# Introduction

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* **Genre:** This is a 2-D side scrolling game for one player.
* **Goal:** The player tries to overcome the challenges presented by each stage, to eventually make it to the end of the day. The levels get harder as the game progresses as more enemies with more health and attacks are added to the game.
* **Gameplay** 
  + The player runs an avatar on the left side of the screen
  + The player views his avatar and the entire screen.
  + Various hazards, enemies, and preventions fly, typically right to left
    - Mosquitos, flies, and dirty hands may fly at the player, from right to left.
    - In certain levels, the mosquitos may spawn from open water jars.
    - All hazards cause damage when they contact the player.
  + The player can move only up and down (I think) to
    - dodge hazards
    - avoid dangerous areas
    - shoot appropriate defenses at some hazards
    - grab preventions for some hazards and sources
    - shoot appropriate preventions at some sources
* **Audience:** The game is intended for casual gamers of ages 7-12 on an Android screen.

## Basic layout

* Intro scene, perhaps with an instructions button that explains how the game is played.
* Background to be decided.
* Main Display
  + Top:
    - Health bar with current life remaining.
    - Gold accumulated (?), acquired from killing mosquitos and other hazards.
    - Weapons panel, that shows which weapons have been acquired, and which is currently active.
  + Bottom: Arrows for left, right, and upwards movement. Also a fire button.
* Notes:
  + Maybe a Help button that explains these buttons, etc.
    - OR a Pause button (Icon) 
    - Pause brings up:
      * Play more icon
      * Menu button
      * Help or Tutorial buttonC:\SwSetup\MSWorks\PFiles\MSWorks\Images\ImageStd\help.gif
* Each new level starts
  + No hazards present
  + In some cases: sources visible.
  + For each hazard and source:
    - a frequency of arrival (perhaps random)
    - a pace of increase
  + New background each level.
  + Health starts each level at where it was the previous level.
* During play
  + Screen and sound reaction at each hit that harm or help hazards or avatar.
  + Health and/or gold amount changes accordingly
  + Player shoots projectiles towards enemies to vanquish them
  + Success is achieved after surviving for a certain duration, or killing a certain amount of enemies
* End of each level
  + Some kind of level winning animation, followed by an upgrades menu.
* Early levels are easy and fast, but levels get slower and harder as the player advances.
* End of game
  + Shows your level and score
  + Best score
    - Personal
    - Ever this machine
  + “Play again?”
  + Menu

Options:

* How to integrate menu/pause/mute buttons?
* How to run upgrade mechanics?
  + Pick up ingame, or buy using gold?

## Avatar

* Option: Player chooses the look of the avatar.
  + Note: All Avatar sprites must be easy to spot & barefoot
* Moves with arrows (or arrow buttons on a touch screen)
* Space bar (keyboard) or Soap button (touch screen) fires soap
  + Delay in shooting
* Avatar
  + loses health when hit by dirty hand or other hazards and
  + gains health when purchasing health upgrade, or picking up ingame upgrade?

### Soap

* Fired by player
  + Delay of xx seconds between firings
* Moves leftward
* When hits dirty hands
  + Gain points
  + Soap disappears

# Types of hazards

There are several “flavors” of hazards

1. “Bullets” such as dirty hands. You lose health when they touch you
   1. All enemy hazards can be avoided or vanquished using the appropriate projectiles.
2. “Sources” such as an uncovered water jug.
   1. Each source emits Bullets, such as an uncovered jug makes Mosquitoes
      1. Sources are like towers in a tower defense game
   2. Many sources can be defeated by a Prevention such as a cover on a water jug that emits mosquitoes.

There are also preventions:

* Soap, bug spray, etc are fired like bullets
* The Latrine reduces poop that brings dangerous flies
* The mosquito net protects you from mosquitoes
* The cover on a water jug stops mosquitoes from breeding.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Level** | **Hazard or nutrition** | **Source** | **Prevention at source** | **Prevention at person** | **Effect** | **Prevent** | **Points if you kill it** | **Health if it gets you** | **Points to end level** |  |
|  | **Dirty hand** | Off screen | N/A | Shoot with soap | Lose health |  |  |  |  |  |
|  | **Flies** | Off screen | Latrine | None | Lose health |  |  |  |  |  |
|  | **Mosquitoes** | Uncovered water jugs/Offscreen | Cover the jug | Get a mosquito net & duck behind it at night | Lose health if you are bit |  |  |  |  |  |

Note: All points and health scores require calibration.

## Dirty Hands

* Start at random location on Right side of screen
* Move at constant speed left
  + Option: that speed increases over time or across levels
* Disappears when hit by a soap
  + Option: turns to clean hand when hit by soap

### Mosquitoes

* A new level starts with one or more uncovered water jugs.
* Jugs send out mosquitoes.
* Mosquitoes might come in a big wave
  + So hard to avoid
  + Preview night is coming by sun setting and moon coming out.
    - Maybe other hazards pause when mosquito wave is coming.
* Option: Malaria might slow you down or stop you from moving.
* Catch or earn a bednet to protect one zone.
  + Then duck into that zone during a mosquito attack (that is “at night”)
    - Option: Bednet regular or long lasting. How show difference?
* Catch or earn a lid and fire it at the water jug to stop most future attacks.

## Higher levels to ponder

Possible ideas for later levels.

### Social forces

* Neighbors start showing up. They become sources that come from above or behind, making life more difficult.
* You can also convince more people to treat water and then there are fewer dirty hands.
  + Buy them a water filter? Safe latrine?

## Administrative details

Menu screen

* Pause, Mute, Restart, Exit, etc.
* Choose avatar
* Options

## Background Notes on the Economy

Gold?

* You acquire gold by defeating enemies (how realistic is this?)
  + Gold can be used to purchase new weapons, buy a bathroom, or restore health (medicine).
  + Gold is spent between levels at an upgrade menu that lets you buy the items.
* Alternatives
  + Pick up items during the level, makes gameplay simpler.

## Checklist for a good game

|  |  |  |
| --- | --- | --- |
| **Rational decisions** |  |  |
| Games have **rules** that give us **structure** | Clear rules | B+ |
| Clear objectives | B+ |
| Games have **winning** **stages** that so we can **feel like winners** | Rewards | A |
| Including emotional rewards | C |
|  | Promise of greater powers | B- |
| Games have **outcomes and feedback** that give us **rewards** | Choices lead to consequences | A |
|  | Experience bar or points | A |
|  | Measures progress through story | A- |
|  |  |  |
| **Fight present bias** |  |  |
|  | Some short-term rewards | A |
| **Goals** |  |  |
| Games have **goals** that give us **motivation** | Challenges | A |
| Reachable, but not too easy or too hard to obtain | A |
|  |  |
| Games are **adaptive** that gives us **flow** | Appropriate skill level or difficulty for the audience | B+ |
| Adaptive | A- |
|  |  |  |
|  |  |  |
| **Group interaction** |  |  |
| Games have **conflict, competition, challenge and opposition** that give us **adrenaline** | Competing players | F |
| Visible results | A |
| Games have **interactions** that build **social groups** | Engagement together | F |
| Visible results build status | D |
| Team success | F |
| Games have **coaching** that builds **pride in others' success** | Pleasure of teaching others and watching them succeed | C |
|  |  |  |
| **Learning and problem solving** | |  |
| Games have **outcomes** **and** **feedback** that give us **learning** | Positive and negative feedback | A |
|  | Learn a lesson | A- |
| Games have **problem solving** that sparks our **creativity** | Non-obvious problems to solve |  |
| Games permit **practice** (with intention) that builds **mastery** | Practice with intention | A- |
| In our setting: Gameplay **process teaches the lessons,** not just game content | For example: The game uses real tools for prevention and cure or practices real beahviors | F |
|  |  |  |
| **Engaging** |  |  |
|  | Satisfying “feel” of the feedback: music, lights, timing, etc. | C |
| Games have **representation and story** that give us **emotion**. | Engaging theme | B+ |
| Take us to new (virtual) places | B |
|  | Emotional | B |
| Games are **interactive** so we **are doing things** | Interactivity and Engagement | A |
| Lots of freedom of what to do, where choices bring meaningful outcomes | B+ |
| Multiple aims both long and short | B+ |
| Games are a form of **fun** that give us **enjoyment and pleasure** | Uncertainty | A |
| 1 | Unexpected | A- |
|  | Humor | C |
|  | Physical movement | F |
|  |  |  |
| Games are a form of **play** that give us intense and **passionate involvement** | Meaningful goal | B |
| Team spirit | F |

Adapted from Prensky, 2001,106 and from “Development of a Digital Game-Based Learning Best Practices Checklist” James D. Shearer, Master’s Thesis, August, 2011

Yellow highlighted cells have opportunity for improvement:

* Meaningful goal
* humor
* emotional
* measure progress through the story
* promise of greater powers

Red highlighted cells are goals the game cannot reach in its current format:

* team spirit,
* movement, and
* teaching realistic lessons