

Playtesting: *Gemji*

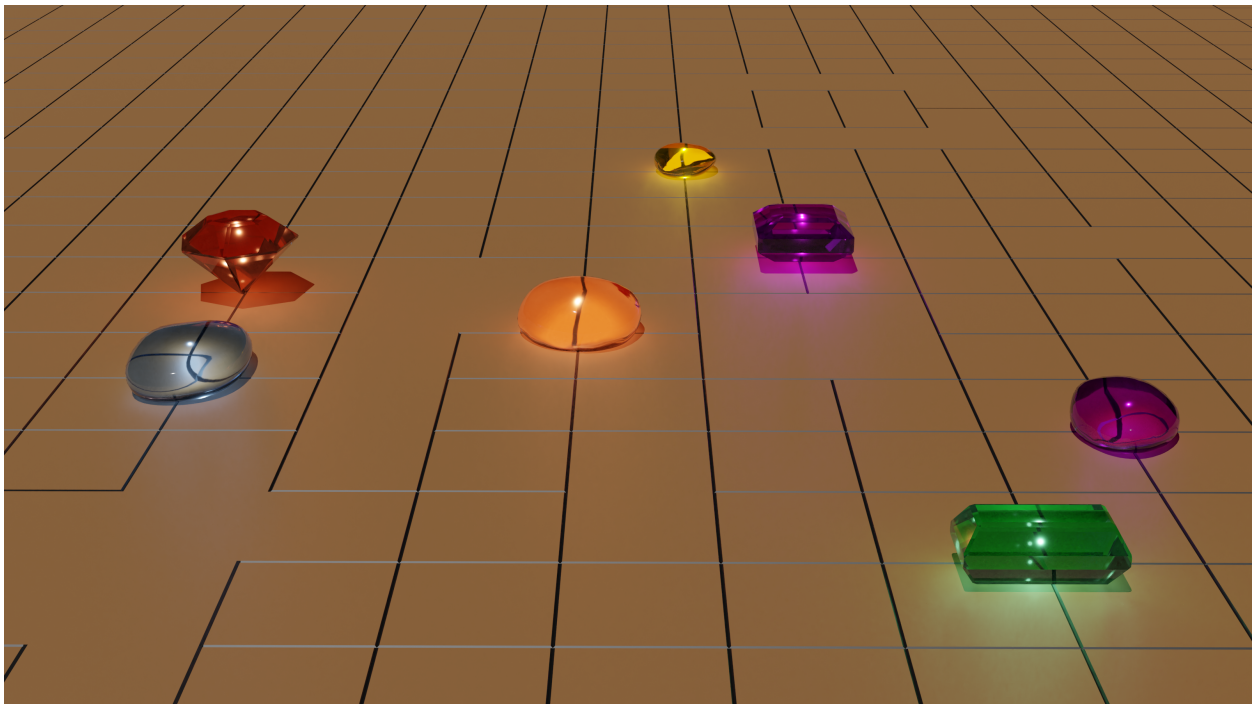
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June 2021



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1 Playtesting Sessions

As the core of this milestone there are the playtests. After having found participants we sent them a .zip file containing the game. In the following sections we present the contents of the demo, the procedure of the playtesting sessions as well as the questions in our questionnaire.

1.1 Playtesting version of *Gemji*

The demo version of *Gemji* that we used for the playtest included 19 levels with increasing difficulty. This number of levels might seem too high but in reality most levels were quite short due to the introductory aspect they had to fulfill. The demo version includes all 7 gem types and effects which we first had to teach the players one after the other. Each of the gem types has its own set of levels for this purpose, starting with a very simple intro level that displays the mechanic and then additional levels that try to show the player what they have to watch out for when using that particular gem. The latter levels in the playtest were a little bit more difficult as they included several different gem types and were more focused on the emergent effects of gem combinations. Most of the levels were handmade but two were automatically generated using the brute-force algorithm.

1.2 Procedure

After welcoming our testers we had them casually play the game. We left it up to them whether they wanted to finish all levels or opt to drop out in the middle of the session. Since we included a few levels and most were rather short, all participants were able to successfully finish the demo. We further did not give them hints how the mechanics work and instead had them figure out the mechanics by playing the game and the in-game tooltips.

1.3 Questions

After finishing the demo the testers were asked to fill out a Google Forms questionnaire to judge the general sentiment of the game among other aspects. Compared to last semester's project we decided to use a fixed questionnaire instead of a free form interview which made the data collection process much easier. We added a free comment and suggestion box at the end of the questionnaire to keep similar opportunities that an interview offers. Some testers also offered to play the demo on stream which allowed us to gain additional insight on how they approached the levels.

1.3.1 Demographic questions

Starting of the questionnaire are two demographic questions regarding the age of the participant and their average weekly time spent playing video games.

1.3.2 Gem effect questions

Going into the playtest we knew that we not only wanted capture a general sentiment about our game but also test whether the level structure and design combined with the tooltips would be enough to convey the game mechanics in a reasonable manner. For this reason the first part of the questionnaire was only focused on the participants understanding of the gem effects. For each of the gems we had a multiple choice question on the gem behavior and how confident the tester was in his judgement of that particular gem.

1.3.3 Impressions questions

For the first impression of our game we mainly asked about the Sound effects, graphics and animations. Additionally we asked about the difficulty and whether our game is frustrating to play. At the end we also asked broader questions about the game itself. If it was fun, or fulfilling or maybe frustrating.

2 Results

After playing through the demo the testers got filled out the questionnaire. In the following we present the results.

2.1 Demographic questions

While with few outliers the age range of our testers was rather compact, the differences in how many hours the testers play video games vary considerably.

How old are you?

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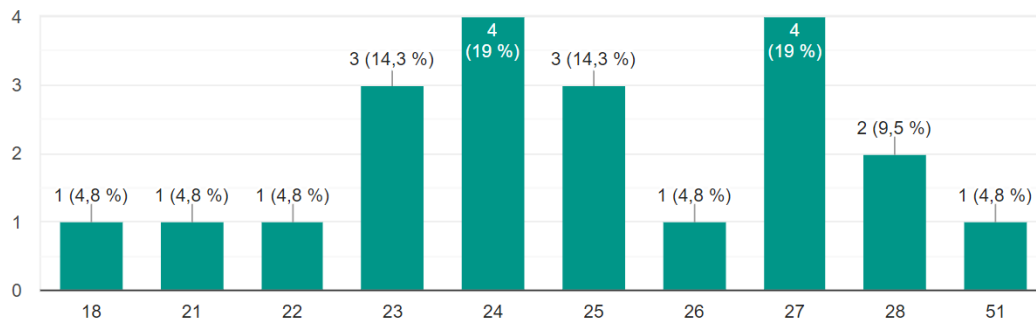


Figure 1: Most testers were in the 20 to 30 age range.

2.2 Gem Properties

The questionnaire results for the gems are really diverse. Some gems were understood really well. Testers could choose the correct effects belonging to a certain gem and additionally reported that they are confident in their answer. On the other hand some gem effects seem to be harder to grasp. The majority of the testers could always identify the correct effects of a given gem, however for some gems, the number of wrongly picked effects was higher. The property of a gem to be able to be moved by the player could also be identified by the testers most of the time. However about half of the testers had trouble identifying most gems' ability to activate the effect of other gems. The only exceptions are the grey and black gems that do not activate other gems. Notable exceptions to these trends are also mentioned in the following sections.

2.2.1 Red gems

The pushing effect of the red gems was recognized well by the testers. We attribute this to a few circumstances. Mainly the red gems were introduced first to the player. The first few levels only contained

How many hours per week do you play Video Games?

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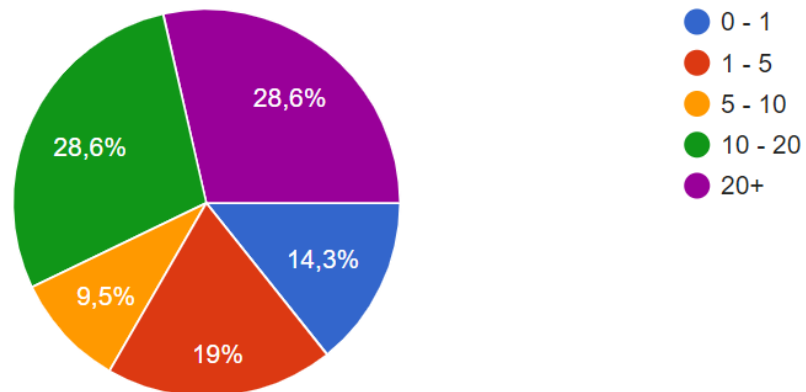


Figure 2: The majority of testers is very familiar with video games.

the red gems, so the player had a lot of time to familiarize themselves with their effect. Furthermore the pushing effect is quite apparent and easy to remember.

Select all properties of Red Gems

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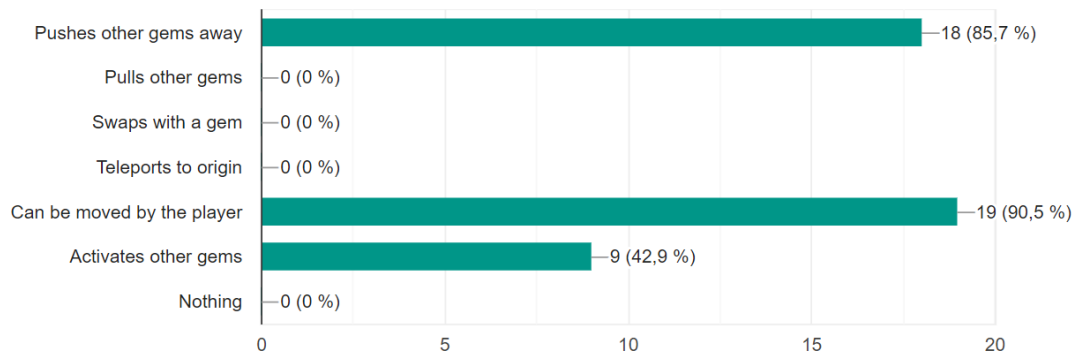


Figure 3: The effect of the red gems could be identified by almost all testers.

How confident are you in your understanding of the Red Gems?

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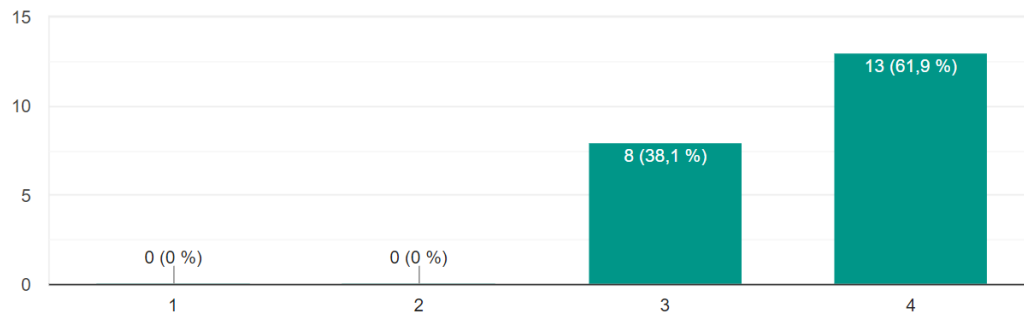


Figure 4: Most testers felt confident in their understanding of the red gems.

2.2.2 Yellow gems

Yellow gems were introduced after the red gems. Their pulling effect could be identified by most of the testers, however some confused it with the pushing effect. The testers had an even higher confidence in their pick than for the red gems. Overall the confidence of the understanding of the yellow gem was the highest considering the results of the questions on the gems.

Select all properties of Yellow Gems

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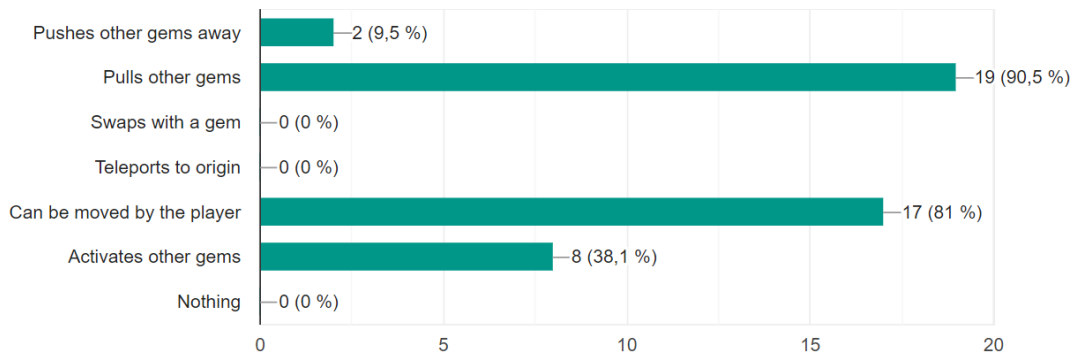


Figure 5: Some people wrongfully attributed the pushing effect to the yellow gems but the majority could identify the pulling correctly.

How confident are you in your understanding of the Yellow Gems?

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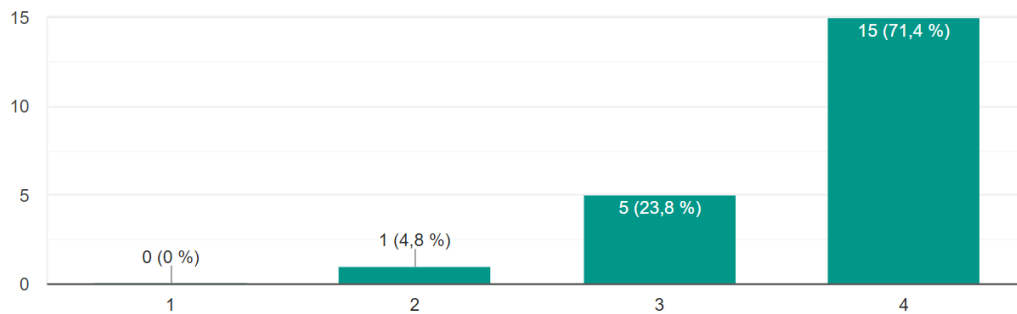


Figure 6: The confidence over the understanding of the yellow gem was higher than for all other gems.

2.2.3 Blue gems

Blue gems teleport back to their starting position of the turn, as long as it is still free at the time of the action, which adds a bit of complexity to the effect. The players could identify the teleportation. However the effects of other gems were also wrongfully identified to the blue gems. Interestingly for blue gems most testers identified their ability to activate other gems. This is probably because its effect was used many times in the testing levels to activate other effects.

Select all properties of Blue Gems

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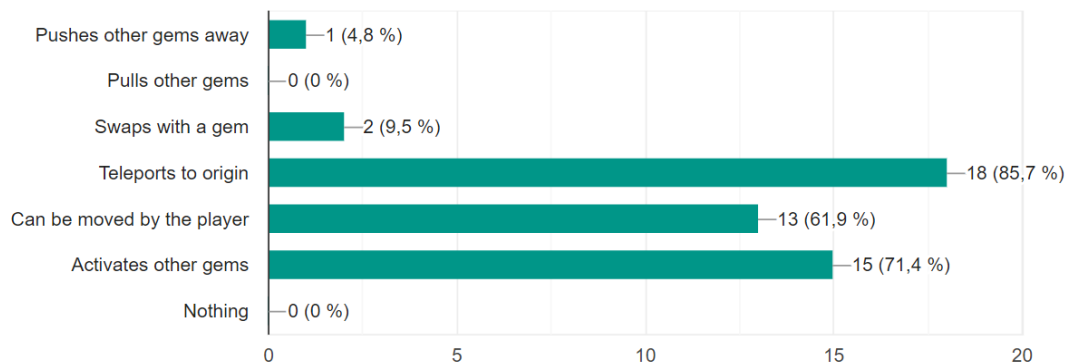


Figure 7: While the teleportation could be identified, other effects were also attributed to the blue gems.

How confident are you in your understanding of the Blue Gems?

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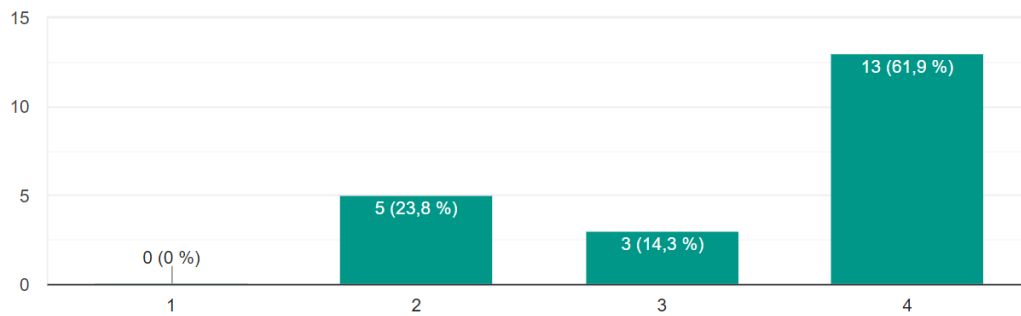


Figure 8: People felt more unsure about the blue effects compared to the previously introduced ones.

2.2.4 Purple gems

Purple gems swap positions with the gem that activated it or – if it was moved by the player – try to find a neighboring gem to swap positions with them. The search happens in clockwise order starting from the neighboring field just north of the purple gem. This makes the purple effect harder to understand fully but there are also only few occurrences of this rule in the testing levels. Overall the effect could be correctly identified. Similar with the results of the blue gem effect, effects purple gems were similarly confused with blue gems. We attribute the confusion between the blue and purple gem effects to the fact that they together have an emergent effect that is used throughout some levels.

Select all properties of Purple Gems

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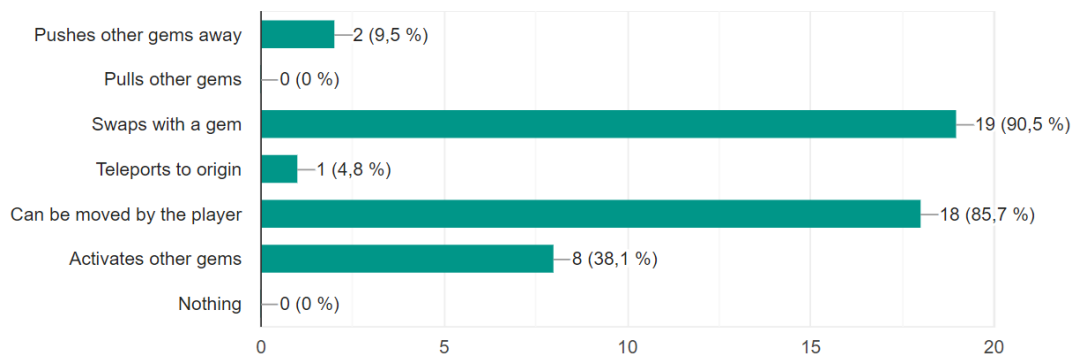


Figure 9: The swapping effect of the purple gems could mostly be identified correctly.

How confident are you in your understanding of the Purple Gems?

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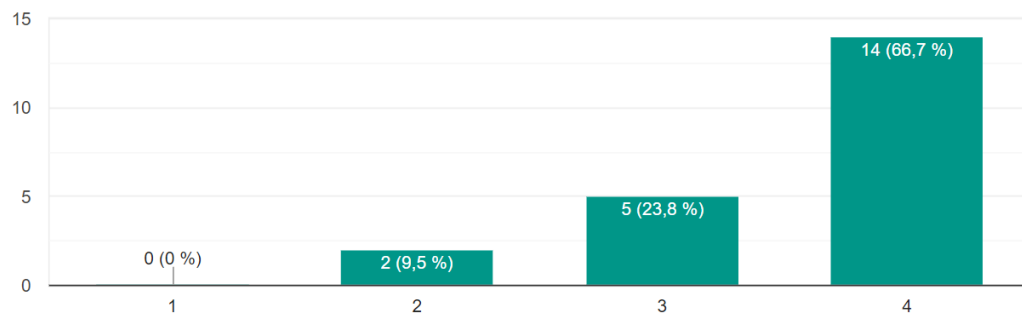


Figure 10: Most testers also feel confident in their understanding of the purple gems.

2.2.5 Grey gems

Grey gems do not have any effect and cannot be moved by the player. They can only be moved by effects of other gems. The vast majority understood this correctly however they did not feel confident to have really understood the properties correctly.

Select all properties of Grey Gems

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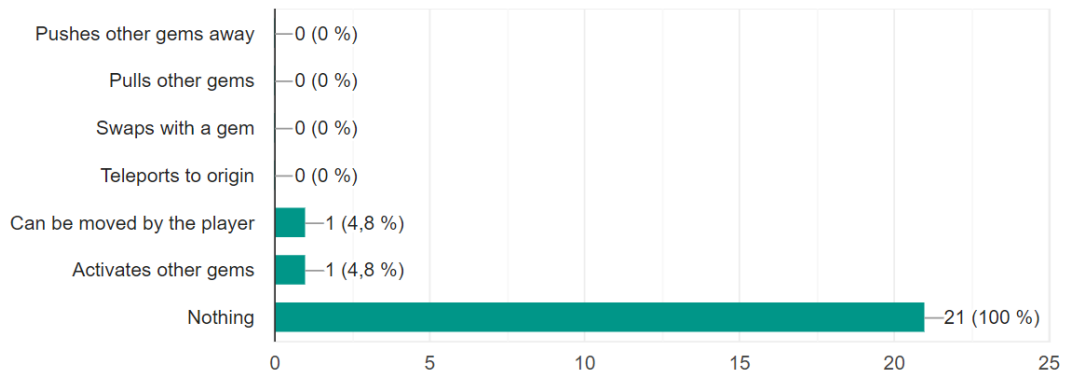


Figure 11: The testers did not have any difficulty to understand the properties of the grey gems.

How confident are you in your understanding of the Grey Gems?

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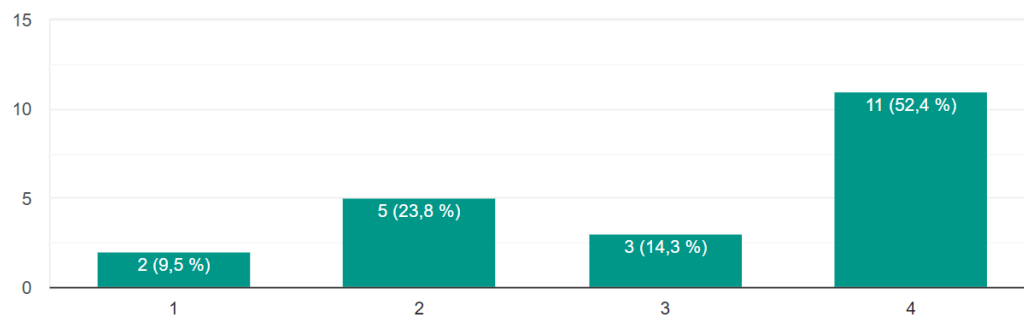


Figure 12: Even though the grey gems do not have any effect, the testers felt unsure about them.

2.2.6 White gems

White gems behave identically to grey gems with the only exception, that when activated it will also activate the effect of all its neighbors. Interestingly the effects of other gems were also identified with this gem, maybe because the white gem activates the other gems. Regardless, the majority correctly identified the absence of any effect but only half realized that the white gem also activates other gems. Notably the majority of testers was unsure about the properties of the white gems.

Select all properties of White Gems

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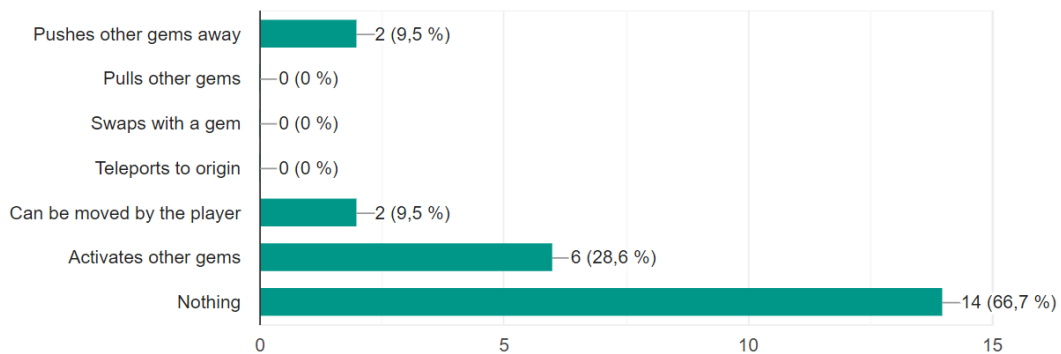


Figure 13: Only around 29% of the testers realized that while gems can activate other gems.

How confident are you in your understanding of the White Gems?

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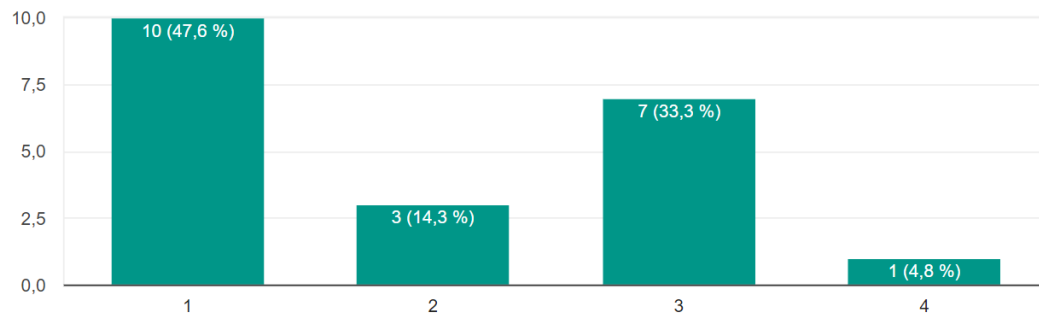


Figure 14: Most people felt really inconfident about their knowledge of the white gems.

2.2.7 Black gems

Black gems do not have any effect and can neither be moved by the player nor by other gem effects. Effectively they are obstacles on the playing field. We attribute the simple properties to the clear result.

Select all properties of Black Gems

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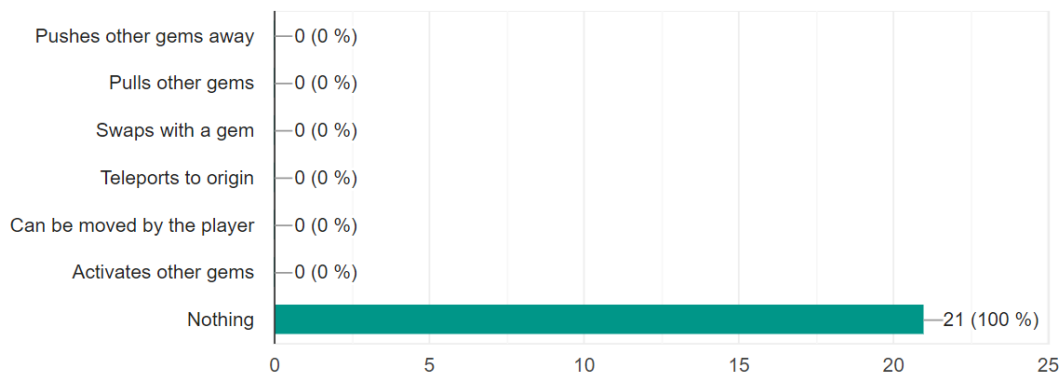


Figure 15: All testers could correctly identify the properties of black gems.

How confident are you in your understanding of the Black Gems?

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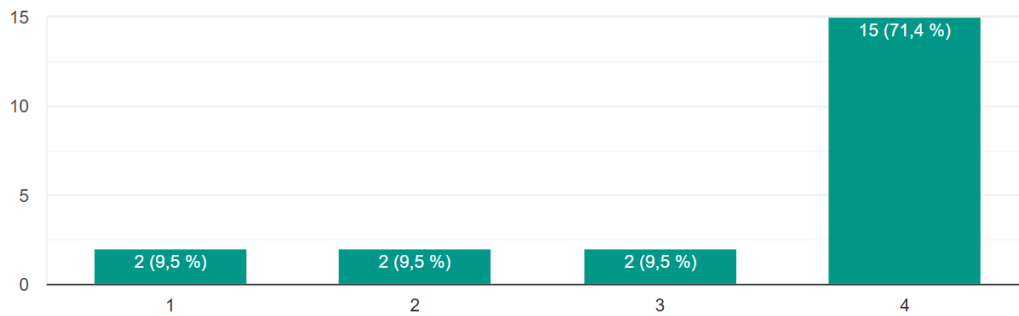


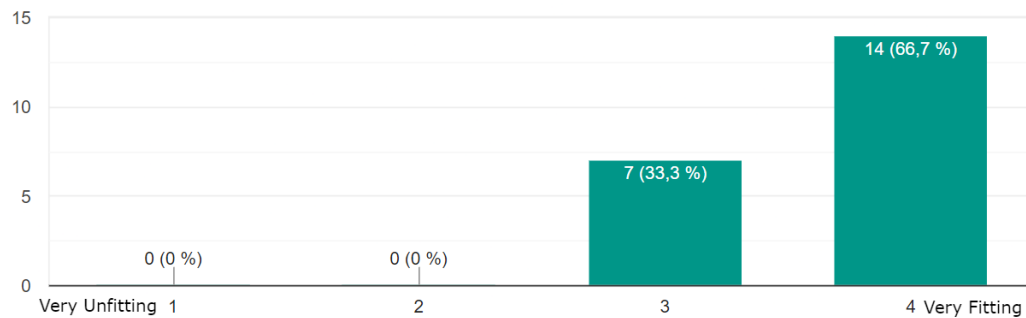
Figure 16: Most people felt really confident in their understanding while a small percentage was not too sure.

2.3 Impressions

The animations and sound effects were received rather well. As 'small' as they are, they did not get in the way of the testers' thinking process while playing.

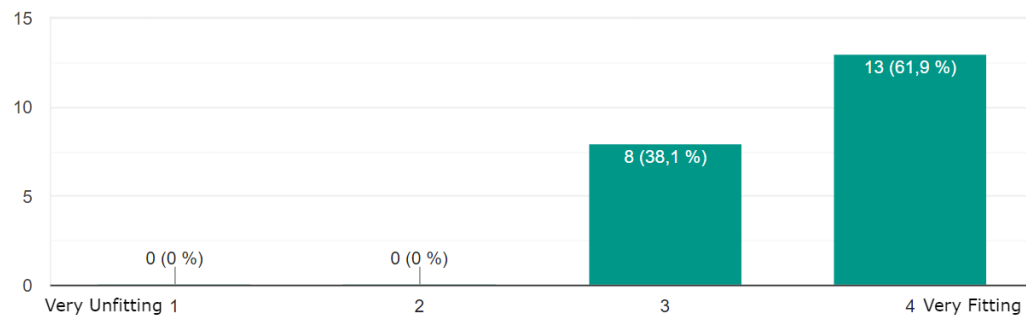
How fitting are the Sound Effects?

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How fitting are the animations?

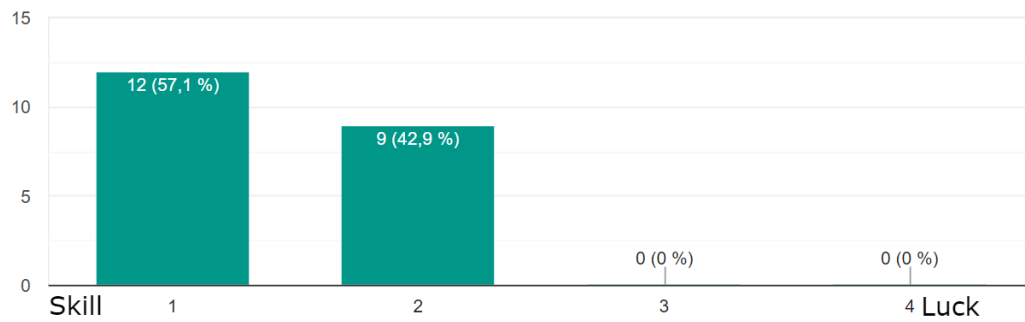
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In regards to the play matrix the results reflected how we envisioned *Gemji* to be: A skill-based puzzle game that requires mental energy to beat.

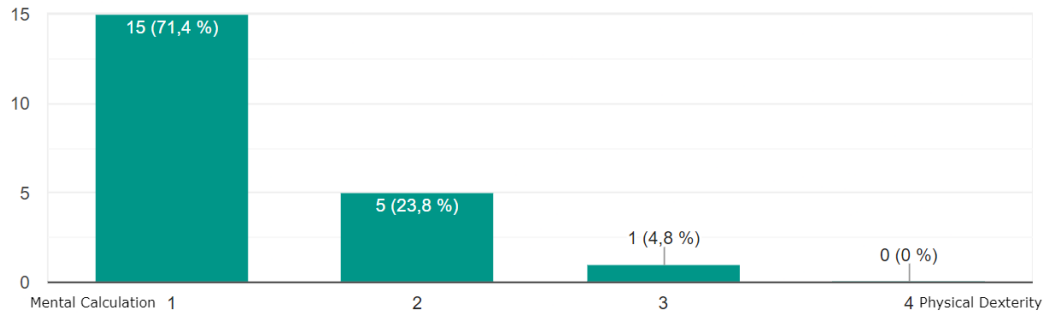
What do you think is more important in this game? (1)

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What do you think is more important in this game? (2)

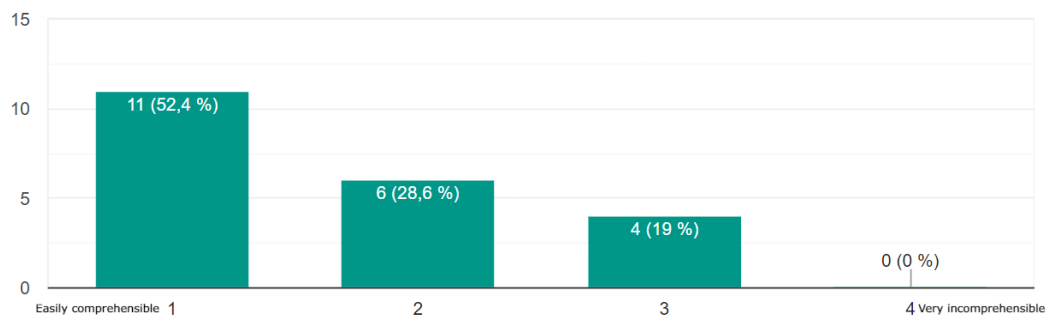
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In terms of accessibility the game seemed to do well as both finish conditions and controls were received as fairly comprehensible and intuitive.

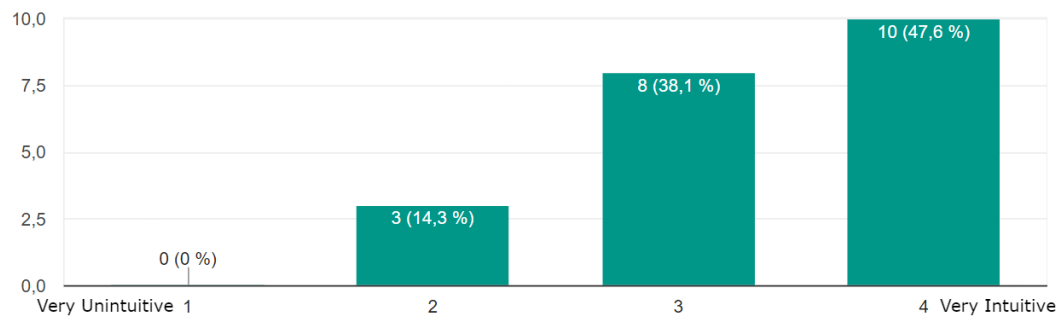
How comprehensible were the finish conditions?

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How intuitive were the controls?

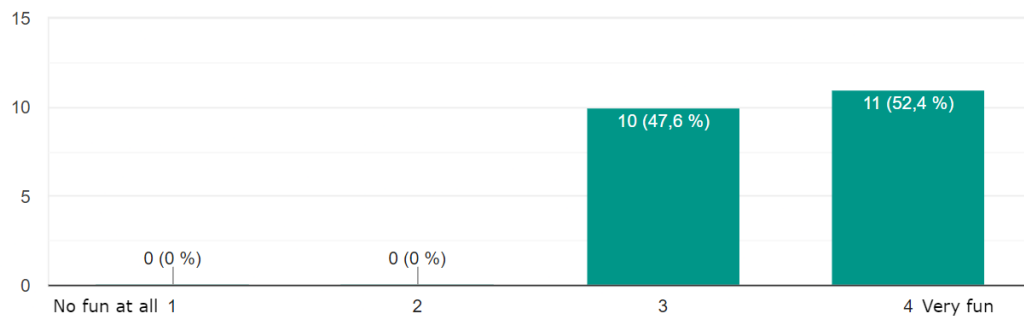
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Gemji further came across as fairly fun by everyone. A reason for that may be the difficulty that was regarded as not too easy or too hard. This indicates that we are on the right path in terms of level design.

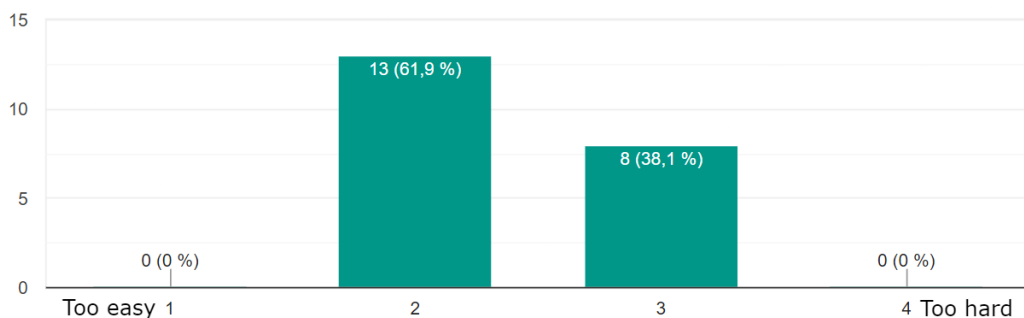
How fun was the game?

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How was the difficulty overall?

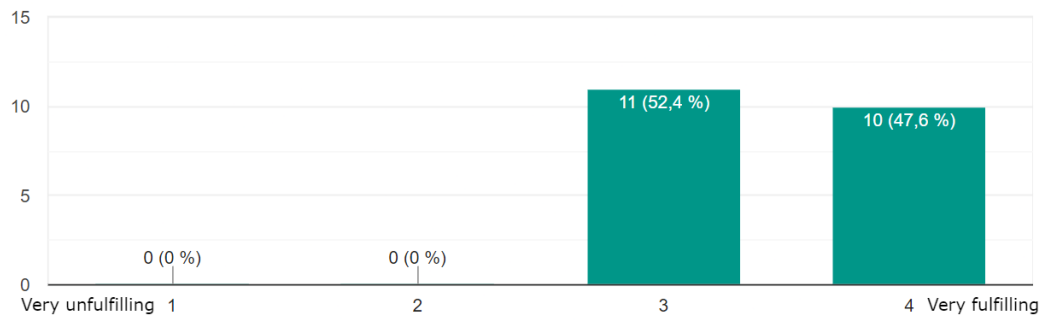
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Fulfillment was something that was present across all testers. Especially in more convoluted levels this fulfillment after finishing the level seems to go hand in hand with a certain degree of frustration, albeit to a lesser extend.

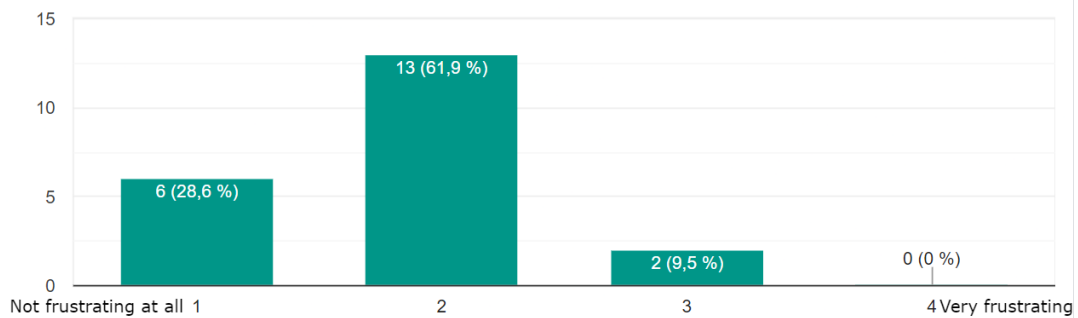
How fulfilling was the game?

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How frustrating was the game?

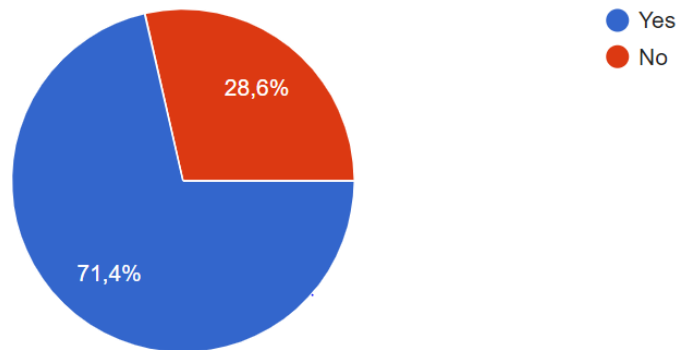
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The majority of participants also resorted to trial and error at some point. Since a considerable amount of participants reported unexpected gem interactions -although they are completely deterministic-, our integration of the theme "chaos and order" seems to be a success.

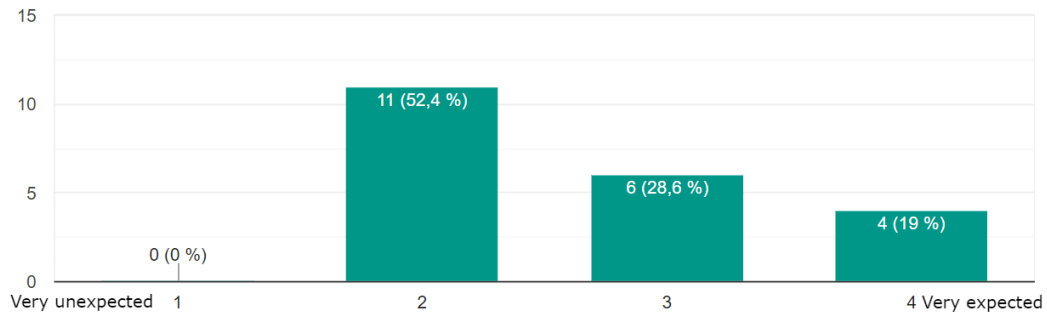
Was there a point where you gave up on thinking and switched to trial & error?

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How unexpected were some of the gem interactions?

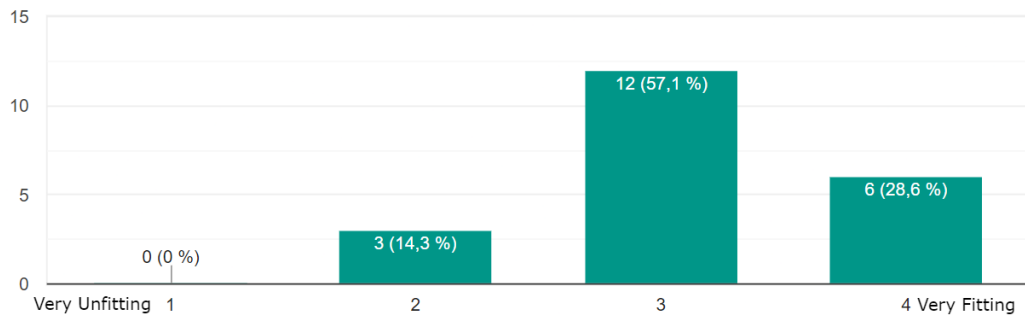
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Graphics were regarded as fitting. This is a field we definitely need to work on. We therefore did not expect the graphics to be a highlight of our game.

What do you think of the graphics?

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Observing testers a trend that further became apparent was that there was nothing conveying to players that gems can only be moved one tile at a time.

Finally addressing comments and suggestions the ones that stood out referred to the instructions of the mechanics that we provide in form of images. Testers suggested to be more specific with explanation especially in regards to gem interactions. Since we want to keep instructions to an absolute minimum, we will have to strike a balance.

3 Conclusion

In this section we will discuss the main conclusions we have taken away from both the questionnaire and watching the testers play the demo. Furthermore we will suggest solutions to problems we encountered during the playtest.

3.1 Intro to basic game mechanics

One thing that was very apparent from the start was that we have to do a better job in explaining the base mechanics of the game, namely: How gems move along the grid and that they can only move one space per turn. For this reason we want to implement additional one line tooltips in the first few levels that explain how the gems can be moved along the grid. Additionally when watching some of our testers

play we realized that they often tried to move gems over other gems or into an already occupied space. To prevent this we want to use point lights that shimmer in the possible spaces a picked up gem can be moved to. We hope that this and the textures make the movement clearer for the players, especially in the first few levels.

3.2 Clearer Tooltips

Some playtesters critiqued that a few of the tooltips explaining the gem effects were not clearly formulated and could even be confusing. This was especially true when the tooltips included gems that were not already introduced. The original plan was to implement a Picture-in-picture clip that displays the gem effect on an example board. Although this is important we want to develop other aspects of our engine first which means that we might not have enough time to implement the pip-tooltips. Depending on the remaining time we might update the existing tooltips or implement the picture-in-picture functionality.

3.3 Better level structure

We were overall content with the level structure of the demo and it was also not negatively mentioned in the questionnaire but when watching the testers play through the demo we realized that the level structure could use some small improvements and that some levels should probably be placed a little bit further back. We came to this conclusion as some levels were clearly more difficult than we first anticipated. Included in this small restructure will be additional intro levels for all gem types and emergent effects.

3.4 Gem activation and chain reactions

The aspect that was critiqued the most in our playtest was the clarity of the effect outcomes. This problem was mentioned both in free the comment section and deduced from the score judging the unexpectedness of the gem interactions. We assume that the main reason for this is unclarity is that the player does not know the order the gems activate in and thus can not calculate the effect combinations that occur of several effects chaining together. We want to improve on this problem by implementing point lights that are created in gem once it is triggered and the rest of the animations are playing out. We hope that this will be enough of an indication to the players that the order of effects matters and that they are working according to a set of rules. Realizing that there are underlying rules that govern all of the gems behavior is something we assume to be a fun part of puzzles games but can only really be observed over a longer playing session.

3.5 Improved VFX

The most lacking aspect of our game right now are the graphics and the overall setting. This was not only mentioned by some testers in the questionnaire but is also something that we were aware of before going into the playtest. One comment mentioned that they were expecting much more exciting effects of the gems moving which we did not implement yet because we are still working on the particle system. We also think that we can improve the current "world setting" of our game as it is very dry for now with only the grid showing. We want to add atleast one fully fleshed out level with details around the game board that give it the necessary flair it deserves. Point lights and the particle system will be a great starting point to achieve this goal.