Master Test-Plan 1

# Introduction:

This test overview is designed to ensure the game is working properly as well accomplishes its goals to the intended target audience.

Goals & Objectives:

* Fully functional educational game that runs on platforms accessible to students.
* Goals: provide educational value to students who play it, to be engaging and educational
* Must be extensible so others can provide educational content

# References:

* [Project Proposal](file:///D:\data\Dropbox\HomeWork\Senior%20Project\SeniorProject\docs\Kamphaus_ProjectProposal.docx)
* [Requirements](file:///D:\data\Dropbox\HomeWork\Senior%20Project\SeniorProject\docs\Requirements.docx)
* [Usability Test-Plan](Usability%20Test-Plan.docx)

# Test Items:

* Unity Version 2019.2.3f1 Personal – IDE for creating the game as well as the engine to run the tests for the game.
* Microsoft Visual Studio Professional 2019 Version 16.2.3 – Programming IDE for C# scripts used in unity engine. Used to test code specific items and debugging.

# Features to be Tested:

## Functionality Features:

* Level Accessible and Functioning:
  + Accessibility of the levels and ability to gain access to all intended areas, and stay within intended boundaries.
  + Questions being able to be answered correctly and correctly display on the screen.
  + All content desired content fits within screen boundary and fit to the display.
* Save and Load Progress
  + Progress of players is can be saved.
  + Score, collectables, and questions answered on current level can be saved.
  + Loading game will restore all progress and previous data will be displayed.
* Player Profile (Stretch Goal)
  + Can create new profiles, and select existing from list
  + All player profiles will still appear when game is reloaded
  + All progress is saved with the respective profile and can be loaded when game is reloaded and profile is selected.
* Menu Display:
  + Menus display during start of game and during pause. Players can edit settings and start game. Correct items display when buttons pressed.
* Dialog System Display
  + Must properly appear when character enters in range of an object or obstacle and questions will go away when answered.
* Overworld to link levels
  + Over World will link levels and spiders’ home. Show items collected. When enough items collected next level is unlocked.

## Performance Features:

* Program Stability
  + Game does not crash or freeze and has good performance on most common devices.
* Resolution Uniformity
  + Game elements fit properly on various resolutions and screen sizes. Text and UI remain readable.
* Cross Platform Compatibility
  + Properly function in the same compacity for all platforms tested.
  + Platforms to be tested:
    - Windows 8 and later
    - Android OS.
  + Test of Display Systems and Resolution hold across targeted platforms.

## Usability:

* Conducive to learning
  + The environment provided by the game and the delivery of the educational content aid
* Ease of user for target audience
  + Children need to be able to understand how to play.
  + Gameplay not over complicated.
* Content Interchangeability
  + All questions and puzzles should be easily changed by a third party to provide educational content.
  + Stretch Goal:
    - An easy to use editor for third party to create content for educators.
* Localization Capability
  + Have the ability to swap out the questions and game dialog with a different language to be extensible in the future.
* Editor for Levels – Stretch Goal
  + A functioning tool to allow third party to edit the levels and provide educational content

# Features Not to Be Tested:

* The Educational value of the questions themselves and content specific
  + The goal of the game is to provide a platform for a learning environment that education providers can upload content for students to use to learn while playing the game. The focus is how the game can facilitate the educational setting but not the educational content included in the game demo.
* Quality of the questions
  + The intention is not how well students can answer the questions themselves, as the intention is for others to supply the content, but how the questions themselves are presented and interfaced for the best delivery of the educational content.
* Stretch Goals that uncompleted
  + Stretch Goals listed are desired features, but will not be tested if they are not complete and implemented within the specified timeline.

# Approach

* Testing will be broken into two categories.
  + Functionality and Performance- Features that are part of the core functionality of the game, that must work the intended way to ensure the game is usable and facilitates the intended goals.
  + User Playability – Features that are more subjective the target users and quality of life that may need to be changed or adjusted base off of feedback from the players.
    - See attached [Usability Test](Usability%20Test-Plan.docx) Documentation for more details
* Functionality and Performance Method of testing
  + Functionality will be tested on a pass, fail Criteria where specific parameters must be met to determine if they meet the requirements.
  + Automation:
    - Automation ranges from auto input, and premade testing levels that will run specific tasks automatically.
    - For functionality Features, automation will be used on case by case basis as there are many variables to account for and is subjective.
    - Performance will utilize automation to ensure uniformity in testing.
      * Stability: Will utilize stress testing by simulating high levels of input and content on game.
      * Cross Platform: Create Automated mode that provides preset input that should behave uniformly across platforms.
  + Features that are independent of device screen size or platform will be tested on a standard device.
* User Playability
  + Testing will be conducted in a controlled environment among target audience.
  + Process of testing will be uniform amongst each playthrough.
  + Documentation will be used with a standard list of questions and order of testing.
  + See attached [Usability Test](Usability%20Test-Plan.docx) Documentation for full feedback requirements, forms, and other details.

# Item Pass/Fail Criteria

1. Levels
   1. Pass Criteria: Must be able to bring character from beginning to end on each level.
   2. Fail Criteria: If player gets stuck, falls out of bounds, or otherwise unable to access the entire level.
   3. Recurrence: Test will be performed for each level, and criteria must be met for each case.
2. Save and load Progress
   1. Pass Criteria: Player saves their progress. When the game is closed and reopened all saved data will return. Player score, progress in level, and previous level scores and overall progress load.
   2. Fail Criteria: Any progress is not loaded when game is reopened and save file is loaded. File fails to load. Collectables lost, or current score not displayed.
3. Player Profile (Stretch Goal)
   1. Pass Criteria: New profile can be created. When game is closed, the profile remains. Profile is displayed from a list and can be selected. Saves made to profile will save with respective profile and load the correct data. At least 3 profiles are created and all previous criteria hold to be true.
   2. Fail Criteria: Profile is not created. When the game closes, profile is not present. Any profile whether newly created or previously created does not display in list. Any profile does not load the progress saved into it. Any profile loads data from another profile.
4. Menu Display and Function
   1. Pass Criteria: All items on menu do as it says. They display properly and all buttons work when pressed. Players are able to load the correct level that the menu indicates.
   2. Fail Criteria: Menu does not lead to intended location; any item does not respond when clicked.
5. Dialog System Display
   1. Pass Criteria: Questions will be answered with the correct answer then disappear opening the way forward. Wrong answers do not answer the question. All text is legible and appears on screens on all levels.
   2. Fail Criteria: Questions dialog does not disappear after being answered, or range has been left. Player unable to move after question is answered. Dialog does not fit in designated area, or text is not legible or visible. An answer cannot be clicked or does not work.
6. Overworld to link levels
   1. Pass Criteria: Levels must properly transition when they are selected. Criteria is met to unlock level, and provide proper access.
   2. Fail Criteria: Wrong level is loaded, level transitions without meeting requirement, level doesn’t load at all, unable to get to overworld upon finishing a level.
7. Program Stability
   1. Pass Criteria: No crashing, freezing, or lagging at any point of gameplay, to be tested across various performance machines.
   2. Fail Criteria: Game crashes, computer crashes (consistently and repeatable as a direct result of the game) or game lags.
   3. Recursion: Test will be performed on multiple devices, of varying capabilities low and high end. Must yield passing results on all devices.
8. Resolution Uniformity
   1. Pass Criteria: All previous tests involving Display to include Dialog System, Menu Display Hold true across all target resolutions and screen sizes. Content fully fits on screen, and text and UI remain legible.
   2. Fail Criteria: Any content does not fit fully on the screen that is meant to. U/I or text does not fully fit on screen, or cutoff. Any previous test involving display fails.
   3. Recursion: Test will be performed on multiple screen sizes, and set to multiple resolutions. Must yield passing results on all devices, all previous tests on display will be made again where applicable, and must hold true.
9. Cross Platform Compatibility
   1. Each Platform tested will have the same pass-fail criteria
   2. Pass Criteria: The game displays properly and controls function the same across all platforms
   3. Fail: The platform behaves differently than intended, game does not function the same as the standard test machine. Any resolution or other display requirement is not met
10. Conducive to learning
    1. Pass Criteria: Gameplay does not distract from the content, players are able to stay focused on the task and access the educational content. Players need to feel significant reward for playing.
    2. Fail: More than half of the players are distracted, do not want to play the game, do not feel like they learned anything.
11. Ease of user for target audience
    1. Pass Criteria: While playing there is minimal interaction with children to explain how the game works. It is straightforward for players and they are able to move towards the goal and not get lost or confused.
    2. Fail Criteria: More than half of the players requires significant explanation or assistance in order to play the game. Players are lost or confused.
12. Content Interchangeability
    1. Pass Criteria: Questions that are in text file load properly and display where desired. Puzzles can be modified.
    2. Fail Criteria: The data does not load at all from the text file, questions do not appear in the correct place, the answers to not match the questions, the features are unable to be changed without recompiling the game.
13. Editor for Levels (Stretch Goal)
    1. Pass Criteria: User is able to edit levels of the game and provide questions and content. When the game is loaded, levels edited by the user will be playable and load.
    2. Fail Criteria: Editor is not functioning properly, and crashes. Files created in editor can not be loaded into the game. The editor freezes or crashes.
14. Description: Localization Capability
    1. Pass Criteria: Alternate text files are able to be swapped out and selected from the settings menu and work correctly. It not need be a different language but all text provided to game should be interchangeable and potentially be in a different language.
    2. Fail Criteria: Alternate text file does not load when selected or it displays when the primary text should be showing.

# Test Deliverables

* Test Plan
* Test Case
* Test Reports
* User Feedback Forms

# Test environment

* Standard Testing Computer: Laptop MSI Intel i5 CPU, 8GB RAM, 500GB SSD, OS: Windows 10, GPU: Nvidia GTX 1050.
* Most Recent build of project will be run on laptop

# Schedule

* Jan 15th test levels accessibility
  + Resolve issues if present by Jan 31st
* Jan 31st Test menu accessibility
  + Resolve issues if present by Feb10th
* Feb 10th test multiplatform
  + Resolve issues as necessary by March1st
* March 2nd – 10th Begin player testing trials with volunteers.
  + May need to evaluate if additional data is necessary. If feedback dictates a feature must be changed, have done by 15th then recommence testing with the new features
  + If necessary additional trials after 15th for changed features
* April 1st Compile all findings from testing
* April 10th All errors should be fixed and game should be about completely finished.

# Training Needs:

* Users may need to be trained on basic controls of the game during testing. If more training is needed during testing, in-game instructions will be considered to be added.

# Responsibilities:

* Developer: Derrick Kamphaus will be responsible for implementing the testing, and distributing for player testing.
* Players: responsible for providing feedback during game play. Fill out a questionnaire after playing through.

# Risks:

* During play testing players may feel like they have to keep playing or testing the entire time
  + Inform players at any point they are able to end testing at any point if they feel the need to.

# Assumptions and Dependencies:

* All features have been completed to full extend prior to testing
* Group play trials depend on having subjects to cooperate

## Approvals:

* Project Advisor: Dr. Sean Hayes:

Signature

Date