

EYE-TRACKING IMMERSION (2020)

Comparing Eye Tracker Input to Traditional Input for Measuring Player Performance, Immersion, and Engagement in an Emergent Narrative

Application: School

Subject: Game, Interaction, Immersion

My Roles: Artist, Game- and UX-designer

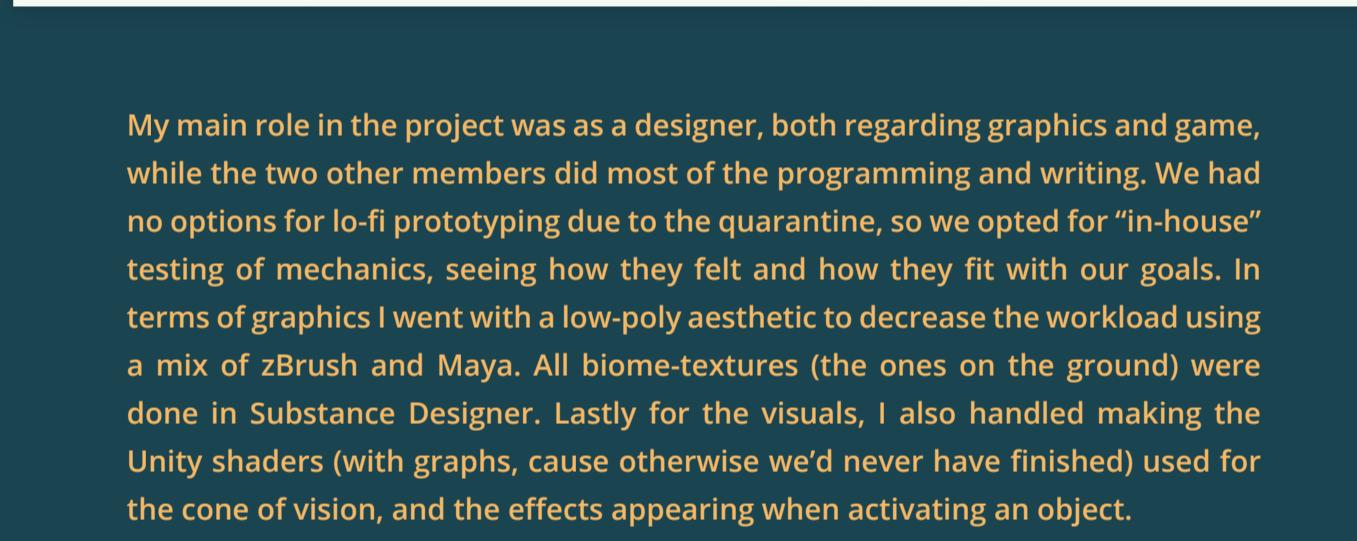


What we wanted

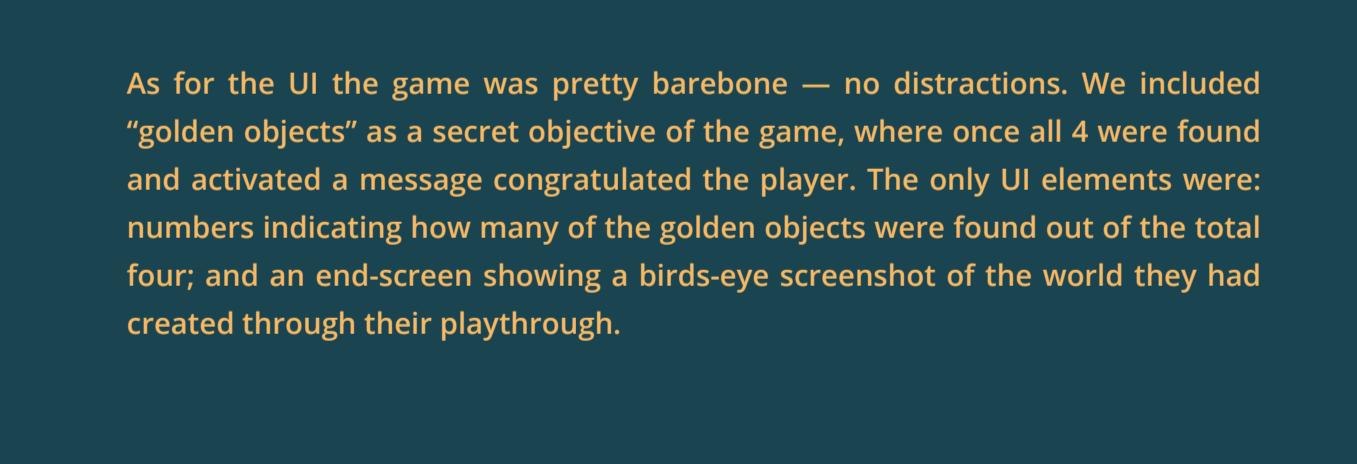
Through research a gap was found regarding the effect on immersion and user engagement when using eye-tracking as an input modality. To deter any bias based on the game's possible narrative themes, we decided to create an emergent narrative — also cause none of us had worked with it before. So the idea was simple, I suppose, create an emergent narrative game with two modes: controlling with keyboard+mouse and controlling with keyboard+eye-tracking.

What happened

As eye-tracking needed to be in focus throughout development, all design aspects were made with this in mind. The main purpose of the game would be to explore — well, and to look, which could easily be translated from eye-tracking to mouse-input. The final game features an isometric procedurally generated world for the player to explore. The world has a predefined size, but the objects within it appear at random. When the player interacts (stares/hovers) on a particular object for an extended amount of time, the object becomes activated and thereby dictates which biome (out of 4) future objects will spawn from. To encourage looking around in the environment the world is, by default, completely desaturated, but wherever the player looks a cone of vision reveals the colours of the world.



My main role in the project was as a designer, both regarding graphics and game, while the two other members did most of the programming and writing. We had no options for lo-fi prototyping due to the quarantine, so we opted for "in-house" testing of mechanics, seeing how they felt and how they fit with our goals. In terms of graphics I went with a low-poly aesthetic to decrease the workload using a mix of zBrush and Maya. All biome-textures (the ones on the ground) were done in Substance Designer. Lastly for the visuals, I also handled making the Unity shaders (with graphs, cause otherwise we'd never have finished) used for the cone of vision, and the effects appearing when activating an object.



As for the UI the game was pretty barebone — no distractions. We included "golden objects" as a secret objective of the game, where once all 4 were found and activated a message congratulated the player. The only UI elements were: numbers indicating how many of the golden objects were found out of the total four; and an end-screen showing a birds-eye screenshot of the world they had created through their playthrough.



The outcome

Though the production of the game could be called a success, and a lot of fun, our testing did not reveal any significant relation between the input modality and the users' engagement, immersion, or performance. This could be due to unclear interactions, which would have been circumvented had we been able to do the tests in person but due to the pandemic we chose not to. My work on narrative theory, graphics, and game design, helped to get a better feel for the production pipeline. We went back and forth with a lot of concepts which never felt like an issue, as long as we kept a clear sense of communication.

[read the full paper](#)

[read the worksheets](#)