

i. Index

- 1. DreamWaker (Introduction)**
 - 1.1. Overview**
 - 1.2. Vision Statement**
- 2. Core Gameplay**
 - 2.1. Game Subsystems**
 - 2.2. Avatar**
 - 2.3. Controls**
 - 2.3.1. Walk (Formerly Crawl)**
 - 2.3.2. Sprint (Formerly Walk)**
 - 2.4. Player's Goal**
 - 2.3. Drawing a Graph**
 - 2.3.1. Drawing a Displacement Graph**
 - 2.3.2. Drawing a Velocity or Acceleration Graph**
 - 2.3.3. Pick Up/Drop**
 - 2.3.4. Activate**
- 3. Environment**
 - 3.1. Entrance**
 - 3.2. Exit**
 - 3.3. Platforms**
 - 3.4. Graph areas**
 - 3.5. Activation Objects**
 - 3.6. Target Origins**
 - 3.7. Random generation**
 - 3.8. Level Structure**
 - 3.9. Obstacles**
 - 3.10. Switches**
 - 3.11. Displacement Pads**
- 4. Front End**
 - 4.1. Screen Flow**
 - 4.2. HUD**
- 5. Narrative/Feel**
 - 5.1. Story**
 - 5.1.1. Characters**
 - 5.1.2. Plot**
 - 5.1.3. Story/Mechanic Tie-in**
 - 5.2. Audio**
 - 5.3. Art**
 - 5.4. Added Interaction**
- 6. Appendix I: Target Audience**
 - 6.1. Main Target**
 - 6.2. Secondary Target**
- 7. Delta Log**
 - 7.1. Version 1.0**
 - 7.2. Version 1.1**
 - 7.3. Version 2.0**
 - 7.4. Version 3.0**
 - 7.5. Version 4.0**

1. DreamWaker

1.1. Overview

Dreamwaker is an educational game for web browsers and home computers. The player uses his or her avatar's movement to draw curves that become platforms. The avatar can use these to reach new areas. Each curve is based on one of two factors: the avatar's distance from a particular object or its velocity.

The game is an environment that encourages player creativity. Players gain satisfaction from drawing interactive entities without serious penalty for inaccuracy. The Product Owner's mandate is to create a game that teaches high school students displacement and velocity through narrative and non-obvious teaching methods. (A non-narrative version of the game is also a requirement.)

1.2. Vision Statement

The player will experience the following:

- **Innovative** game play – a whole new way to utilize displacement and velocity
 - **Understanding** through an enjoyable medium
 - **Countless** possible solutions to any given level
 - **Varied** levels upon multiple play-throughs

2. Core Gameplay

2.1. Game Subsystems

The following are included in *DreamWaker*:

- **Avatar** that the player uses to move around
 - **Graphs** that the player draws and can use to get to new places
 - **Environment** that will affect the player's ability to draw certain graphs and get to certain places

2.2. Avatar

The player's Avatar can do the following:

- **Move** left and right by either walking or sprinting
 - **Jump** to reach platforms
 - **Pick up** activation objects to start plotting graphs. Each graph has its own activation object.
 - **Drop** activation objects to stop the plotting of graphs and solidify

them

- **Activate** a switch

2.3. Controls

	Menu Bring up the menu in-game
	Move Go left or right
or	Jump Jump up
	Pick up/Drop/Activate Switch Pick up or drop an activation object Activate a switch to move a large obstacle
	Sprint Switch movement to Sprint by holding down

2.3.1. Walk

The graphs of displacement and velocity look as follows:

2.3.2. Sprint

The avatar moves at a constant acceleration until it attains maximum velocity. When this occurs, acceleration goes to zero.

2.3.3. Pick Up/Drop

Players can pick up and drop activation objects while moving or standing still.

2.3.4. Activate

Players can activate a switch to cause a change in the environment. If an activation object is dropped in front of a switch, picking up the activation object also activates the switch.

2.4. Player's Goal

The player's goal is to get to the end of each level.

2.5 Drawing a Graph

Special sections of levels have graph areas. To draw a graph, the avatar must pick up the activation object that corresponds to the graph that the avatar wants to manipulate. This action causes a graph of displacement or velocity over time to start plotting.

During this time, the line that is drawn is not interactive. The plot of the graph goes from the left end of the pad to the right. Once it reaches the right end and four seconds pass, the graph disappears, and a new plot begins.

When the player drops the activation object, the graph solidifies into an interactive element of the level. If a graph is solid and the player picks up the activation object again, the solid graph disappears and another plot begins.

The scale of the graph's y-axis differs for each graph. The x-axis always has the same scale.

2.5.1 Drawing a Displacement Graph

- Every displacement graph has a corresponding origin target (located at the original location of the displacement orb)
 - The graph is based on the horizontal distance between the activation object of the graph and the origin target
 - Displacement is never negative

2.5.2 Drawing a Velocity Graph

- Velocity is negative when the avatar moves left and positive when the avatar moves right
 - An arrow pointing right appears above where the avatar picks up the activation object to indicate the direction of positive velocity

3. Environment

3.1. Entrance

Place where the avatar starts at the beginning of a level (not physical)

3.2. Exit

Place that the avatar is trying to reach

3.3 Platforms

Pieces of land that the avatar can stand on

3.4. Graph areas

- Sections of the area where graphs are drawn
 - Graphs can be of displacement or velocity.
 - Activated by picking up a corresponding activation object
 - Always on platform or ground

3.5. Activation Objects

- Correspond to particular graph areas
 - Graph starts plotting upon pickup and stops when object is dropped
 - The avatar can only carry one activation object at a time

3.6. Target Origins

Points of reference for displacement graphs

3.7. Random Generation

- Obstacles in graph areas are randomly generated (with constraints)
 - They must be a certain distance apart (based on difficulty setting), can't be so low that the avatar hits them as it runs across the ground, and can't be too close to the platform that the avatar is trying to reach

3.8. Level Structure

There are 16 levels (4 for each world)

1. Displacement tutorial
- 2-4. Displacement level
5. Velocity tutorial
- 6-8. Velocity level
- 9-12. Mix/Switches

3.9. Obstacles

- Stationary objects in graph areas that force the player to form graphs that are not just straight lines (randomly generated into graph area)
 - In easy and normal mode, send player to location of activation object
 - In hard mode, erases graph
- Moving or stationary obstacles that teleport the player to the beginning of the level
 - Tall or wide obstacles that block (but not teleport) the player and that can be moved using switches

3.10. Switches

- Objects that, when activated, move obstacles (obstacles do not hurt the player, just block)
 - These obstacles move until they collide with other solid objects, including graph or the edges of the screen
 - Switches can be activated again to undo

3.11. Displacement Pads

- Pads on which activation objects for displacement graphs are originally located
 - Represent displacement origins

4. Front End

4.1. Screen Flow

4.2 HUD

- Menu button

5. Narrative/Feel

5.1. Story

5.1.1. Characters

- Protagonist: Player (The Waker)
 - Auxiliary: Dreaming kid

5.1.2. Plot

See story file

5.1.3. Story/Mechanic Tie-in

- Orbs contribute to the avatar's ability to guide the dreamer
 - For more info, see story file

5.2. Audio

See audio asset list.

5.3. Art

See art asset list.

5.4. Added Interaction

Some cutscenes are backgrounds to levels with no platforms

6. Appendix I: Target Audience

6.1. Main Target

High school students

6.2. Secondary Target

People who have little to no knowledge of displacement, velocity, and acceleration

7. Delta Log

7.1. Version 1.0

- Incorporated initial design.
 - Made with throw-away code for first runnable.
 - Player cannot interact with graph

7.2. Version 1.1

- Made with same code as Version 1.0
 - Moved displacement target to a more informative position
 - Replace colored square with shiny ground for indication of graph area
 - Background music plays

7.3. Version 2.0

- Made for 1st playable
 - Made with non-throw-away code
 - Can play narrative or non narrative version
 - Can pick up object and interact with draw graph
 - Get confirmation for level completion
 - Partially procedurally generated levels
 - Multiple backgrounds

7.4. Version 3.0

- Made for Beta
 - Feature complete

7.5. Version 4.0

- Made for RC0
 - All art assets in
 - All major bugs fixed