lab at the University of Missouri – Columbia. First, adaptive gaming devices and materials were acquired and assimilated at the lab. It also included making space at the lab for the Adaptive Gaming Program and creating a system for setting up, taking down, and locking up consoles and devices. I also marketed the Adaptive Gaming Program at the lab. Advertisements included sending out mass emails to the Disability

Center, emailing deans and/or vice chairs, emailing college student organizations, and word-of-mouth. Spreading the word can help mitigate the gap identified earlier of individuals being unaware of assistive technology being available for video gaming.

The third goal was to measure the efficacy of the Adaptive Gaming Program. It included getting IRB approval to complete the study, collecting the data, and then analyzing it afterward. It also tied into the first goal, where the data can determine whether the gaming setup succeeded and if it should be carried out at the Gaming Lounge in the future with the help of other occupational therapy capstone students.

The fourth and final goal was to disseminate the results of the Adaptive Gaming Program. It included identifying the right target (e.g., journal, conference) to display the study results.

### **Methods**

This program examined the feasibility of creating an Adaptive Gaming Program on a college campus. Outcomes from this research study could also lead to the development of Adaptive Gaming Programs throughout other college campuses, high schools, and even inpatient or outpatient facilities.

### **Setting**

This capstone project took place on the University of Missouri campus at the Assistive Technology Adaptation and Training Lab. Currently enrolled Mizzou students who identify as having a disability, are 18+, and who are interested in the Adaptive Gaming Program could set up an appointment via email. During scheduled appointments, I would be present to assist students in configuring adaptive gaming equipment that best fits their needs.

### **Participants**

This study was open to any currently enrolled student at the University of Missouri who are 18+ years old and self-identify as having a disability. I recruited participants from the last interest survey who included their email as well as through targeted advertisements. I had anticipated recruiting up to 25 students max.

### **Project Methods**

During my scheduled adaptive gaming time at the Assistive Technology Adaptation and Training Lab, I was going to help students with disabilities identify games that can be played, introduce adaptive devices that can help them access the games, and set up and configure the devices for personal use. I was also going to assist students on how to set up the devices themselves or with the help of another occupational therapist student. In the future, Gaming Lounge staff will also assist with this setup. Once a student finds a setup that meets their needs, I would:

- Document that setup for future use in the Assistive Technology Adaptation and training Lab and eventually the Gaming Lounge,
- Provide detailed information about the setup for the individual's own use such as pictures, videos, and step-by-step instructions, and
- Provide links to purchase equipment for their own home use if interested.

Students who used the adaptive gaming service would have been asked to complete the QUEST 2.0 (Quebec User Evaluation of Satisfaction with Assistive Technology) and the PIADS (Psychosocial Impact of Assistive Devices) surveys after their visit, which they could decline if they chose to do so. After the student consented, both instruments would be delivered via school email using the REDCap data collection platform.

The **QUEST 2.0** is a 12-item self-report instrument with a 5-point Likert-style response scale. The 12 questions are split into two subscales: eight items regarding satisfaction with an assistive device and four items regarding satisfaction with the service that delivered the device. The service subscale consists of four questions regarding service delivery, repairs and servicing, professional services, and follow-up services, with responses ranging from “1 - not satisfied at all” to “5 - very satisfied.” The QUEST 2.0 has exceptional construct validity; mean service subscale scores correlate with overall satisfaction (Spearman’s  $\rho \geq 0.71$ ,  $p < .001$ ) within each of the ten types of assistive devices.

The **PIADS** is a 26-item self-report instrument with a 7-point Likert-style response scale. All 26 questions ask how an adaptive device (e.g., an accessible gaming setup) impacts some aspect of the user’s psychosocial well-being. Users rate each item (e.g., happiness, independence, self-esteem, quality of life, sense of control, ability to participate) on a scale from -3 (decreases) to +3 (increases). The psychometric properties of the PIADS are well-established among people with a wide variety of conditions. The standard error of measurement is 0.26, .38, and .36 across the competence, adaptability, and self-esteem subscales, and internal consistency coefficients (Chronbach’s  $\alpha$ ) is  $>.9$  for all three subscales (Harada et al, 2014).

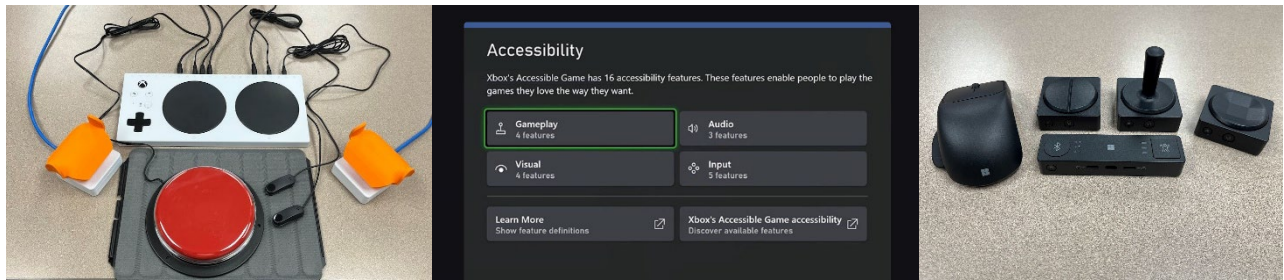
I would have individually report descriptive statistics on the QUEST 2.0 subscore and all four items. Together, these values would describe satisfaction with the assistive gaming service provided. I would compare these findings to existing literature to better understand satisfaction with the adaptive gaming service in relation to other interventions.

I would also report descriptive statistics on the PIADS and all 26 questions individually. Together, these responses would have told me how the adaptive gaming service impacted students’ psychosocial well-being. I would have reported measures of central tendency (mean,

median, standard deviation) for all items. These results would have provided crucial guidance on where future efforts should be focused. Future adaptive gaming efforts and research will be tailored to focus on the specific areas of psychosocial well-being that are positively impacted by the adaptive gaming service.

**Intervention Materials**

Under the direction of my capstone mentor, a licensed occupational therapist, I provided the bulk of the adaptive gaming service. This service would have included many different types of adaptive equipment, including hardware, software, and mounting solutions (Figure 1).



**Figure 1. Adaptive gaming equipment.** Xbox Adaptive Controller with off-the-shelf switches and custom-made joysticks (Left), Xbox accessibility settings on the Xbox Series X (Center), Microsoft accessible accessories (Right).

Interested students could set up appointments in the lab to directly support them with disabilities in identifying, selecting, setting up, and testing adaptive equipment. In the future, after students have attended the lab and have identified an adaptive gaming setup that works best for them and their disability, Gaming Lounge staff can help students set up existing solutions.

**Capstone Timeline**

Table 1

*Time Frame of Capstone Project*

WEEK	EXPECTED RESULTS
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1	Established evaluation protocol. Gathered adaptive gaming devices and material and assimilated them at the lab.
2	Made space at the AT-AT Lab for the Adaptive Gaming Program and materials.
2 through 5	Created templates for documenting successful gaming setups and what equipment or devices are available in the lab.
3 through 5	Created training materials so that staff and future OT students know what they're doing.
4	Obtained IRB approval to do the study.
4 through 8	Created adaptive gaming staff training material and successful setups for every console. Created checkout sheet for OT students.
4 through 11	Trained occupational therapy Evidence-Based Practice students.
5 through 14	Advertised Adaptive Gaming Program to various sources on campus. Reached out to Mizzou student organizations, Deans, Presidents, and Vice Chairs.
7	Trained a nurse and social worker on basic Xbox adaptive gaming equipment. Toured Ability KC's adaptive gaming setup at their outpatient facility. Identified the right target (e.g., journal, conference, etc.) to display the results.
8	Presented to the University of Missouri's Disability Center about the AGP and what it can offer to students. Officially partnered up with the Disability Center to promote the AGP.
10	Offered an adaptive gaming demonstration at an engineering summer camp for local high school students interested in engineering and creating video games.
11	Submitted capstone proposal for a 1-hour short course at the MOTA conference on October 25-26, 2024.
12	Got everything submitted to the University of Missouri Disability Center for the Disability Culture Month Event.
13 through 14	Presented results of capstone experience.
14	Officially moved into the Gaming Lounge. Onboarded frontline Gaming Lounge staff on the basics of the AGP.
August 19, 2024	Soft launch the AGP at the Gaming Lounge.
September 24, 2024	Disability Culture Month Event for the AGP at the Gaming Lounge.

October 26, 2024	1-hour short course about my capstone at the MOTA conference at St. Louis University – submitted for consideration.
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### **Results**

Despite extensive efforts to recruit participants for the AGP at the University of Missouri, no students participated in this study during the time available. Various recruitment strategies were employed, including an in-person presentation at the University of Missouri Disability Center, emails to Deans and professors of multiple departments, outreach to on-campus student organizations, and an adaptive gaming demonstration at an engineering summer camp for local high school students interested in engineering and creating video games. In spite of these efforts, no data was collected from the QUEST 2.0 or the PIADS.

### **Discussion**

The purpose of this capstone project was to establish and evaluate the effectiveness of an Adaptive Gaming Program (AGP) at the University of Missouri in enhancing the gaming experiences and social connectedness of students with disabilities. Staff training material and documents were created to help future occupational therapy students and Gaming Lounge staff with the setup and takedown of adaptive gaming materials and consoles. Despite recruitment efforts starting when the University of Missouri's summer semester began, the lack of participants during the time available was primarily due to the timing of the capstone project. The project took place during the college's summer semester when most students were off-campus, and many classes were online or asynchronous. We anticipate an increase in interested participants beginning on August 19, 2024, with the start of the fall semester and the return of traditional in-person classes.

Another setback encountered was the location of the AGP. Initially, we planned to move the AGP to the University of Missouri's Gaming Lounge. However, shortly before the capstone experience began, we were informed that this was not possible because the Gaming Lounge would be closed over the summer except for a few summer camps unrelated to adaptive gaming. As a result, the AGP remained at the Assistive Technology Adaptation and Training (AT-AT) Lab for the duration of the capstone experience. Although this was an unexpected setback, the AGP could still operate effectively in this location throughout the entirety of the capstone experience.

On August 14, 2024, we successfully moved the adaptive gaming equipment, devices, and consoles into the Gaming Lounge. Initially, the limited storage space in the Gaming Lounge required us to keep all of the equipment at the AT-AT Lab throughout the capstone experience. With the transition into the Gaming Lounge, we now have sufficient equipment at both locations. Each site is equipped with one of each console and at least one of each adaptive gaming device, allowing participants to trial adaptive gaming equipment at the whichever location best fits their needs in terms of location and time availability.

### **Strengths and Limitations**

The AGP at the University of Missouri demonstrated several strengths throughout its implementation. One notable strength was the quick accumulation of adaptive gaming devices and equipment at the AT-AT Lab, which allowed for a broad range of equipment and consoles to be available for trial. These adaptive gaming devices and equipment were organized and ready to go by day one of the capstone experience. Also, the successful relocation of the adaptive gaming equipment to the Gaming Lounge on August 14, 2024, enhanced accessibility by ensuring participants could access the AGP's resources at two on-campus locations – the AT-AT Lab and

the Gaming Lounge. Collaborating with other occupational therapy students also provided a solid foundation for future program evaluation and success. The occupational therapy students' involvement not only facilitated the continuity of the AGP but also contributed to the program's development and future expansion, wherever that may be.

However, the AGP also encountered several limitations. The timing of the capstone experience during the summer semester, when student presence on-campus was minimal, and many classes were online or asynchronous, significantly impacted recruitment efforts. This timing issue led to lower participant engagement than anticipated.

An area for improvement was the initial inability to relocate the AGP to the Gaming Lounge due to its summer closure and limited storage space, requiring us to keep all AGP equipment at the AT-AT Lab during the capstone experience. Although the AGP continued to operate effectively at the AT-AT Lab, the delay in moving to the Gaming Lounge may have restricted the program's exposure during the capstone experience and delayed the training of Gaming Lounge staff.

These limitations highlight the need for careful planning regarding timing and location when establishing similar adaptive gaming programs in the future. Addressing these factors could increase participant engagement and the program's efficiency. Despite these challenges, the AGP's strength in equipment accumulation, OT student involvement, advertising collaboration and outreach, and planned expansion provides a solid foundation for future success and further development.

### **Implications for Future Practice**

During the capstone experience, two 2nd year occupational therapy students received training in the fundamentals of adaptive gaming setup and the three console-specific adaptive

gaming devices. At the University of Missouri, all occupational therapy students take a class called Evidence-Based Practice, which require students to choose a topic to research and write a paper about. These two OT students had chosen adaptive gaming as their research topic for the year. After my capstone experience concludes, they will assume responsibility for running the AGP at both the Gaming Lounge and the AT-AT Lab alongside a 3rd year student. The 3rd year student will also expand on the AGP during his capstone experience, starting in early 2025. These occupational therapy students will continue to survey participants using the QUEST 2.0 and PIADS to gather data and assess the program's impact and feasibility on the University of Missouri campus.

The AGP's future goal is to expand its reach to additional locations in Columbia, Missouri, including Mizzou Therapy Services and the local Children's Hospital. This expansion aims to broaden access to adaptive gaming resources and support for a broader range of individuals with disabilities in the community, targeting a wider range of ages. Future occupational therapy capstone students will have the opportunity to develop and implement AGPs at these locations, continuing the initiative and adapting it to meet local and community needs.

In addition to these plans, an AGP Open House will be held at the Gaming Lounge on September 24, 2024, from 4-6 pm. In September, the University of Missouri hosts a Disability Culture Month with various events, and this drop-in event is open to students, faculty, and staff to explore adaptive gaming equipment and devices. Attendees can engage with PCs, the PlayStation 5, Xbox Series X, and Nintendo Switch consoles. Adaptive gaming occupational therapy team members will be present to discuss attendees' interests and needs, provide demonstrations, and facilitate play-testing of popular adaptive gaming devices. The event aims to

raise awareness about the AGP, foster learning, and offer an enjoyable gaming experience for all participants.

Along with these initiatives, submission to the 2024 Missouri Occupational Therapy Association (MOTA) conference was sent on July 29, 2024. If accepted, I will present a 1-hour short course about my capstone experience at the conference, which will be held on October 25-26 at St. Louis University. The conference is an excellent opportunity to expand awareness about adaptive gaming and highlight occupational therapists' role in supporting gamers with disabilities.

The conference presentation will cover the development and implementation of the AGP, the challenges faced, and the lessons learned. It will also provide insights into how similar adaptive gaming programs can be established on other college campuses and other local facilities. This platform will showcase the approaches taken and materials created and foster discussions on best practices and collaborative strategies to enhance gaming accessibility for college students with disabilities.

### **Conclusion**

Creating the AGP at the University of Missouri represents a significant step toward enhancing gaming accessibility and inclusivity for college students with disabilities. This capstone project aimed to integrate adaptive gaming devices for college students and evaluate the AGP's impact on participants' gaming experiences and social connectedness. Although the project faced several challenges, mainly due to the timing of the capstone, it successfully demonstrated the potential benefits of such an initiative. It also developed the groundwork needed to grow the AGP on campus successfully.

Despite the lower-than-expected recruitment during the summer semester, the relocation of adaptive gaming equipment to the Gaming Lounge, the success in creating staff training material and documents, and the ongoing involvement of occupational therapy students have laid a strong foundation for the AGP's continued success at both the Gaming Lounge and AT-AT Lab. The AGP's setup in two separate locations ensures broader accessibility and availability for interested participants.

In conclusion, while challenges were encountered, the AGP's achievements and ongoing efforts confirm the program's potential to make a meaningful difference in the lives of college students with disabilities. The successful implementation and planned expansion of the AGP highlight the importance of adaptive gaming as a tool for enhancing accessibility, promoting social connectedness, and enriching the college experience for all participants (Jones & Cotè, 2019).

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## Appendices

### Appendix A. IRB Application Exemption Form



**Institutional Review Board**  
**University of Missouri-Columbia**  
 FWA Number: 00002876  
 IRB Registration Numbers: 00000731, 00009014

310 Jesse Hall  
 Columbia, MO 65211  
 573-882-3181  
 irb@missouri.edu

May 23, 2024

Principal Investigator: Rachel Nichole Fagan  
 Department: Therapies

Your IRB Application to project entitled Preliminary Efficacy of an Adaptive Gaming Program on a College Campus was reviewed and approved by the MU Institutional Review Board according to the terms and conditions described below:

IRB Project Number	2102226
IRB Review Number	407615
Initial Application Approval Date	May 23, 2024
IRB Expiration Date	May 23, 2025
Level of Review	Exempt
Project Status	Active - Exempt
Exempt Categories (Revised Common Rule)	45 CFR 46.104d(2)(ii)
Risk Level	Minimal Risk
HIPAA Category	No HIPAA
Approved Documents	Informed Consent & Assent - Written Consent Form: #704008
	Other Study Documents - Instruments (i.e. surveys): #705393
	Other Study Documents - Instruments (i.e. surveys): #706525
	Recruitment Materials - Recruitment Flyer: #702910

The principal investigator (PI) is responsible for all aspects and conduct of this study. The PI must comply with the following conditions of the approval:

1. No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date.
2. All study changes must be IRB approved prior to implementation utilizing the Exempt Amendment Form.
3. Major noncompliance must be reported to the MU IRB on the Event Report within 5 business days of the research team becoming aware of the deviation. Major noncompliance are deviations that caused harm or have the potential to cause harm to research subjects or others, and have or may have affected subject's rights, safety, and/or welfare. Please refer to the MU IRB Noncompliance policy for additional details.

## Appendix B. Written Consent Form

**Written Consent to Participate in a Research Study**

**Project Title:** Capstone Proposal: Is it Feasible to Create an Adaptive Gaming Program on a College Campus?

**Principal Investigator Name:** Rachel Fagan & William Janes

**IRB Assigned Project Number:** #2102226

**Key Information About the Study**

You are being asked to participate in a research study. The purpose of the research study is to address the accessibility barriers faced by students with disabilities in mainstream gaming environments by establishing an Adaptive Gaming Program within a college campus setting. You are being asked to fill out two surveys about your experience with the Adaptive Gaming Program. Some possible risks may include fatigue after filling out the surveys.

Please read this form carefully and take your time. Let us know if you have any questions before participating. The research team can explain words or information that you do not understand. Research is voluntary and you can choose not to participate. If you do not want to participate or choose to start then stop later, there will be no penalty or loss of benefits to which you are otherwise entitled.

**Purpose of the Research**

You are being asked to participate in this study because you are an enrolled student at the University of Missouri who self-identifies as having a disability. The purpose of the study is to not only enhance the gaming experiences of college students with disabilities but also serve as a model for similar initiatives nationwide.

**What will happen during the study?**

You are being asked to fill out two surveys about your experience with the Adaptive Gaming Program. These surveys will last approximately 10 minutes. There will be about 25 participating in this study.

**What are the expected benefits of the study?**

You may or may not benefit as a result of your participation in the study. Outcomes from these research surveys could lead to the development of Adaptive Gaming Programs throughout other college campuses, high schools, and even inpatient or outpatient facilities.

**What are the possible risks of participating in this study?**

There are minimal risks expected when taking part in this study. Some possible risks include fatigue after filling out the surveys.

To help lower these possible risks, we will offer as many breaks as needed and water to limit fatigue.

**What other choices do I have if I don't want to be in this study?**

You are not required to be in this study. You can simply choose not to participate. You can look for other research projects you may be interested in instead of this study.

**Will I receive compensation for taking part in this study?**

You will not be compensated for taking part in this study.

**Are there any costs for participating in this study?**

You should not expect any additional costs from participating in this study.

Other costs to you from being in this study may include transportation, parking, childcare, and/or time off work.

You should discuss any questions about costs with the researchers before agreeing to participate.

**Will information about me be kept private?**

The research team is committed to respecting your privacy and keeping your personal information confidential. We will make every effort to protect your information to the extent allowed by law. Your records will be given a code number and will not contain your name or other information that could identify you. The code number that connects your name to your information will be kept in a separate, secure location.

When the results of this research are shared, we will remove all identifying information so it will not be known who provided the information. Your information will be kept as secure as possible to prevent your identity from being disclosed.

**Who do I contact if I have questions or concerns?**

If you have questions about this study or experience a research-related injury, you can contact the University of Missouri researcher at [janesw@health.missouri.edu](mailto:janesw@health.missouri.edu) or 573-882-4183.

If you have questions about your rights as a research participant, please contact the University of Missouri Institutional Review Board (IRB) at 573-882-3181 or [muresearchirb@missouri.edu](mailto:muresearchirb@missouri.edu). The IRB is a group of people who review research studies to make sure the rights and welfare of participants are protected.

**Do I get a copy of this consent?**

You will receive a copy of this consent for your records.

We appreciate your consideration to participate in this study.

**Consent Signatures**

<b>Subject's Signature</b>	<b>Date</b>

Appendix C. PIADS Survey



**Occupational Therapy**  
 College of Health Sciences  
 University of Missouri

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**PIADS 2**

Each word or phrase below describes how using an assistive device may affect a user. Some might seem unusual but it is important that you answer every one of the 26 items. So, for each word or phrase, check the appropriate box to show how you are affected by using the device.

Like all research activities, your participation is voluntary. Please note that this form cannot be scored unless all items are completed.

	(Decreases)				(Increases)		
	-3	-2	-1	0	1	2	3
competence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
happiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
independence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
adequacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
confusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
efficiency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
self-esteem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
productivity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
frustration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
usefulness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
self-confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
expertise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
skillfulness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
well-being	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
capability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
quality of life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sense of power	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sense of control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
embarrassment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
willingness to take chances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ability to participate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
eagerness to try new things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ability to adapt to the activities of daily living	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ability to take advantage of opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Submit

Appendix D. QUEST 2.0 Survey



**Occupational Therapy**  
**College of Health Sciences**  
 University of Missouri

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**Quest 2.0**

The purpose of this questionnaire is to evaluate how satisfied you are with your assistive device(s) and the related services you experienced. The questionnaire consists of 8 satisfaction items per device and 4 satisfaction items for related services. For each of the items, rate your satisfaction with your assistive device(s) and the related services you experienced by using the following scale:

- not satisfied at all
- not very satisfied
- more or less satisfied
- quite satisfied
- very satisfied

Question	Satisfaction	Comments
<p><b>How satisfied are you with the service delivery program (procedures, length of time) in which you obtained your assistive device?</b></p>	<ul style="list-style-type: none"> <li><input type="radio"/> not satisfied at all</li> <li><input type="radio"/> not very satisfied</li> <li><input type="radio"/> more or less satisfied</li> <li><input type="radio"/> quite satisfied</li> <li><input type="radio"/> very satisfied</li> </ul>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>
<p><b>How satisfied are you with the repairs and servicing (maintenance) provided for your assistive device?</b></p>	<ul style="list-style-type: none"> <li><input type="radio"/> not satisfied at all</li> <li><input type="radio"/> not very satisfied</li> <li><input type="radio"/> more or less satisfied</li> <li><input type="radio"/> quite satisfied</li> <li><input type="radio"/> very satisfied</li> </ul>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>
<p><b>How satisfied are you with the quality of the professional services (information, attention) you received for using your assistive device?</b></p>	<ul style="list-style-type: none"> <li><input type="radio"/> not satisfied at all</li> <li><input type="radio"/> not very satisfied</li> <li><input type="radio"/> more or less satisfied</li> <li><input type="radio"/> quite satisfied</li> <li><input type="radio"/> very satisfied</li> </ul>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>

<p><b>How satisfied are you with the follow-up services (continuing support services) received for your assistive device?</b></p>	<p> <input type="radio"/> not satisfied at all  <input type="radio"/> not very satisfied  <input type="radio"/> more or less satisfied  <input type="radio"/> quite satisfied  <input type="radio"/> very satisfied                 </p>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>
<p><b>How satisfied are you with the dimensions (size, height, length, width) of your assistive device?</b></p>	<p> <input type="radio"/> not satisfied at all  <input type="radio"/> not very satisfied  <input type="radio"/> more or less satisfied  <input type="radio"/> quite satisfied  <input type="radio"/> very satisfied                 </p>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>
<p><b>How satisfied are you with the weight of your assistive device?</b></p>	<p> <input type="radio"/> not satisfied at all  <input type="radio"/> not very satisfied  <input type="radio"/> more or less satisfied  <input type="radio"/> quite satisfied  <input type="radio"/> very satisfied                 </p>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>
<p><b>How satisfied are you with the ease in adjusting (fixing, fastening) the parts of your assistive device?</b></p>	<p> <input type="radio"/> not satisfied at all  <input type="radio"/> not very satisfied  <input type="radio"/> more or less satisfied  <input type="radio"/> quite satisfied  <input type="radio"/> very satisfied                 </p>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>
<p><b>How satisfied are you with how safe and secure your assistive device is?</b></p>	<p> <input type="radio"/> not satisfied at all  <input type="radio"/> not very satisfied  <input type="radio"/> more or less satisfied  <input type="radio"/> quite satisfied  <input type="radio"/> very satisfied                 </p>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>
<p><b>How satisfied are you with the durability (endurance, resistance to wear) of your assistive device?</b></p>	<p> <input type="radio"/> not satisfied at all  <input type="radio"/> not very satisfied  <input type="radio"/> more or less satisfied  <input type="radio"/> quite satisfied  <input type="radio"/> very satisfied                 </p>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>
<p><b>How satisfied are you with how easy it is to use your assistive device?</b></p>	<p> <input type="radio"/> not satisfied at all  <input type="radio"/> not very satisfied  <input type="radio"/> more or less satisfied  <input type="radio"/> quite satisfied                 </p>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>

	<input type="radio"/> very satisfied	
<b>How satisfied are you with how comfortable your assistive device is?</b>	<input type="radio"/> not satisfied at all <input type="radio"/> not very satisfied <input type="radio"/> more or less satisfied <input type="radio"/> quite satisfied <input type="radio"/> very satisfied	<input type="text"/>
<b>How satisfied are you with how effective your assistive device is (the degree to which your device meets your needs)?</b>	<input type="radio"/> not satisfied at all <input type="radio"/> not very satisfied <input type="radio"/> more or less satisfied <input type="radio"/> quite satisfied <input type="radio"/> very satisfied	<input type="text"/>

25) Below is the list of the same satisfaction items.  
**PLEASE SELECT THE THREE ITEMS** that you consider to be **the most important to you.**

\* must provide value

- Dimensions
- Weight
- Adjustments
- Safety
- Durability
- Easy to use
- Comfort
- Effectiveness
- Service delivery
- Repairs/servicing
- Professional service
- Follow-up services

**Submit**

## Appendix E. IRB Flyer for AGP Surveys

VOLUNTEERS NEEDED

University of Missouri

# ARE YOU A STUDENT WHO ENJOYS PLAYING VIDEO GAMES?

If you are 18 or older and self identify as having a disability, you may be eligible to participate in this research study.

If you are actively participating in the Adaptive Gaming Program and are interested, you can sign up for this study and fill out a survey about your experience with the program.

#### **YOU MAY QUALIFY IF**

- You are 18 years of age or over
- You are a currently enrolled student at the University of Missouri
- You self-identify as having any type of disability
- You are currently participating in the Adaptive Gaming Program at the Assistive Technology Adaptation and Training Lab

#### **PARTICIPATION INVOLVES**

- One research visit of up to 10 minutes to complete follow-up survey

#### **FOR MORE INFORMATION**

If you have questions or would like to participate, please contact:

William Janes, OTD, MSCI, OTR/L  
 Advisor  
[janesw@health.missouri.edu](mailto:janesw@health.missouri.edu)  
 573-882-4183

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**Principal Investigator: Rachel Fagan, OTD student**

Department of Occupational Therapy | Clark Hall, 801B, 703 S 5<sup>th</sup> St., Columbia, MO 65211

## Appendix F. Flyer to Participate in AGP

# Check Out Our Adaptive Gaming Center!

Do you identify as having a disability and enjoy playing video games or want to learn how? Join us at the University of Missouri's Assistive Technology Adaptation and Training Lab!

## What You'll Do:

- Play video games with various adaptive equipment
- Experiment with new adaptive and accessible gaming devices

## Interested?

- Make an appointment today via email!

## What We Offer:

- Try out different gaming devices, joysticks, and buttons tailored to your needs
- One-on-one support from an occupational therapy student
- Receive a handout with your adaptive gaming setup and where to find or purchase the equipment

## Contact Information:

Rachel Fagan | [umhsshpatatlab@health.missouri.edu](mailto:umhsshpatatlab@health.missouri.edu)



University of Missouri