



# Final Documentation

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# Intent

Paper Ponds is a single-player puzzle game geared towards children, but can be enjoyed by any age group. The game's simple look made entirely of paper is supposed to calm the player, and the way the game plays compliments this style; there is no defined lose state, but winning is not possible without the player thinking about what to do. The perfect example of the intended player is someone who is lying in bed but isn't tired enough to sleep, so they pull up Paper Ponds in order to kill the time.

## Art Style/Theme


Origami is a craft that people usually get into during their childhood years, since it can be easy to follow and creates beautiful art out of something so commonplace like paper. Because this game is geared towards a younger audience, and because the mechanics are fairly simple, I wanted to use paper and origami as the art and theme for my game. The board itself is inspired by Japanese art, which compliments origami since origami is Japanese. The art uses very soothing colors to compliment the simplicity of the game and complete the "lying in bed" feeling.


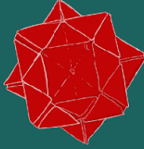
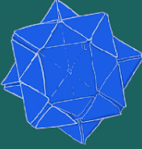


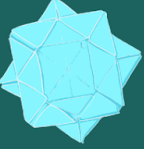
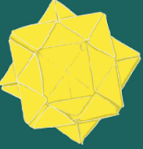


*The original piece of art I found that inspired the game's art direction (the original artist could not be found)*

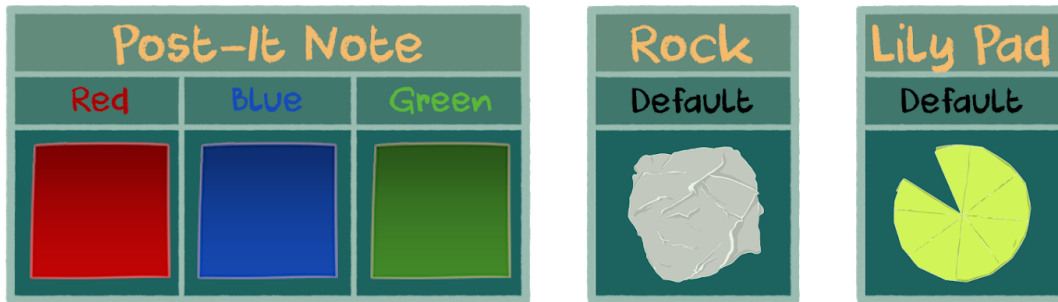
## In-Game Sprites

Frog						
White	Red	Blue	Green	Magenta	Cyan	Yellow
						

Bug						
White	Red	Blue	Green	Magenta	Cyan	Yellow
						

Lotus Flower						
White	Red	Blue	Green	Magenta	Cyan	Yellow
						

Whirlpool						
White	Red	Blue	Green	Magenta	Cyan	Yellow
						



## Music and Sound

Since I had the chance to make my own music for this game, I decided to make something somewhat relaxing, but not enough to the point where the player would actually fall asleep. I wanted to give somewhat of a puzzling and perplexing feeling to the song. The sounds all revolve around paper being folded or peeled or crumpled, with the exception of a frog and bug sound.

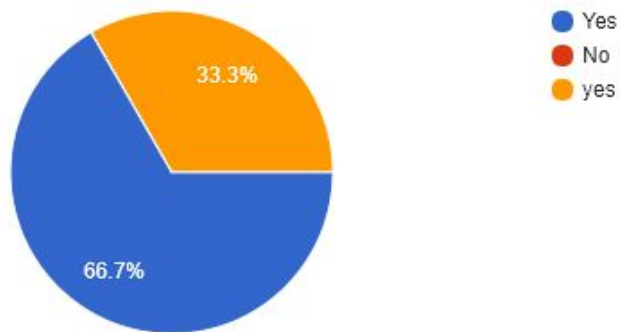
# QA Test Results

## Initial Informal QA

### Topic #1: Theme and Gameplay

Does the theme of paper and origami work well with the simplicity of the gameplay?

3 responses



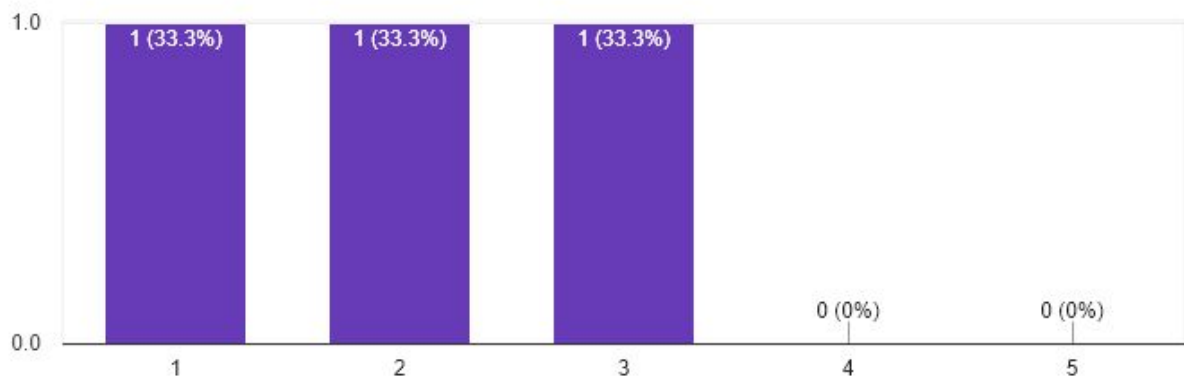
*\*\*Note: both answers above are 'yes'. One of the testers thought it would be funny to put "other" as their answer and write 'yes'*

These results show that the game is synergistic; the different aspects of the game (the theme, the art, and the gameplay) all mesh together to deliver a solid experience. Because of this, there are no "big picture" changes to be made to the game.

## Topic #2: The Color Mechanic

On a scale of 1-5, how easy/hard was it to understand the color mechanic?

3 responses

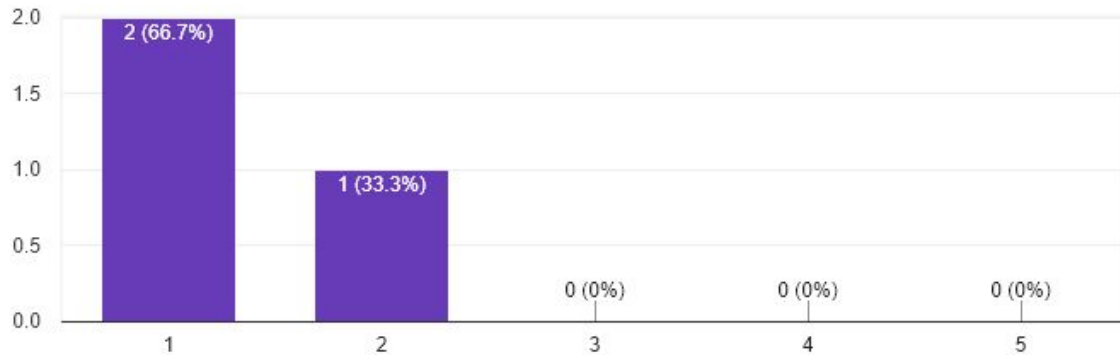


Overall, the testers thought the color mechanic was on average fairly easy to understand, averaging at about a 2 from 1-5 with 1 being easy and 5 being hard. Because of this, the tutorial/instructions of the game have to be very clear.

### Topic #3: Post-it Note Mechanic Simplicity

On a scale of 1-5, does the gameplay (specifically placing-down post-it notes to move the frog around the grid) seem simple or overwhelming?

3 responses



Explain your answer to the previous question.

2 responses

It takes some time to completely understand but it becomes satisfying once you learn.

it's simple

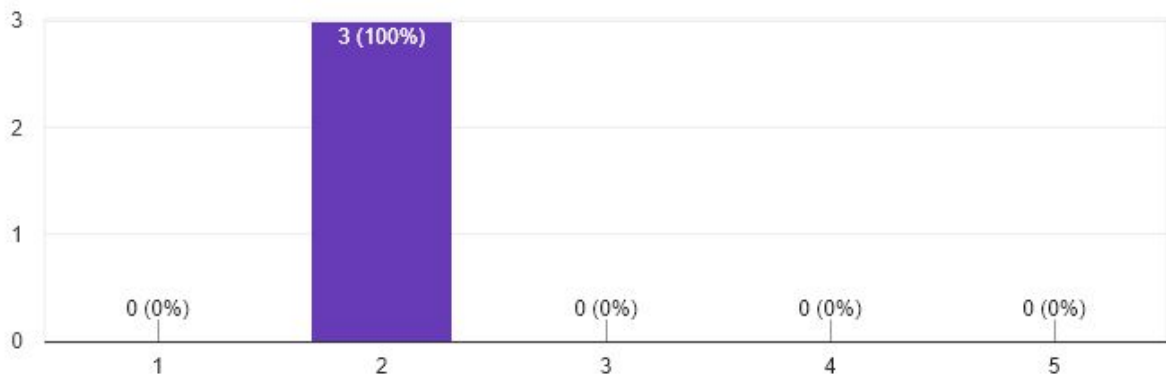
With 1 being simple and 5 being overwhelming, the testers all thought that the post-it note mechanic was straightforward and easy to understand. This is good, because the intent of the game is to be as simple as possible for the player and have the complexity lie within the design of the levels. It is worth noting that one of the testers said while the mechanic takes some time to understand, it becomes “satisfying”. This is perfect, because the player is supposed to feel good when playing, and this falls right under that umbrella.



## Topic #4: Level Difficulty

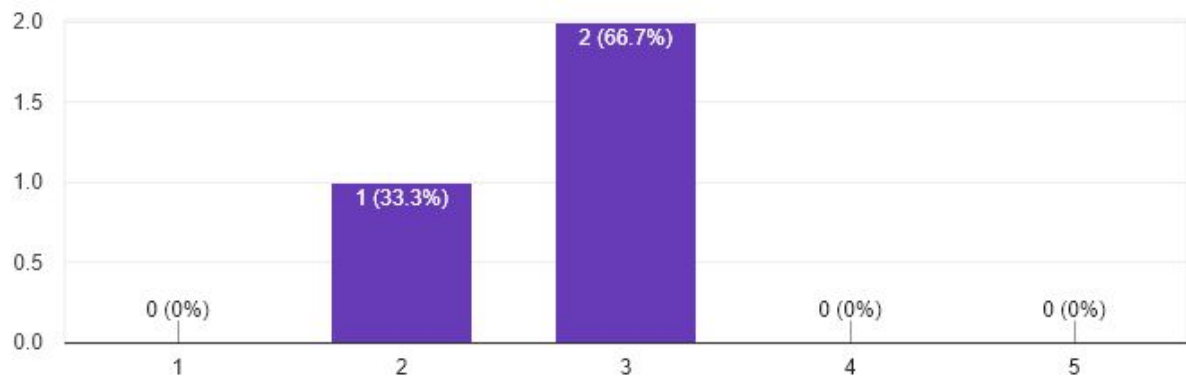
Rate the difficulty of the 1st level from 1 to 5.

3 responses



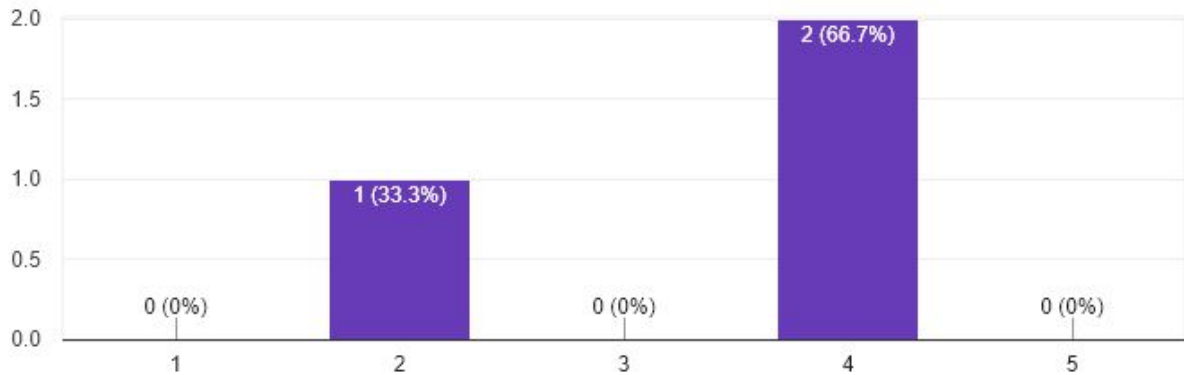
Rate the difficulty of the 2nd level from 1 to 5.

3 responses



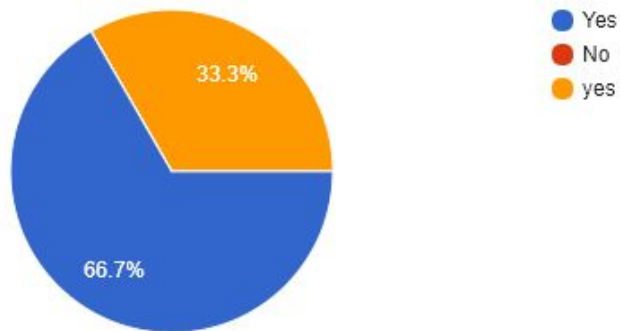
Rate the difficulty of the 3rd level from 1 to 5.

3 responses



Did the lily pad and whirlpools in the 3rd level make the game more interesting?

3 responses



*\*\*Note: both answers above are 'yes'. One of the testers thought it would be funny to put "other" as their answer and write 'yes'*

On a scale of 1-5, where 1 is easy and 5 is hard, three levels were given to the players to test, and the intent of the levels are as follows:

Level 1: An **easy, introductory** level (around a 1)

Level 2: A **test of the player's grasp on the basic mechanics** (around a 2)

Level 3: A **challenge**, since new mechanics were introduced (around a 4)

The levels were graded on average as follows:

Level 1: 2

Level 2: 2.6

Level 3: 3.3

**Level 1 was harder than intended** most likely because of the previous topic; the mechanics took some time to get used to. The mechanics and controls aren't similar to anything in most games, so the testers had to adjust to that before tackling the levels.

**Level 2 was harder than intended.** There is no real reason as to why this is from the data provided, so when designing levels, the difficulty should be scaling a lot slower than intended.

**Level 3 was easier than intended.** The level was designed with the intend of having the new mechanics of whirlpools and lily pads to throw the players off and require them to look at the game from a new angle. The new mechanics did make the game more interesting, but not necessarily as difficult as I had thought it would be. It is worth noting that one of the testers found an alternate, unintended way to beat the level. Maybe if this was changed, the level would have been harder to that tester. When designing future levels, the new mechanics should not be relied on entirely to dictate the difficulty of a level.

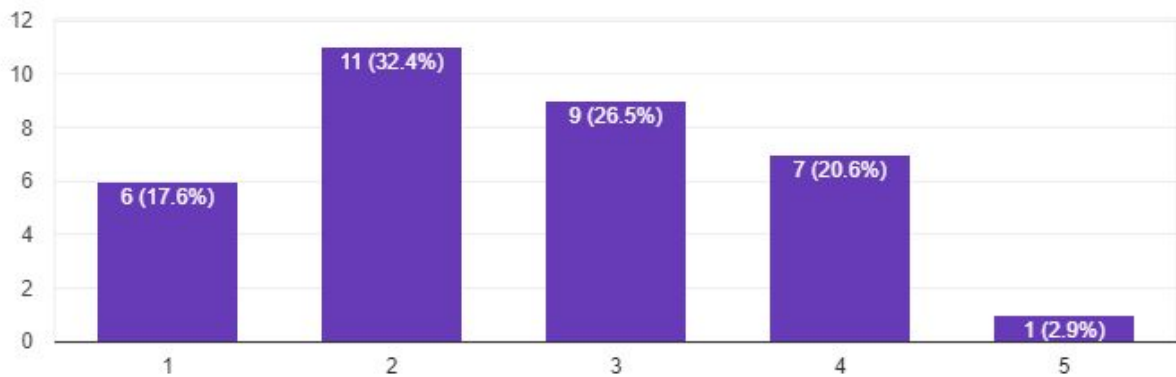
## Official Formal QA

*\*\*Note: this QA session was running a version of the game with many bugs. While I do believe the game itself has problem that need to be addressed, keep in mind that the testers were using a version of the game that was not stable*

## Topic #1: Clarity

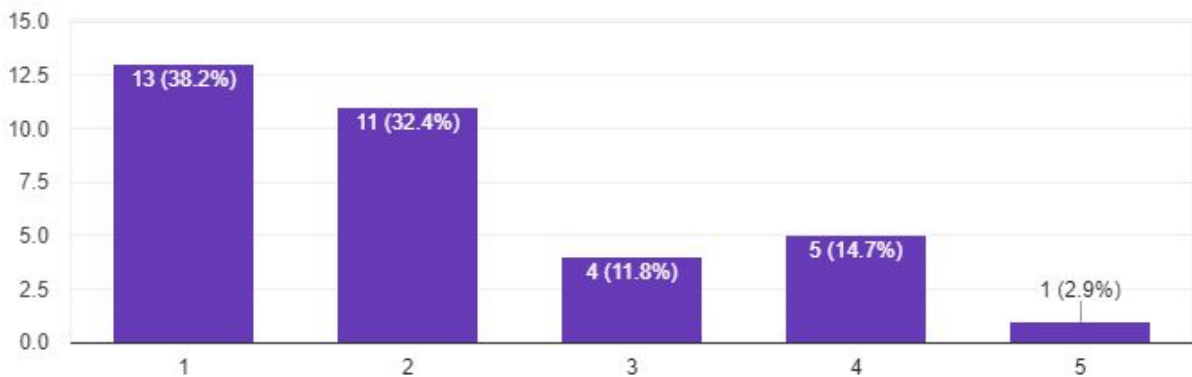
How well did you understand the color-changing mechanic?

34 responses



How well did you understand the movement with the post-it notes?

34 responses

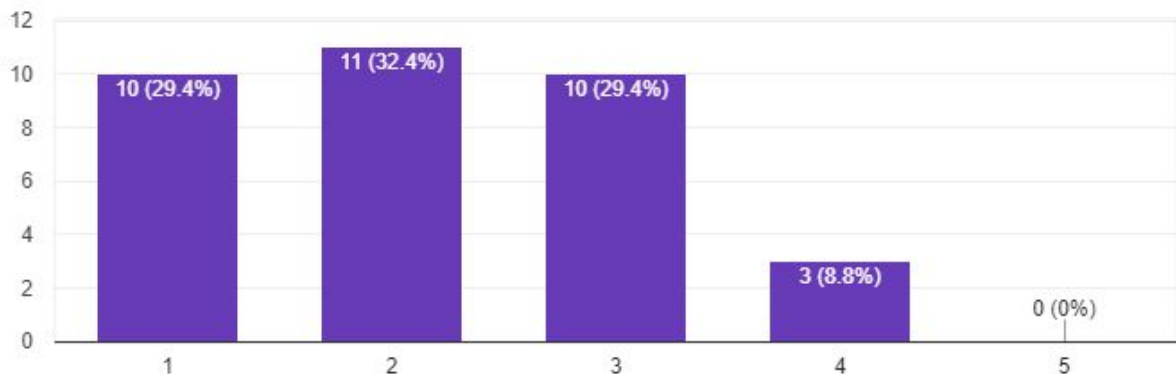


These results tell me that the core mechanics of the game were relatively easy to understand, but they still are not as easy as I would like them to be. A suggestion was made to have an interactive tutorial instead of a readable tutorial, which is an idea that could be explored in the future.

## Topic #2: Satisfaction

How good did it feel to figure out the puzzle in a level?

34 responses

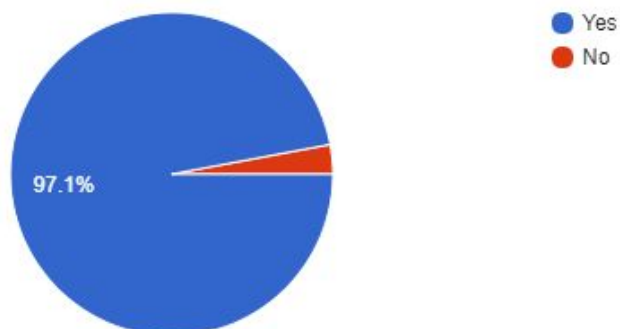


Most players found that completing a level felt rewarding (1 was rewarding, and 5 was not rewarding). This could be due in part to how difficult the levels actually were (will go more into that later in this document), but for the most part the players experienced satisfaction when completing a level.

## Topic #3: Satisfaction

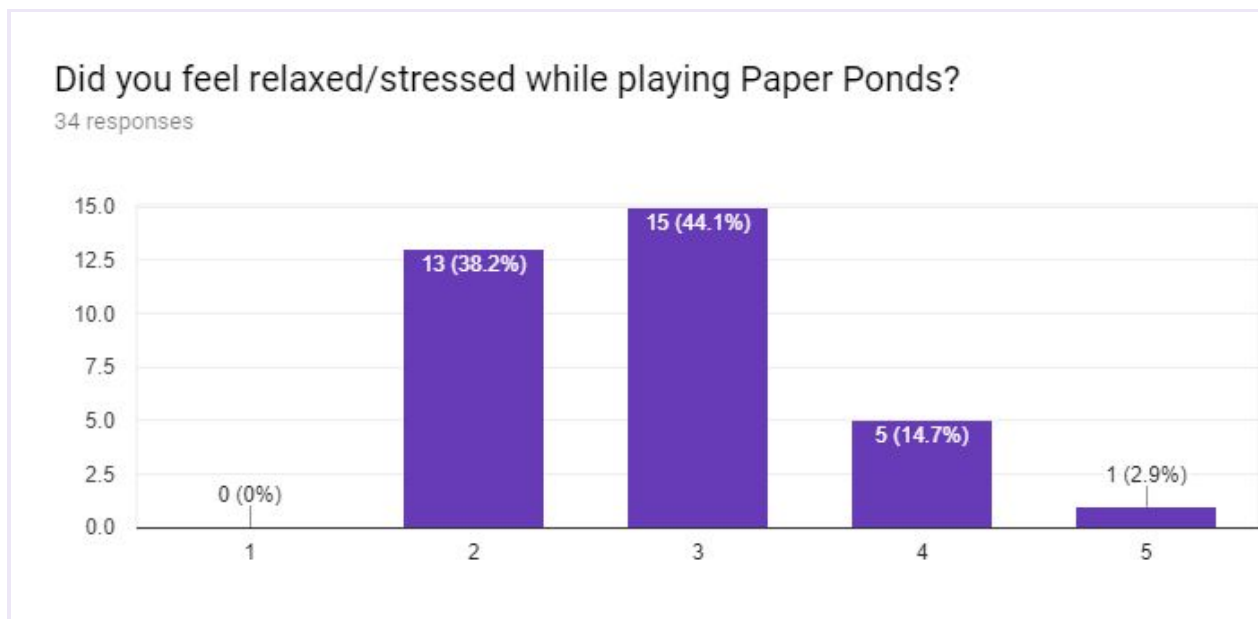
Was the UI simple to understand?

34 responses



All but one person out of 34 understood the UI. One comment said the following: “The only thing it didn't explain is that if you go from red to blue and turn magenta and then continue laying a blue path you cannot turn back to blue that way.” This is something that needs to be addressed in the tutorial, which in the game’s state as of writing this, it is not.

#### Topic #4: Satisfaction

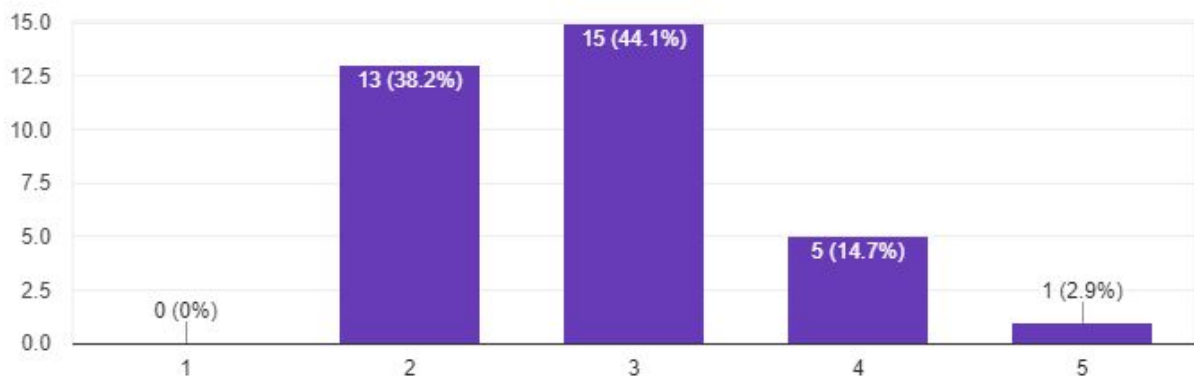


All but one person out of 34 understood the UI. One comment said the following: “The only thing it didn't explain is that if you go from red to blue and turn magenta and then continue laying a blue path you cannot turn back to blue that way.” This is something that needs to be addressed in the tutorial, which in the game’s state as of writing this, it is not.

## Topic #5: Satisfaction

Did you feel relaxed/stressed while playing Paper Ponds?

34 responses

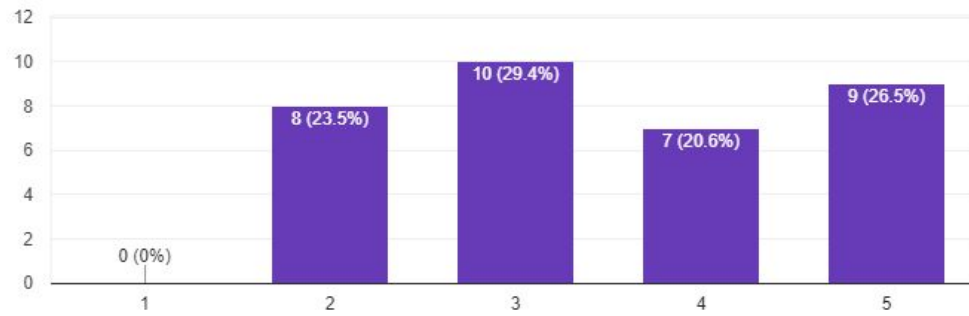


This game was meant to be relaxing, but no one thought the game was very relaxing (1 being relaxing, 5 being not relaxing). The game needs some tuning and some leeway in order to make the player feel like they aren't forced to find one solution. As it stands right now, I'm making the player play my game, and I'm not letting them play the game their way.

## Topic #6: Difficulty

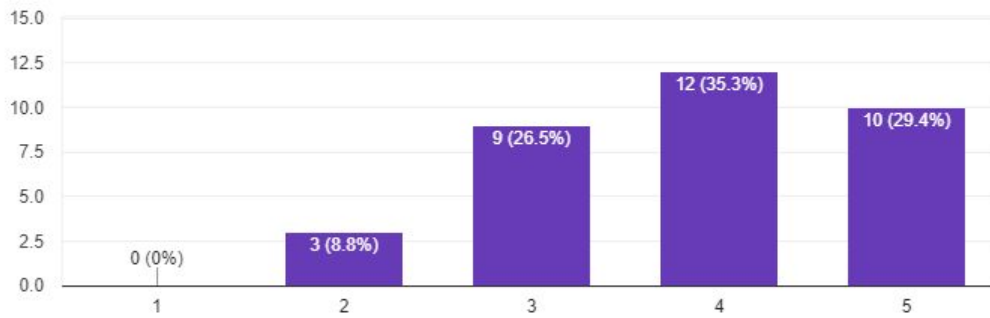
### Rate the difficulty of Level 1.

34 responses



### Rate the difficulty of Level 2.

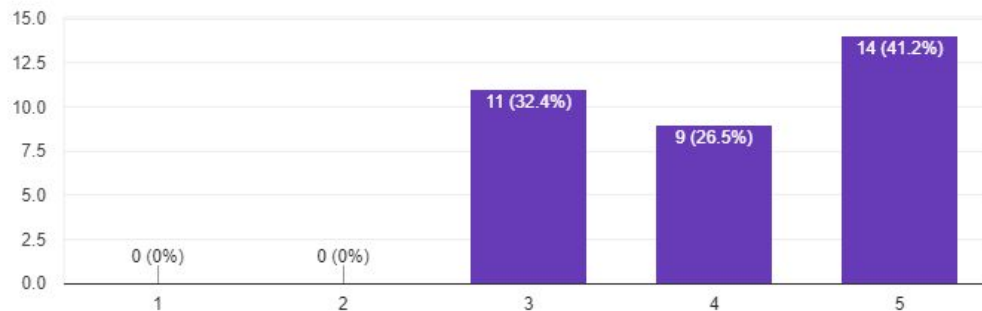
34 responses





### Rate the difficulty of Level 3.

34 responses

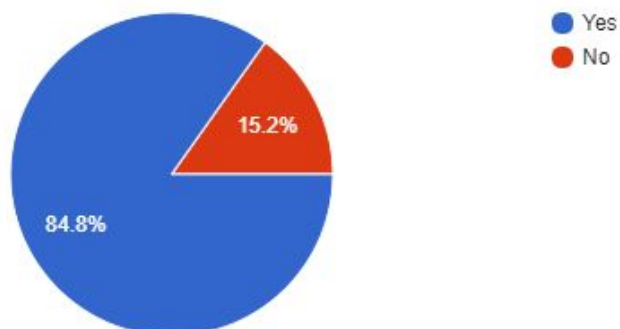


These levels were made with the intent of being easy, and clearly, the players did not think any of them were easy (1 being easy, 5 being difficult). The levels need to be rebalanced to be shorter, have multiple endings, and they need to have more post-it notes than necessary so the players can feel like they can correct their mistakes without being too punishing.

### Topic #7: Future Plans

#### Would you like to see more of this game in the future?

33 responses



Even after the trainwreck that this QA was, a large majority of the players said they wanted to see more of the game, showing that the concept of the game is interesting and the current state of the game is close to being something the players would like.

## Systems List

*\*\*Note: not every single system and mechanic detailed below is present in the final build of the game, as these were cut due to time limitations, but are still included in the document since they have been more or less fully conceived.*

- The Grid

- The grid is 8 squares by 8 squares
- The frog, post-it notes, bugs, and every single obstacle in the game each occupy one square total
- No two obstacles can occupy the same space
- Post-it notes are dragged by the player from another part of the screen onto the grid in order to move the frog

- The Frog (Movement)

- The frog always starts each level on the lily pad marked with a lotus flower
- When a post-it note is placed down on a square, the frog will move on top of that post-it note
- The frog can only move to a square adjacent to the one the frog is currently on (unless an obstacle prevents this)
- The player's goal is to collect each bug in the level
  - The player does this by moving the frog on the spaces where the bugs are while also being the same color as the bug the frog is currently on

- This must all be done in one run; backtracking past a spot where a bug was collected will respawn the bug

## ● The Frog (Color)

- The colors are as follows:
  - **White:** White
  - **Primary:** Red, Blue, Green
  - **Secondary:** Cyan, Yellow, Magenta
- The combinations of colors are as follows:
  - **Cyan:** Blue + Green
  - **Yellow:** Red + Green
  - **Magenta:** Red + Blue
- The color of the frog at the start of each level is determined by the color of the lotus flower on the lily pad it starts on
- When the frog moves on top of a post-it note, the frog “absorbs” the color of the post-it note it moved to (the post-it note itself does not change)
  - If the frog was **white**, the frog will turn into the color of the post-it note being moved to
  - If the frog was already a **primary** color and the color of the post-it note being moved to is a different primary color, the frog will turn into the **secondary** color corresponding to the combination of the two primary colors used
  - If the frog was already the same **primary** color of the post-it note being moved to, or if the frog is a **secondary** color that contains the color of the post-it note being moved to, then the frog does not change color
  - If the frog was already a **secondary** color and the color of the post-it note being moved to is the **primary** color that doesn’t

correspond to the combination of said secondary color, then the frog will turn **white**

- A chart showing the different possible color combinations is shown in Mechanics, Elements, &
- Whirlpools can change the color of the frog
- A reference chart of how the colors interact with each other will be on the screen at all times during gameplay for the player to reference

## ● Post-It Notes

- Post-it notes come in the three different **primary** colors
  - Red, blue, and green
- Post-it notes can be dragged in from the sides of the screen onto the playspace
- The amount of post-it notes available to the player is shown on the space where the player can drag the post-it notes from
- The player has a preset number of each color of post-it note available to them in each level (the number is different for each level)
- Post-it notes may be placed on any space adjacent (but not diagonal) to the space the frog is currently on
- The frog will automatically move to the most recently placed post-it note.
- The player is not allowed to place a post-it note on top of a post-it note that has already been placed
- The most recently placed post-it note may be removed and dragged back into the side of the screen in order to allow the player to backtrack
  - The frog will move to the previously placed post-it note when this happens, and it's color will change to whatever color the frog was on the previous post-it note

- Bugs

- Bugs come in the following colors:
  - White, Red, Blue, Green, Cyan, Yellow, Magenta
- Every single bug in the level must be completed in one run in order to beat the level
  - If a bug is picked up and then the player backtracks to a point before that bug was collected, the bug will reappear
- When a bug is picked up, a more opaque version of the bug will be left on the screen to show the player where the bug was
- The frog must be on the same space as the bug while also being the same color as the bug in order to pick it up
- Each level has a different combination and number of bugs

- Lily Pad

- The frog always starts each level on the lily pad that has a lotus flower on it
- Lily pads are placed on spaces in the grid depending on the level the player is on (the number of lily pads depends on the level)
- The player moves the frog to a lily pad by placing down a post-it note on a square adjacent (but not diagonal) to a lily pad; the frog will instantly move to the lily pad on its own if this condition is met
- Lily pads do not affect the color of the frog in any way

- Lotus Flower

- Lotus flowers come in the following colors:
  - White, Red, Blue, Green

- Every level has a lily pad with a lotus flower on it
- The color of the lotus flower determines what color the frog will be when spawning
- The frog will always start on the lily pad that has a lotus flower on it
- A lily pad with a lotus flower acts exactly the same as a normal lily pad
- Lotus flowers do not change the frog's color when moving back onto the lily pad it is on

## ● Rocks

- Rocks are placed on spaces in the grid based on the level the player is on
- The player is not allowed to place lily pads on a space where a rock is
- No other thing in the game will ever occupy the same space as a rock

## ● Whirlpools

- Whirlpools come in the following colors:
  - White, Red, Blue, Green, Cyan, Yellow, Magenta
- Whirlpools are placed on spaces in the grid based on the level the player is on
- Post-it notes may be placed on top of whirlpools, but the frog's color will not change based on the post-it note placed; instead, the frog will change to whatever color the whirlpool is


## ● Leaves

- Leaves are placed on spaces in the grid based on the level the player is on

- The player moves the frog to a leaf by placing down a post-it note on a square adjacent (but not diagonal) to a leaf; the frog will instantly move to the leaf on its own if this condition is met
- When the frog moves onto a leaf, the leaf will then keep moving in the direction that the frog was moving when entering the leaf
  - For example, if the frog moves to the right onto a leaf, the leaf will begin moving to the right
- The leaf will not stop until it has hit either a rock, a post-it note, a lily pad, or the edge of the grid

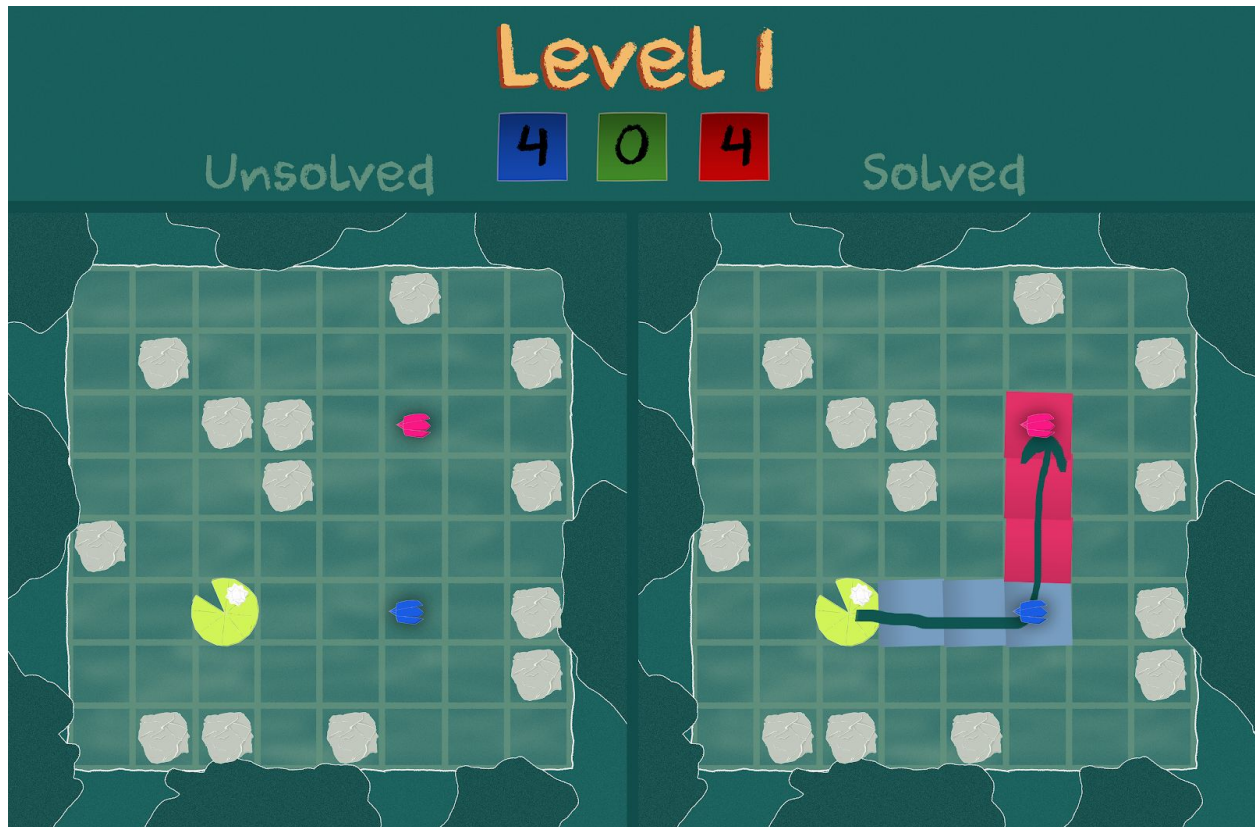
## Color Change Chart

# Changing Colors

		Color of the Frog						
		White	Red	Blue	Green	Magenta	Yellow	Cyan
Color of Post-It Note Being Added	Red							
	Blue							
	Green							

# Level Design

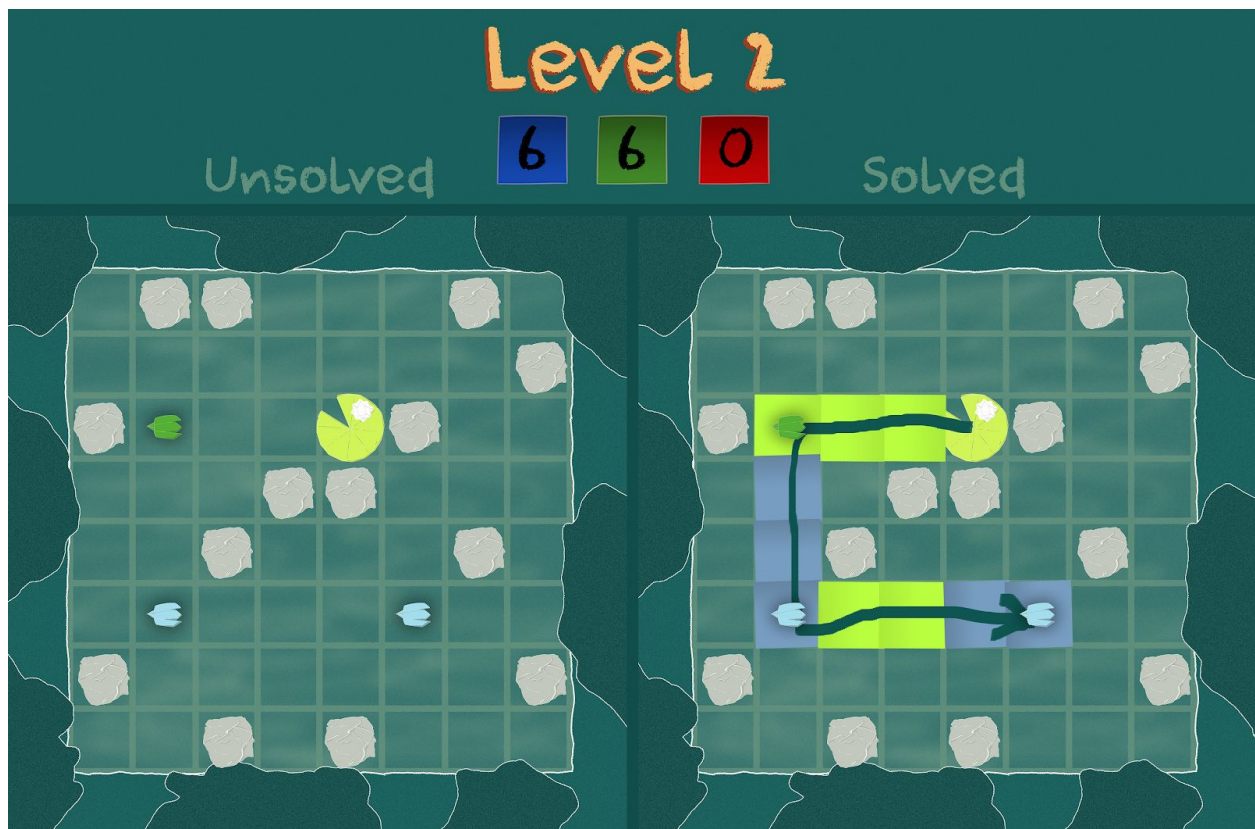
## Level 1



Level 1 was designed with the goal of having the player able to experience the game and the color changing mechanic without having to face any real challenges. The placement of the rocks gives a very clear path of where the player needs to go, and not being able to use green post-it notes limits the amount of error the player can have.

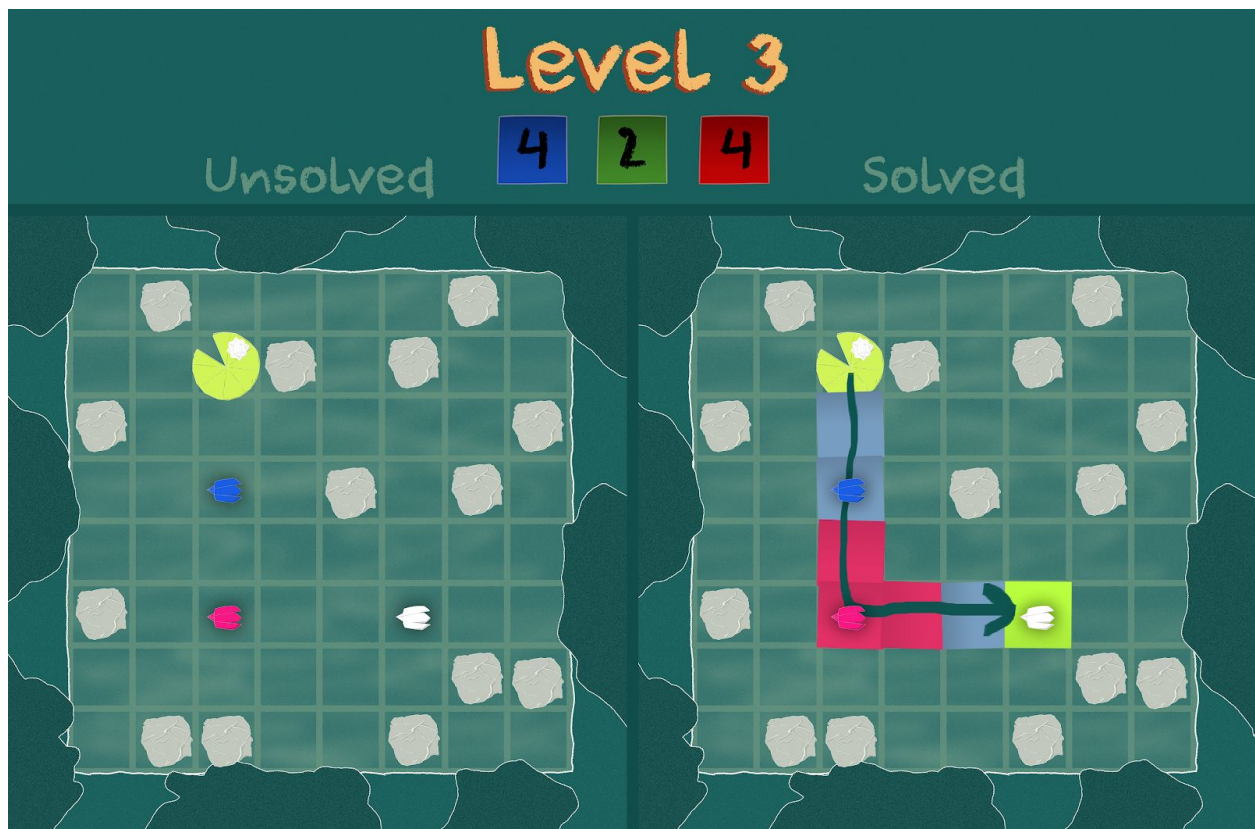


## Level 2



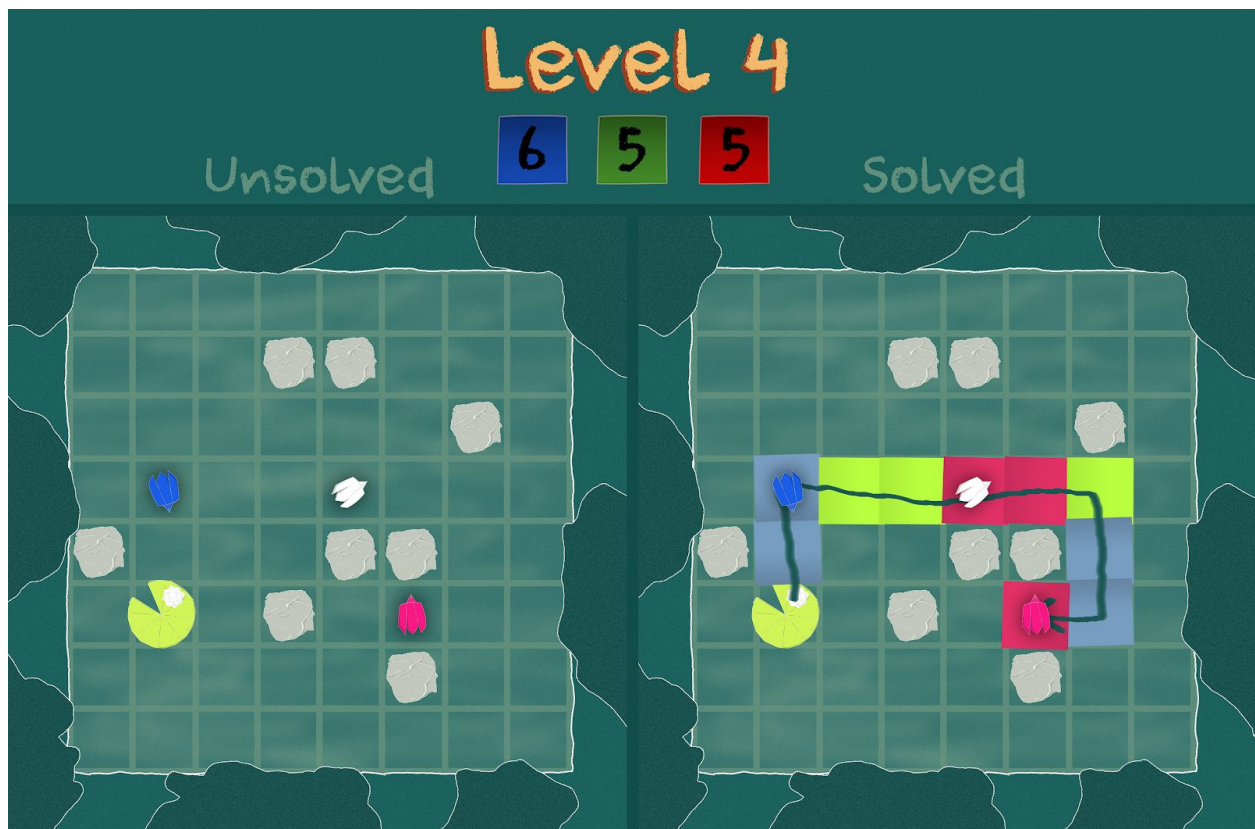
Level 2 was designed in a similar way to level one, but with the added layer of making the player know and experiment with how using a post-it note with a corresponding secondary color does not change the color of the frog. It also includes an extra bug compared to Level 1 to give the illusion of extra difficulty.

## Level 3



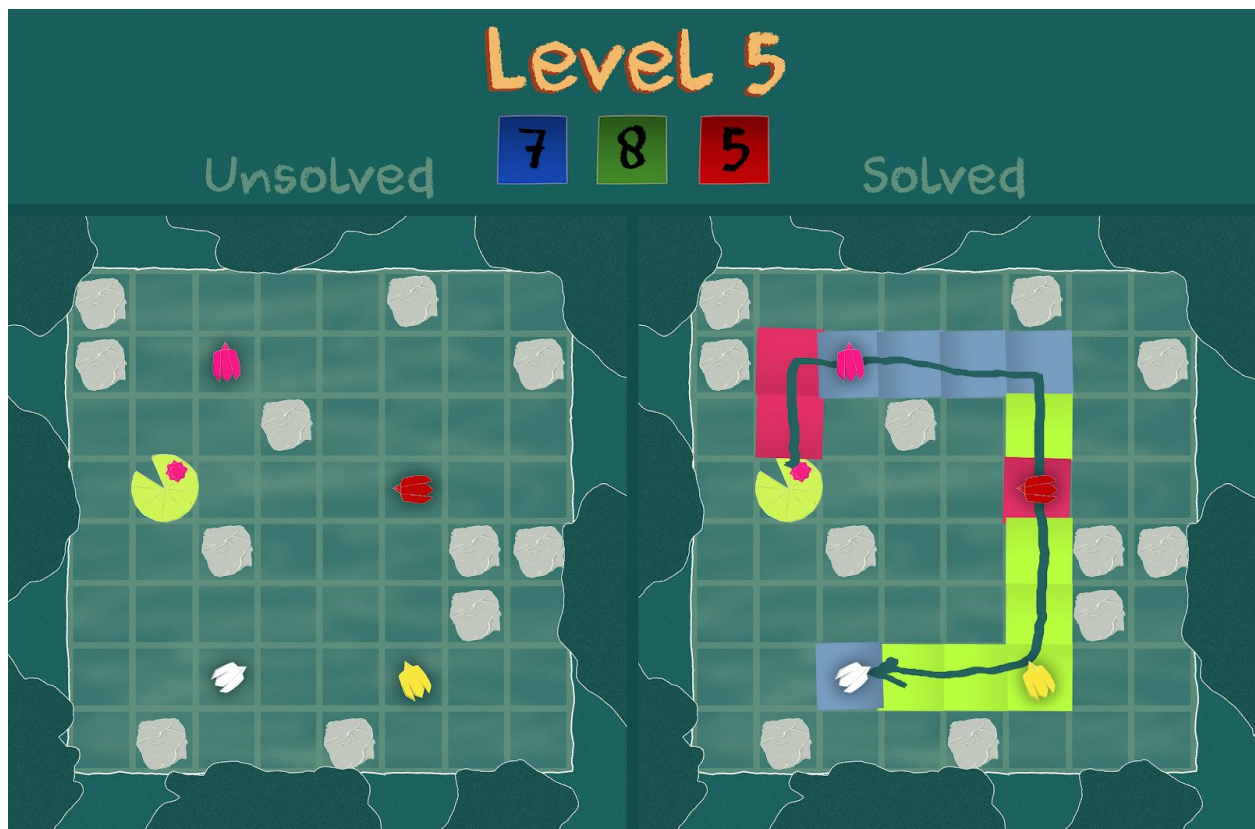
Once again, Level 3 is designed to familiarize the player with a key concept of the game: refreshing the frog's color by turning white. The player's end goal is to turn their frog white, and their movement on the board is limited by the way the rocks are placed in the level.

## Level 4



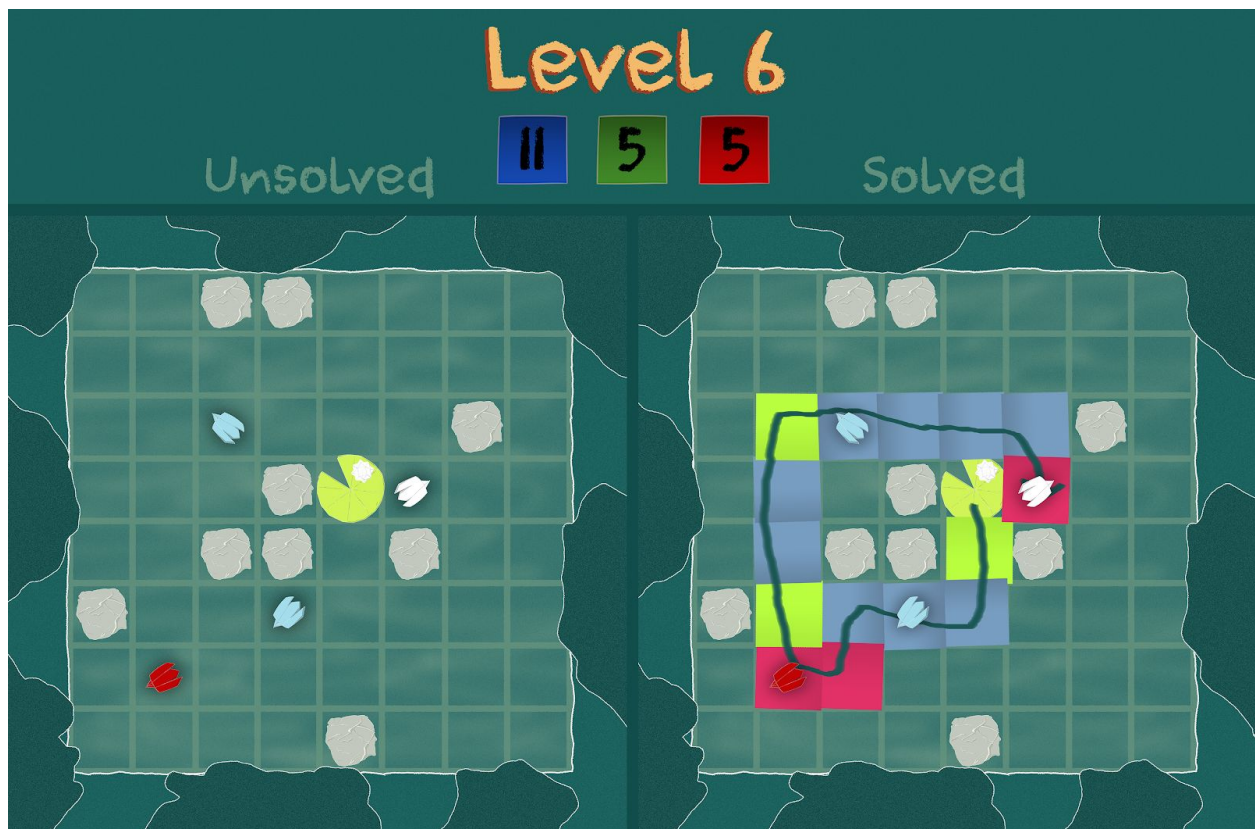
Level 4 is the first level that makes the player really think and test how well they know the mechanics of the game. The shape of the rocks blocking off the magenta bug hints that the player should go up and around rather than down and below.

## Level 5



The only jump in difficulty in Level 5 compared to previous levels is that there are 4 bugs to collect; it should be somewhat obvious to the player that they need to go in a circular pattern in order to pick up all the bugs.

## Level 6



Level 6 is supposed to trick the player, since they want to pick up the white bug first but they can't with how they are spawned into the level. They must also pick up 4 bugs, which is still the most amount of bugs that they have ever faced in one level.

## Iteration

- The game was initially planned to have whirlpools, which would add variety to the levels and create more levels of thinking for the player
- Leaves were added as a stretch goal in order to add even more ways to interact with the level, but this time without necessarily changing the levels themselves
- The game was sent to QA and the feedback showed that the levels were far too hard; the amount of post-it notes given to the player was increased and easier levels were introduced before the levels currently in the game
- Lily Pads, Whirlpools, and Leaves were cut from the final version of the game due to time constraints, technical constraints, and level balancing issues