



Team: AstroBearBytes

EXOQUEST: A GALACTIC **EXPLORATION** ADVENTURE



About the game

Description



ExoQuest is an interactive, educational game designed to immerse students from grades 6th to 9th into exoplanets. The game combines storytelling, hands-on science activities, and gamification to make the complex field of astrophysics engaging and accessible for learners of diverse backgrounds and abilities. Players will design exoplanets, and conduct scientific missions, to learn key principles about exoplanetary science in a format that is inclusive, collaborative, and deeply engaging.

About the game

Objective

ExoQuest is a game designed to unify the classroom and engage students with concepts related to exoplanets. The goal of this game is to immerse students in the learning process and create an inclusive environment where everyone can thrive.

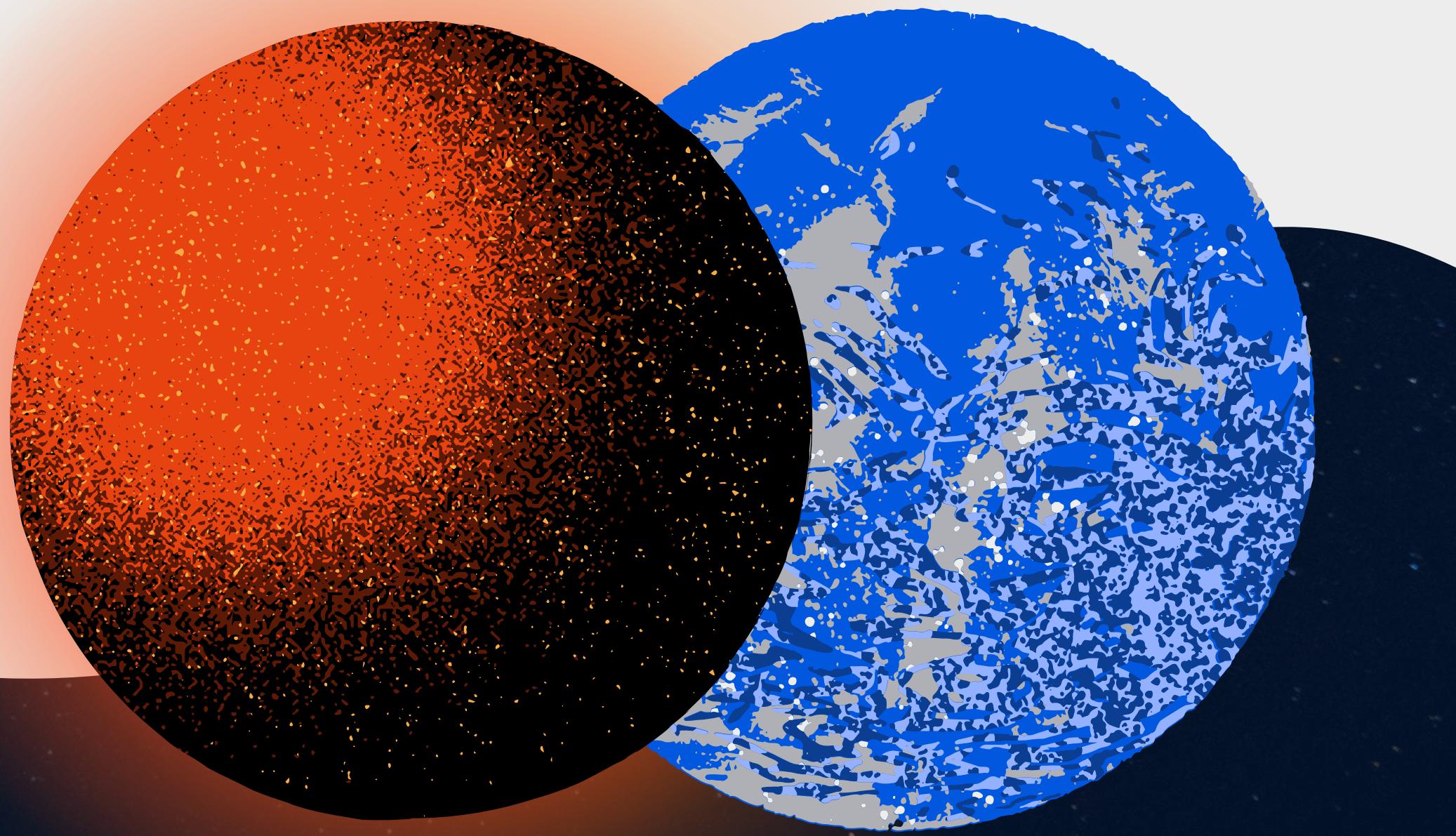
Game Structure

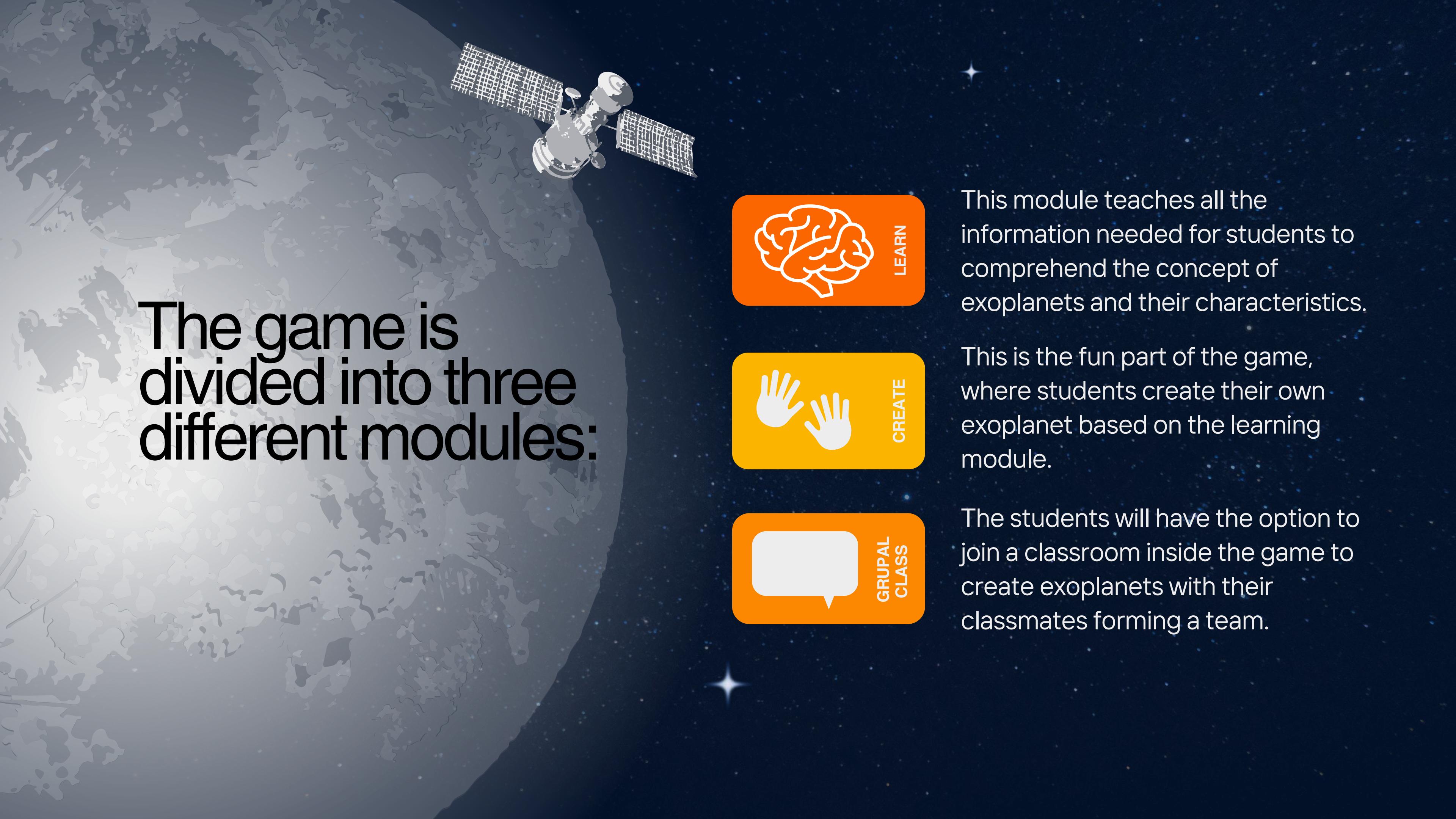


Storyline

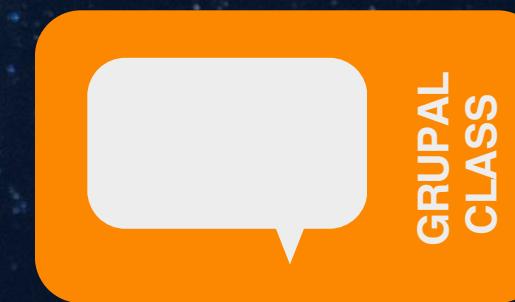
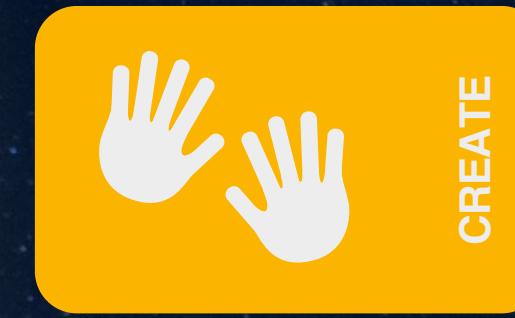
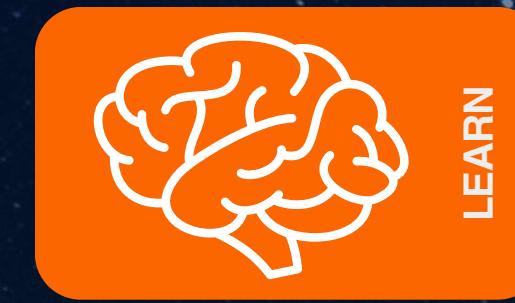
The game opens with an introductory cinematic sequence: a young and enthusiastic scientist from **NASA** welcomes the players to the Exoplanet Research Academy. They are addressed as **Exoplanet Detectives**, freshly recruited to help uncover the mysteries of exoplanets located in the Milky Way.

GAMEPLAY FLOW AND ACTIVITIES





The game is divided into three different modules:

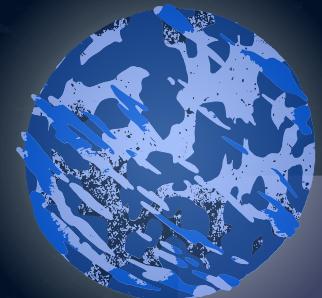


This module teaches all the information needed for students to comprehend the concept of exoplanets and their characteristics.

This is the fun part of the game, where students create their own exoplanet based on the learning module.

The students will have the option to join a classroom inside the game to create exoplanets with their classmates forming a team.

The main goal for students is....



In the theoretical module, students study Milky Way exoplanets through interactive lessons and storytelling. We also implemented quizzes to track students' progress. The game adjusts content difficulty and provides additional hints.



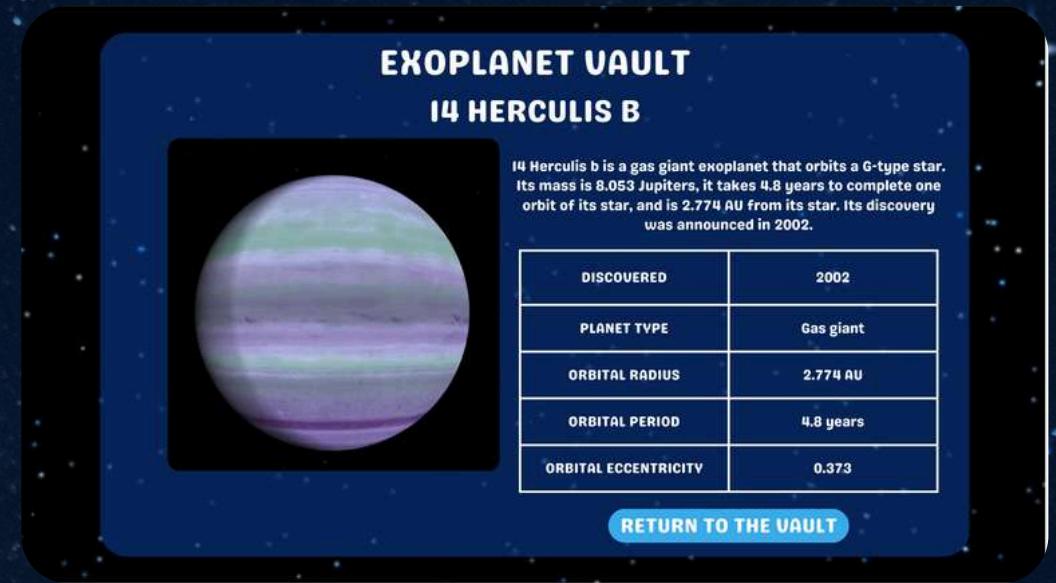
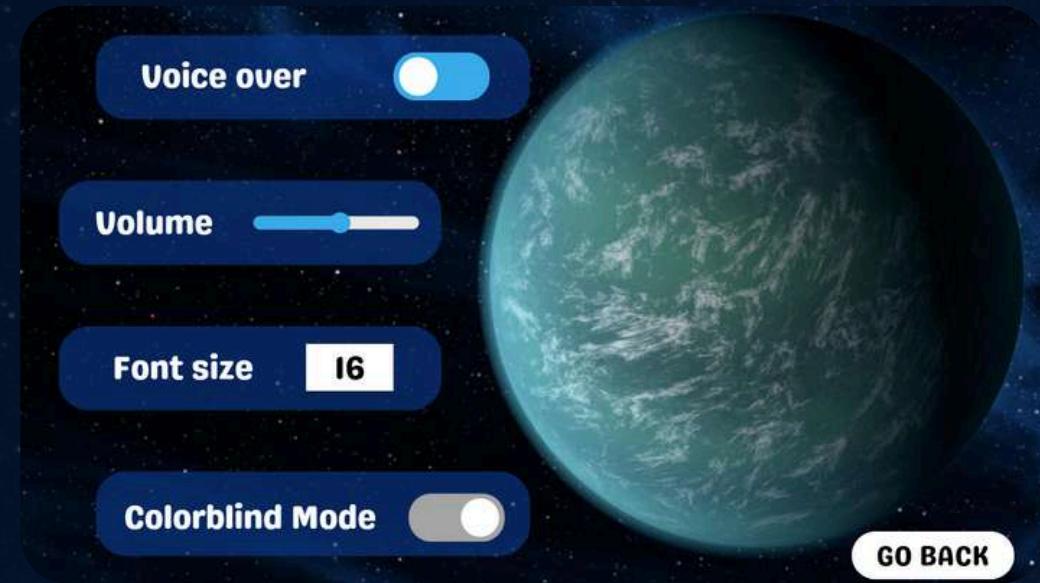
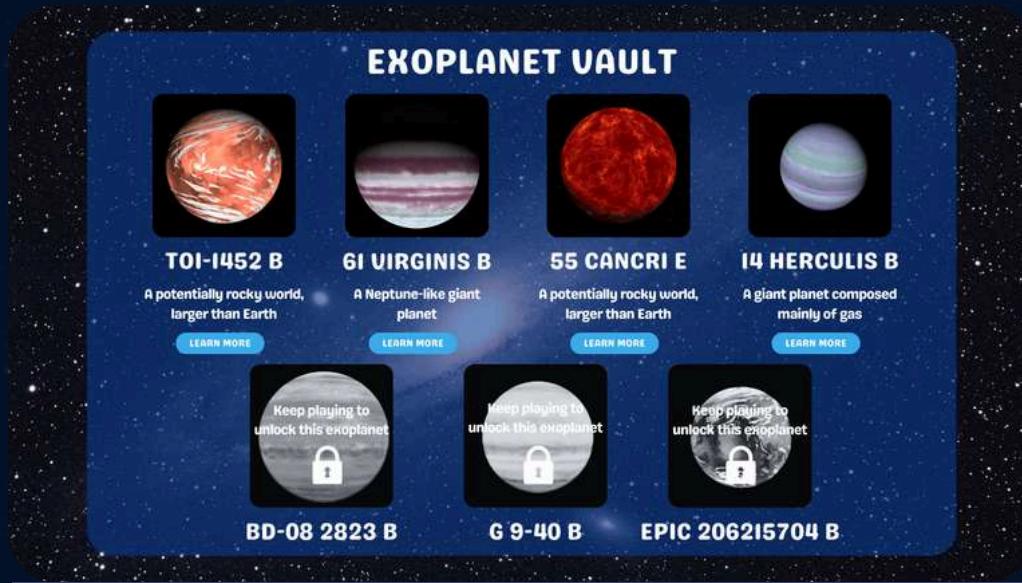
After completing the theoretical sessions, students will access the 'Create Your Own Exoplanet' module. Here, students can create the exoplanet and personalize it by specifying whether the planet will have a star, its type, mass, size compared to Earth, distance from Earth, period, and they can name it as well!

The game will also show the match percentage with an existing exoplanet in our galaxy.



The last module is team work! Which is a private room inside the game where each class will have its own map visible to all players. Each team can compete to create the best system that is the most accurate based on the teacher's instructions.

Additional features



INFORMATION BANK

The information bank is a repository of definitions, diagrams and real world exoplanets examples. The students can access the library anytime to review concepts.

The image above is an overview of the information bank.

ACCESIBILITY

The game includes accessibility personalization to make it more friendly for different populations, including options like:

- Adjustable font size.
- Colorblind mode option.
- Dyslexia-friendly fonts and customization of font size.
- Volume customization.

GALLERY

The exoplanet gallery shows each planet created by the students in their own personal exhibition, featuring descriptive stats, a 3D model, and comparisons with real-life exoplanets.

The image above is an overview of the gallery.

Teacher role and tools

In ExoQuest, the teacher plays a central role in guiding the students' learning experience, providing real-time support, and facilitating collaborative activities. The game is designed to empower teachers to tailor the learning environment based on class needs, track individual and group progress, and engage in meaningful interactions with all the students.

Teacher dashboard



The Teacher Dashboard serves as the primary tool for tutors, enabling them to monitor each student's performance, view mission status, track completion history, and identify areas where additional support may be needed. Teachers can also provide real-time feedback, send resources, and adjust quiz content dynamically based on students' performance.

The Teacher Dashboard provides advanced features, allowing tutors to create custom missions, track student contributions, and facilitate team challenges and peer reviews. It includes accessibility options for diverse learning needs and offers detailed reports on a student engagement and knowledge acquisition, helping educators adapt lessons and provide personalized feedback.



Figure. Overview of the classroom Arena

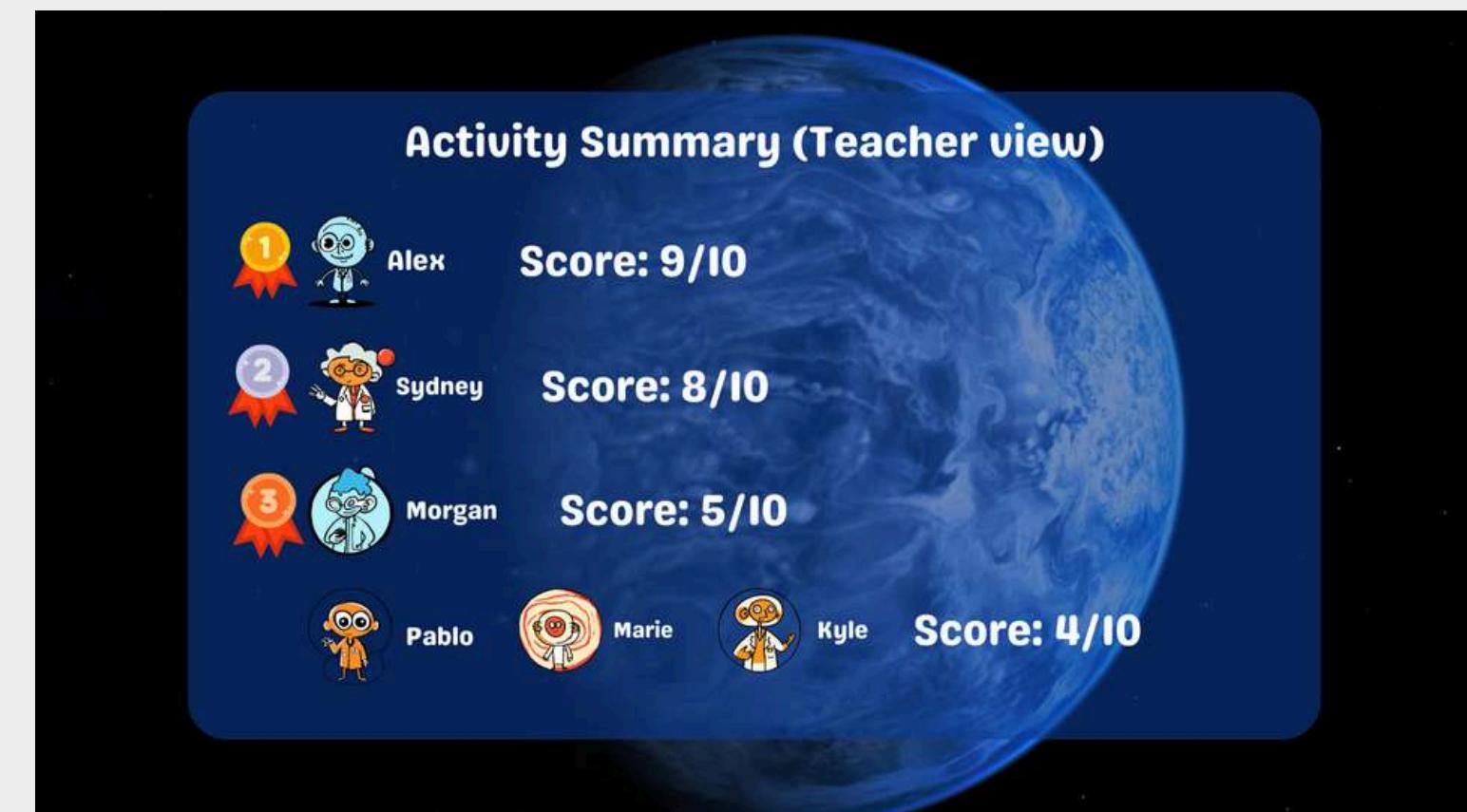


Figure. Teacher dashboard overview

Future improvements



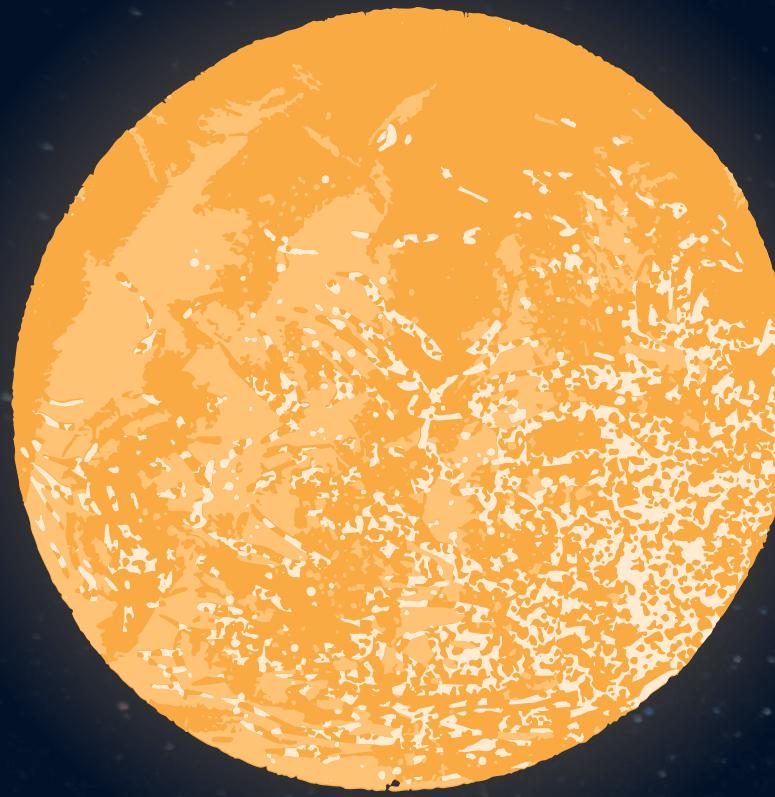
1 Develop a functional prototype of the game using a programming language such as java, python or unity.

2 Allow students to share their created exoplanets with other classes or even publicly within the game community.

3 Implement a system for collecting feedback from both students and teachers regularly. This could include surveys after gameplay sessions.

4 Integrate activities where students can work with actual exoplanet data sets. This could involve interpreting graphs, comparing planetary characteristics, or even predicting the potential habitability of discovered exoplanets.

5 Develop additional missions that explore different aspects of exoplanetary science, such as the search for habitable conditions, the impact of exoplanets on their stars, and the significance of exoplanet discovery in understanding the universe.



Join us in this Journey!