

# HEURISTIC EVALUATION: ROAD TO SALVATION APP

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## Introduction

Nielsen's 10 Usability Heuristics are a dynamic, widely recognized set of standard evaluations for the usability of a system. These ten heuristics broadly cover the range of issues that may cause errors for end users. Evaluating a system such as *Road to Salvation* is precisely what this tool is designed for.

The following sections present a quick, formatted table overview and a detailed, point-by-point analysis of the *Road to Salvation* app. The detailed analysis contains our recommendations for each evaluated heuristic. We are convinced the application of this heuristic evaluation will dramatically improve the system's usability and reduce the possibility of user error. These improvements stand to give users a significantly improved and more satisfying experience with this app.

## Heuristic Table Overview

Table 1 – Overview notes

<b>Nielsen's 10 Heuristics</b>	<b>Notations</b>
<b>Visibility of system status</b>	Indicators for important inventory items, equipped items, health and movement speed, ammunition, effects related to travel and resting, as well as different zombie models (per movement speed) are all missing or inadequately addressed for usability.
<b>Match between system and real world</b>	Throughout the game, system terms are largely avoided. Terms and functions familiar to game players are used to effectively indicate the function of buttons or operation of mechanics.  Relevant information is sometimes presented out of order or in an illogical manner.
<b>User control and freedom</b>	Menus from the beginning of the game, through the tutorial either lack the ability to quickly exit or are persistent. The game lacks a quick access menu and/or settings menu altogether. Music and audio cannot be stopped from within the game's screen.

<b>Consistency and standards</b>	Visually, the game looks consistent on all menus. Difficulty-wise, Winder seems harder than all levels before and after it. Lastly, enemies attack through walls sometimes.
<b>Error prevention</b>	Clear and concise directions/tutorials are given to the player with not much omitted. Accidental traveling between cities can occur when just checking for data. Audio setting is only accessible in the main menu.
<b>Recognition rather than recall</b>	It may be helpful to add controls to the pause menu when it's added in case the player forgets them as well as the number of resources added.
<b>Flexibility and efficiency of use</b>	Audio settings are well done except there is no mute all button (could be helpful but also not necessary) All options on the main screen are functional After losing, if the user decides to exit the game, there is no save. Double tapping doors while having the gun equipped causes issues in fluidity Respawning respawns you the beginning levels Tutorials should give a pause for users.

<p><b>Aesthetic and minimalist design</b></p>	<p>It is a game, so the main design is not minimalist due to the gameplay which isn't a bad thing.</p> <p>The aesthetic of the game is simple and functional</p> <p>The text can be hard to read and should be changed to something more minimalistic or more in line with the games theme.</p> <p>Misspelled "immune"</p> <p>Game's music and SFX are well done and fitting.</p>
<p><b>Help users cognize, diagnose, and recover from errors</b></p>	<p>Although an incomplete game, the game does help users. Such as losing, the game gives you an option to stop playing or respawn. However, there is no save.</p>
<p><b>Help and documentation</b></p>	<p>There is no help other than the tutorials that come with the game.</p> <p>The credits are well done.</p>

## The Nielsen's 10 Usability Heuristics

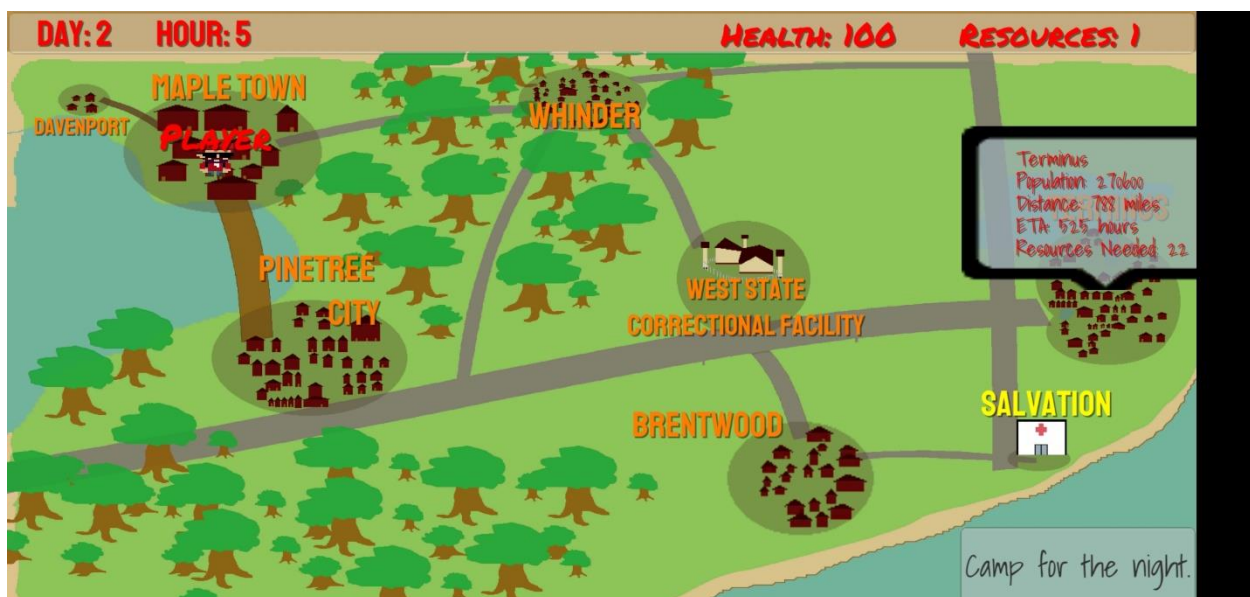
### 1. Visibility of system status

*"The system should always keep users informed about what is going on, through appropriate feedback within reasonable time."*

The first of Nielsen’s usability heuristics is usually one of the most obvious as users attempt to progress within the system. *Road to Salvation* is notably lacking in menus, inventory/item displays, and other important usability metrics. While these do not prevent users from progressing within the system, they can easily confuse, delay, or frustrate users. This leads to a lack of surety, inability to anticipate cause and effect relationships, and distracts the user from interacting with the system.

Many of the provided menus and tooltips are paired with the primary mechanic of movement or forward progress. This means users must use resources or make mistakes to ascertain system status. Elements like this serve to frustrate users and undermine confidence in the system.

Figure 1 – Level Map Tooltip



### Recommendations:

First and foremost a Heads-Up Display (HUD) should be created for in-level use. Several critical pieces of information should always be available to the user, including:

- Health Bar or Percentage
- Movement Speed
- Weapon Equipped & Ammunition
- Number of Resources
- Settings Menu

Additional elements such as “Amount of Resources Left on Map”, “Resource Requirements for Next Map”, or a “Mute Audio” button.

Aside from a HUD, users would benefit from menus and tooltips with more attention to usability elements. Menus currently lack 'easy escape' methods such as a close (X) button, or Yes/No options. Other menus and tooltips may only be accessed by pressing and holding down on the screen. This generates a primary function response, in addition to create a menu or tooltip.

The result is a guaranteed user error. These menus should be static when pressed, and include a Yes/No option to facilitate information gathering, before an action is engaged in.

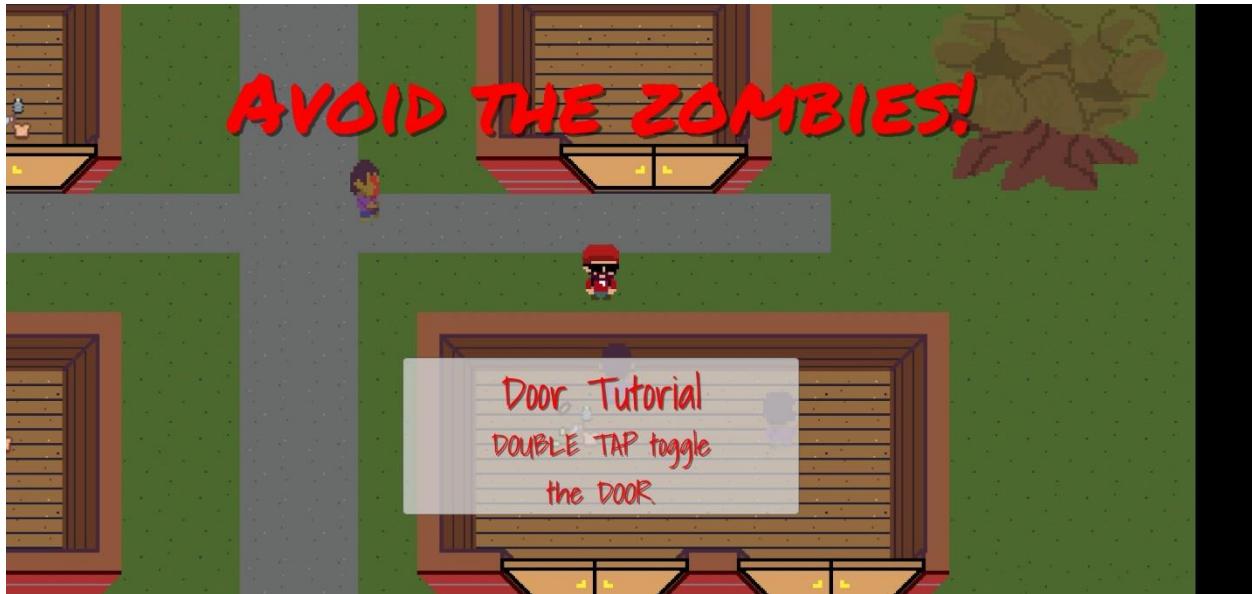
## 2. Match between system and real world

*"The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order."*

The system, *Road to Salvation*, largely speaks the user's language by using familiar phrases which are easily understood within the context of the game. There are elements, such as the menus, which are presented in an inconsistent and illogical order. Menus during the tutorial will not close until the action is completed, while menus on the campaign map perform two functions simultaneously, ensuring user error.

Information displays and certain mechanics fail to meet typical expectations for operation and consistency. When a user encounters a pistol or shotgun in the game, no indication is given for several important functions. How to shoot the firearm is not included when equipping one for the first time. Whether the firearm is equipped, or can be unequipped, is not addressed either. Finally, the amount of ammunition for each firearm is not displayed.

Figure 2 – Tutorial Menu Text



### Recommendations:

While the language shows areas for minor improvement (toggle the DOOR vs open the DOOR), improvements to information display and firearm tutorials should be improved and included. We recommend reviewing tooltips, menus, and information for system-based words to replace them with more accessible, contextual language.

Functions and mechanics not included in the initial tutorial should feature a mini-tutorial or brief introduction to their use. For example, picking up a shotgun or handgun should result in a short tutorial demonstrating how to shoot, which also highlights ammunition count and how to equip or unequip these items.

### 3. User control and freedom

*“Users often choose system functions by mistake and will need a clearly marked ‘emergency exit’ to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.”*

Several of the menus that appear within the game lack an obvious exit function. If users can exit these menus at all, the means they possess to do so is noticeably lacking. User’s control of actions is significantly limited. While movement within an individual level is straightforward, exiting a level to the campaign map can be confusing or difficult.

Once a player has navigated to the campaign map, levels are not easily scouted. The lack of static, transition menus prevents users from attaining the necessary information to progress from one location to another without encountering at least



one error. The lack of these menus and clear, rapid exit functions is likely to confuse and frustrate users, particularly those unfamiliar with independent games.

Figure 3 – Campaign Map Menu



## Recommendations:

The ideal resolution to these issues is to design clear, simple, and effective menus that possess detailed information, yet may be exited with ease. Traveling between levels is the most impactful transition to engage users with a highly functional menu. It may be worth considering adding menu encounters for other functions. For example, transitions between local and area maps or when users equip new items would be significant additions.

## 4. Consistency and standards

*“Users should not have to wonder whether different words, situations, or actions mean the same thing.”*

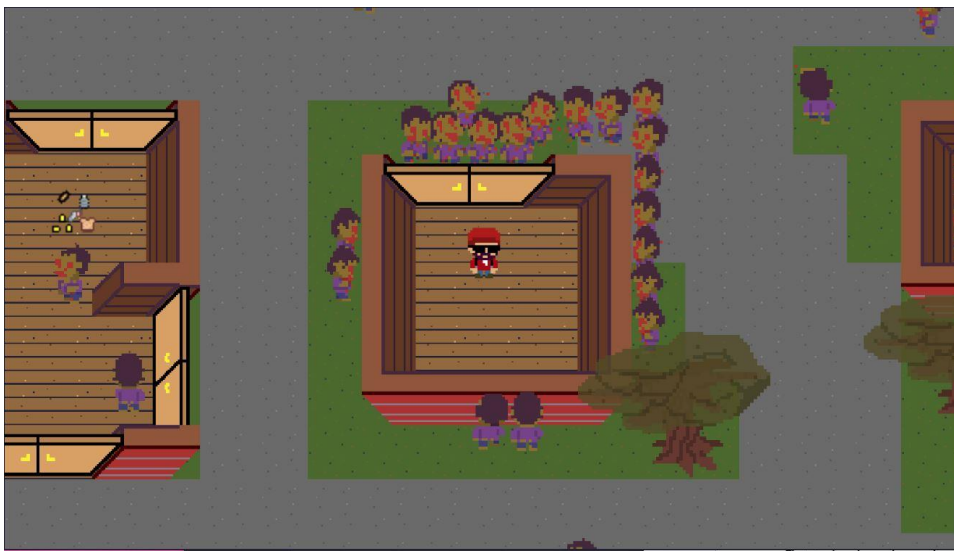
*Road to Salvation* maintains a consistent visual style throughout its levels. Minimalist vector-shading and bold outlines comprise the game’s art style. Environments encountered throughout the game make use of these design elements, producing a signature style.

Notable inconsistencies in difficulty are found within the level “Whinder,” and the level “West State Correctional Facility (WSCF).” Whinder is arguably the most difficult level, as the number of zombies and terrain chokepoints work together to ensure a

high degree of difficulty. WSCF is a difficult level due to a clever design of map obstacles. The prison within the map creates a new level of challenge for users, one which relies on timing as much as speed. The maze-like structure of the prison requires an entirely different approach to successful navigation when compared to square houses and open terrain.

Occasionally, bugs are encountered within the game. Sometimes clipping occurs, in which the player character may walk through a boundary, object, or structure. Infrequently, zombies may attack the user through structures or walls. Rarely, sharp drops in frame rate occur causing delays or jumps which may result in damage to the player character.

Figure 4 – House Surrounded



## Recommendations:

These levels may be improved by a gradual increase in difficulty and complexity. Elements of these levels could be included in prior level maps. Terrain bottlenecks and complex structures could be added a level or two before these. Making these additions would prepare users for the dramatic change in difficulty that they will face in either level.

If these elements could not be incorporated into earlier maps, we recommend adding additional maps or moving these two levels to the end of the campaign map.

## 5. Error prevention

*“Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone*

*conditions or check for them and present users with a confirmation option before they commit to the action.”*

Error prevention is a noticeably diminished element of design in *Road to Salvation*. The tutorials adequately address several user concerns, though lack a few crucial introductory elements. First, the tutorial should address movement speed, the use of guns, camping, and the necessity of gathering resources. Throughout the tutorial, users should be familiarized with menus that remain consistent throughout the game. Quick exit buttons should be present. Transition menus would also be excellent additions. For example, new users should be presented with a quick confirmation menu when entering the map transition zone, so they do not immediately exit the map.

Once on the campaign map, users lack confirmation menus for camping or traveling. Access to a general menu is also missing from this stage. Users may not save progress, exit to main menu, adjust global settings, view credits, or exit the game conveniently from level maps or the campaign map.

### **Recommendations:**

The tutorial should be revamped entirely, with a specially designed level for teaching the damage incursion, movement speed reduction, object interaction, map transition, and interaction with other design elements.

Adding simple menus (with rapid exit features) and transition menus is a necessity for error prevention that must be included in the next product iteration. Global menus should always be accessible from level and campaign maps.

## **6. Recognition rather than recall**

*“Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.”*

Simple gameplay mechanics are adequately explained within the tutorials. However, users may benefit from a HUD which displays health, equipment, resources, ammunition, and move speed. If presented during the tutorials, the basic mechanics related to these variables are more likely to remain recognizable to users, even after extended breaks in gameplay. Lacking these elements is an oversight that should be corrected within the next iteration of *Road to Salvation*.

### **Recommendations:**

Once a pause menu is added, allow the player to see the control mapping and revisit tutorials; gun controls may be particularly hard to memorize. Second, add an indicator showing the amount of resources obtained, current move speed, hit points, ammunition, and weapon equipped. Lastly, allow the player quick access to how many resources are needed to go to each location, so that the player doesn't have to constantly leave locations to check how many resources they need to proceed toward the next level.

## 7. Flexibility and efficiency of use

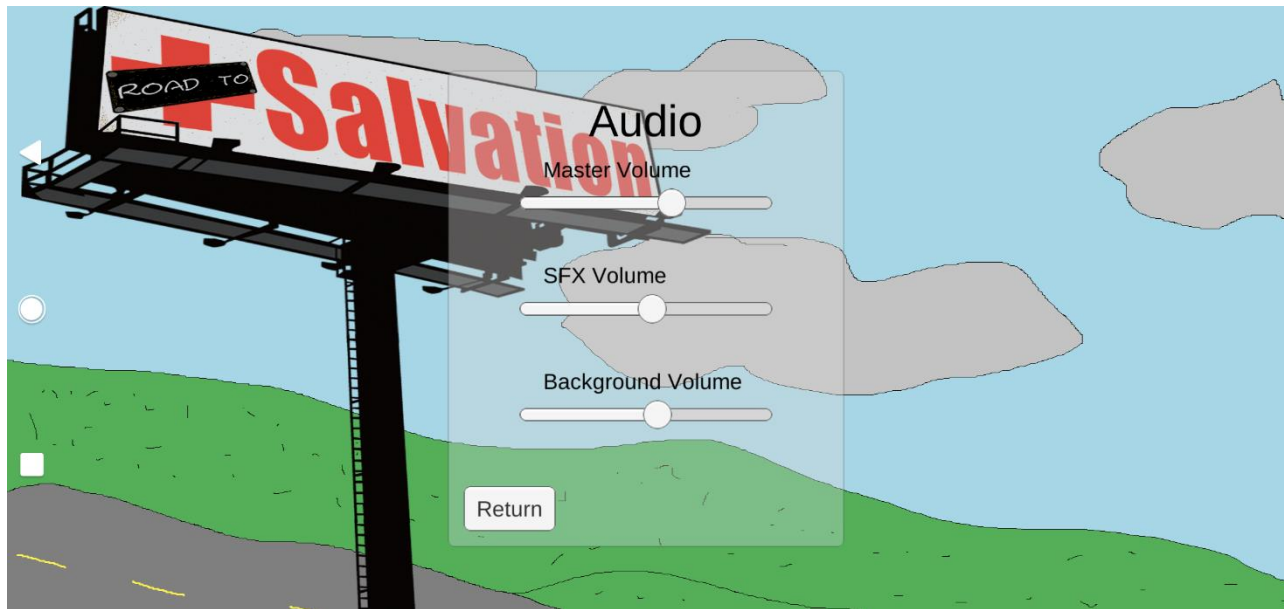
*“Accelerators – unseen by the novice user – may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.”*

*Road to Salvation* is still in an early, iterative developmental phase and lacks advanced features which promote ease of use for experienced users. Game mechanics designed for skilled users are entirely unincorporated at this juncture, though the possibility of adding creative, efficient mechanics abounds.

### **Recommendations:**

Basic functions for flexibility and efficiency such as pause, mute audio, and equipped items should be included in the next iteration. Developers may consider including hidden vendors, hidden levels, difficult-to-find resources (e.g. Molotov cocktails, grenades, med-kits, shortcuts, etc.), level-scale-maps, and aiming functions. More advanced mechanics, such as equipment-based features (e.g. boots to jump or dash), should be considered in conjunction with terrain features such as rivers, trees, maze-like structures, rocks, and other level features. In-game sound options are shown in the figure below.

Figure 5 – Audio Menu



## 8. Aesthetic and minimalist design

*“Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.”*

Text found within *Road to Salvation* is largely relevant to the game, though editing and streamlining messages is necessary. Spelling errors exist and text could be reduced to minimal requirements or stylized for added context or immersion. Dialogue boxes that describe storyline events should include easy exit functions. Additionally, these dialogue boxes should fall into a ‘Journal’ category that users may access from a global menu.

The font used within the dialogue boxes should be changed at the developer’s soonest convenience. Though it adds somewhat to the aesthetic, usability decreases. Menus should also be redesigned to include a quick exit feature. Minimalism within the game’s features may not be necessary, since the game itself is straightforward in its design.

### Recommendations:

Changes to text found throughout the game should be a priority for *Road to Salvation* developers. The text used in this iteration significantly hinders usability. Readability should be the primary consideration for text. A small compromise may be made for aesthetic purposes without causing user error or frustration.

We recommend creating unique dialogue boxes for *Road to Salvation*. Emphasis in their design should be on adding style and context to the game while including functional elements such as quick exit features. Content introduced in these dialogue boxes should be included in a ‘Journal’ feature, accessible to users in the game’s global menu.

It is also recommended that grammatical errors are fixed as well as changing the text’s font to a more minimalistic font without serifs or to a more readable font that fits the theme of the game. The figure shows the font as well as the grammatical error in the word “immune” underlined in red.

Figure 6 – Word “Immune” is Misspelled



## 9. Help users cognize, diagnose, and recover from errors

*“Error messages should be expressed in plain language (ideally no codes), precisely indicate the problem, and constructively suggest a solution.”*

In the current iteration of *Road to Salvation*, users have no way to diagnose errors, provide feedback, or quick-access option to review the game. While this is due to early game development, these features must be included to gain the maximum benefit of user testing throughout the development phase.

### Recommendations:

As *Road to Salvation* is under development, the absence of these elements is expected. Of course, error reports should be generated when the game crashes unexpectedly. A dialogue box should be presented to the user, allowing for user



submitted feedback opportunities. Manual error reporting should also be included as a separate button or through providing contact information. Simple diagnostic elements should also be included within the global menu.

## 10. Help and documentation

*“Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.”*

While the game is within its developmental phase, the only location to seek help or examine documentation is on a blog. The location of this blog is given in the credits menu, which is counterintuitive. This greatly inhibits the user's ability to seek help or additional information about the system.

### Recommendations:

We recommend creating a separate menu option for “Help & Additional Info,” that users may access to learn the blog address and contact game developers. The addition of a “Journal” section to review and replay tutorials, dialogue boxes, or game lore should also be included. Users may wish to review this information quickly after a period of not playing the game.

Figure 7 – Contact Info. on Credits

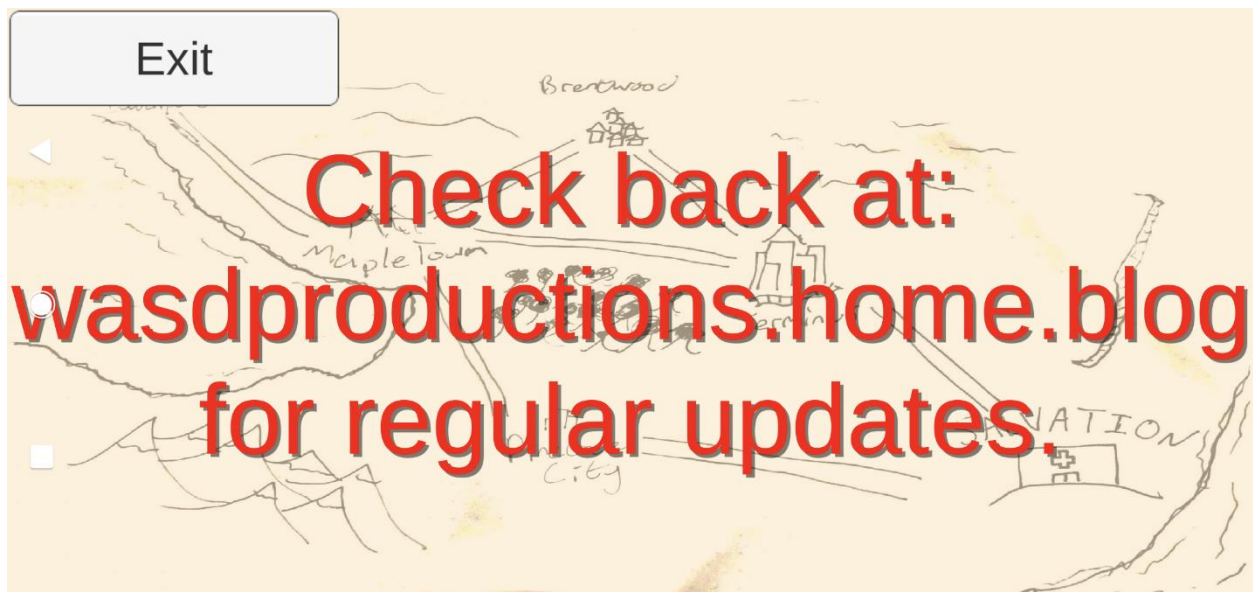


Figure 8 – Button Mapping Blocks Text



## Conclusion

*Road to Salvation* is a promising game with an incredible amount of potential. Currently, it is within the iterative, testing phase of development. As prototypes are made and improvements added, errors will decrease, and usability will rapidly increase. *Road to Salvation* may be improved across all 10 of Nielsen's Usability Heuristics. Most of these improvements are straightforward in nature and will provide incredibly large jumps in usability. We anticipate the largest improvements to come from menu additions and alterations. Other large improvements include developing a HUD and introducing more mechanics in the tutorial map.

## Resources

<https://www.nngroup.com/articles/usability-heuristics-applied-video-games/>