**Introduction**

This report outlines the results of usability research carried out on our team’s e-commerce website, specifically built for the purpose of purchasing in-game products. The objective of the research was to assess the usability of the website, with a specific focus on its features, page layout, and general design, to ensure that visitors can easily navigate and engage with the site without needing any external help.

**Methodology**

Participants were instructed to complete a series of tasks, simulating the process of navigating and purchasing in an online gaming item shop. The study was conducted in a controlled environment, where participants interacted with the website and completed predefined tasks. These tasks included account creation, character customization, weapon-item exploration, and checkout​​​​. Our participants were broken up into two groups. The first used the “normal” UI with no assistance, and the second completed multiple tasks while blinded and using a screen reader. It is important to note that many of ours users are not familiar with the typical use of screen readers.

The measurements primarily assessed the frequency of mistakes encountered when searching for and adding products to the cart, the efficiency of job completion, and the duration from initiation to checkout for certain situations. The test methodologies encompassed the processes of exploration, diagnosis, and validation by means of scenario completion. For the purpose of data collection these tasks were broken down into sub-tasks, each of which we timed and collected the number of errors when completed.

**Findings**

*Account Creation (Task 1):*

Participants created and logged into their accounts. The average time for account creation was measured​​ in this task.

*Character Customization (Task 2):*

For task 2, our test users added five items to the cart and then removed two. Measurements included the time taken to add and remove items and the number of errors made in the same process. Task 2.1 in our data is the measurement in seconds, and 2.2 is the number of errors.

*Weapon Exploration (Task 3):*

The third task involved using the search bar and categories dropdown to find and add items to the cart. Here task 3.1 measured the time taken for searching and adding items, 3.2 the time taken navigating categories and adding the item to the cart, and task 3.4 was the time taken adjusting item quantities​​. Task 3.3 here is the number of errors in completing all 3 timed tasks.

*Checkout (Task 4):*

In task 4, participants completed the purchase of items added to their cart. The time taken to complete the checkout was recorded​​.

*Debriefing:*

Feedback was gathered on any confusion or issues faced by participants​​.

**Analysis**

*Task Performance:*

Task 4 (Checkout) was the most time-consuming task for both groups of users, indicating potential complexity or inefficiencies in the checkout process. Here we found it took on average, roughly 44 seconds for the users to complete the process using the normal GUI and closer to 6 minutes, 24 seconds to complete it with a screen reader. That means it took more than 8 times longer for a user with a screen reader to complete this process. This alludes to a potential issue with the checkout process using the screen reader, which did match some of our feedback.

Task2.2 (Character Customization) had the highest error rate, suggesting issues with the cart management interface or item selection process. It is important to note that there were two total errors for the normal UI group, and 18 for the screen-reader group. This also implies more time should be spent on usability functionality with the site. Again, our feedback also alludes to this.

*Issues and Recommendations:*

There are two important areas to target based on the data we found. The first, as stated in our task performance section, we recommend implementing further accessibility features to the UI. There was a distinct lack of feedback when filling out the checkout form while using a screen reader. Implementing proper ARIA tags to these fields may increase the amount of time it took to complete checkout.

The cart is the other important area for improvement. This screen experienced the most errors implying there may be an issue with understandability and usability, especially while using a screen reader. Improving the clarity and usability of the cart management interface to reduce errors during item selection and removal should be investigated further. It is especially important to make further changes to add accessibility features to this and other pages as it should reduce the number of errors.

*Successes:*

Tasks with lower completion times and fewer errors indicate successful design elements. These aspects should be preserved in future iterations.

*Areas of Uncertainty:*

Further investigation is needed to pinpoint the exact causes of inefficiencies and errors in certain tasks. Subsequent usability tests should focus on these areas.

**Conclusion**

The usability study provided valuable insights into the e-commerce website's design effectiveness. While certain tasks highlighted areas for improvement, others demonstrated successful interface design. As a result of this study, it is readily apparent that future design implementations on this site should focus on accessibility. There were a small number of errors for the normal site users in comparison to the screen reader users and times were significantly shorter. It has helped show our team the importance of designing around using accessibility options like screen readers, and how challenging it is to actually use them.