A PROJECT BY

ATENEO DE MANILA UNIVERSITY

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

ATENEO LABORATORY FOR THE LEARNING SCIENCES

A TEACHER'S GUIDE TO WHAT-IF

WHAT-IF HYPOTHETICAL IMPLEMENTATONS IN MINECRAFT

JAVA EDITION

OUR THANKS TO

DEPARTMENT OF SCIENCE AND TECHNOLOGY

FUNDING AGENCY

AND

DEPARTMENT OF SCIENCE AND TECHNOLOGY
PHILIPPINE COUNCIL
FOR INDUSTRY, ENERGY
AND EMERGING TECHNOLOGY
RESEARCH AND DEVELOPMENT
(DOST-PCIEERD)

MONITORING AGENCY

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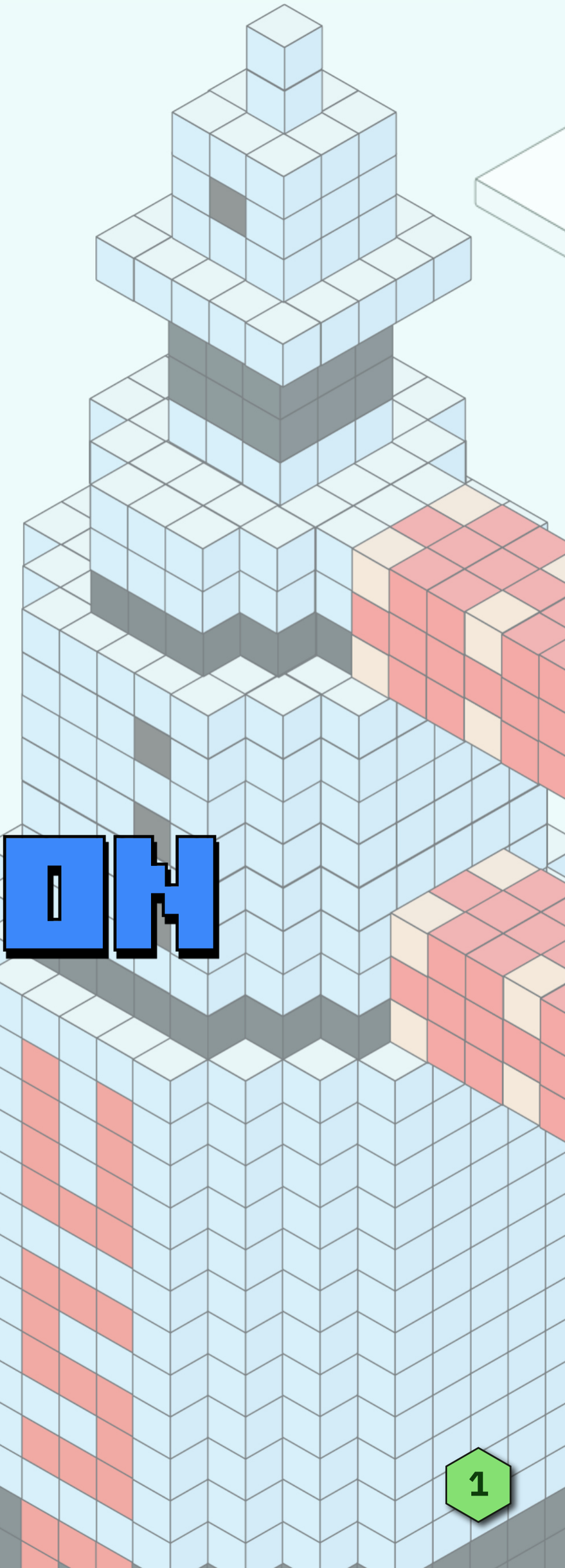
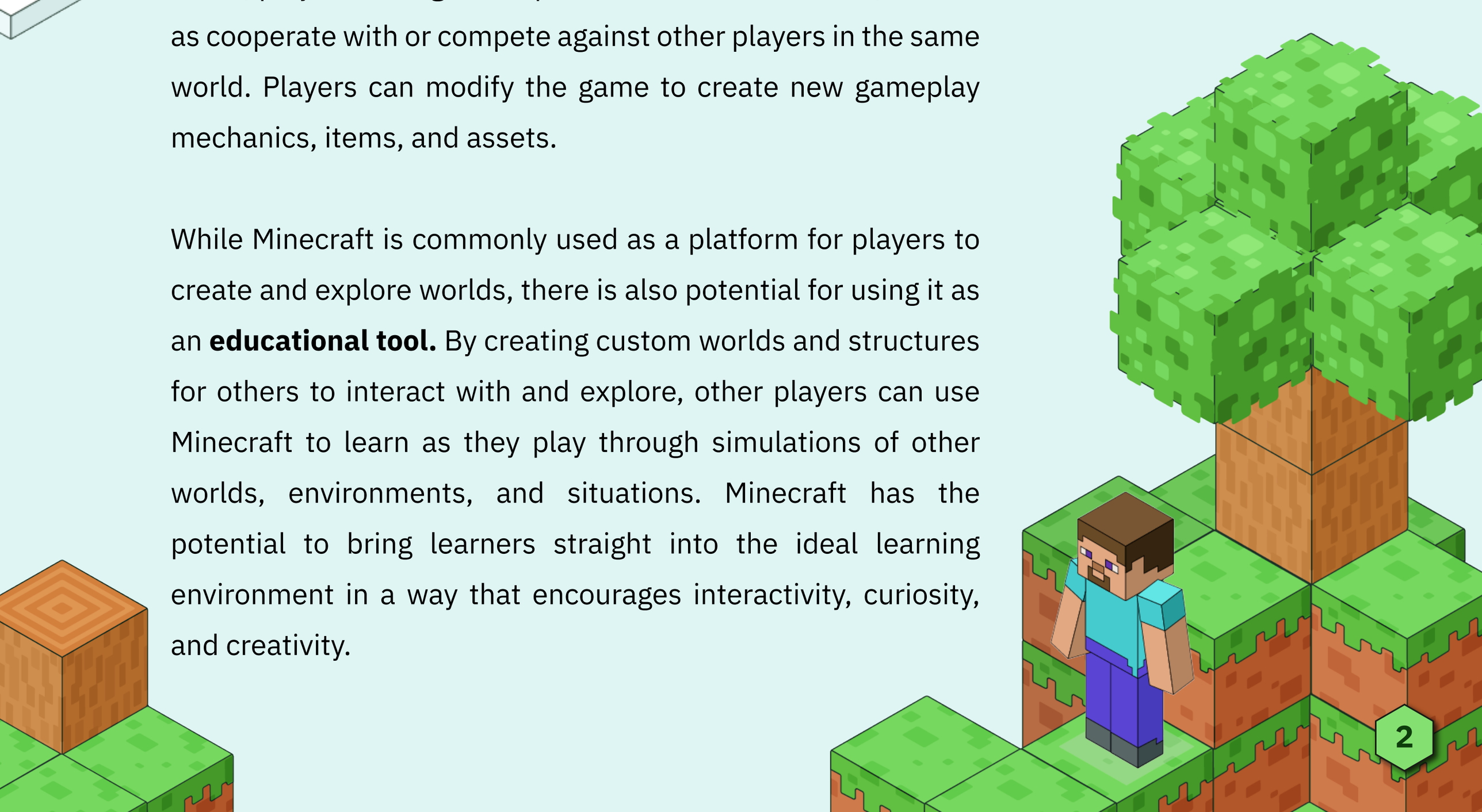


WHAT IS MINECRAFT?

Minecraft is a sandbox video game developed by Mojang. In Minecraft, players can explore a three-dimensional (3D) world with virtually infinite terrain where you can discover and extract raw materials, craft tools and items, and build structures, earthworks and simple machines. Depending on the game mode, players can fight computer-controlled monsters, as well as cooperate with or compete against other players in the same world. Players can modify the game to create new gameplay mechanics, items, and assets.

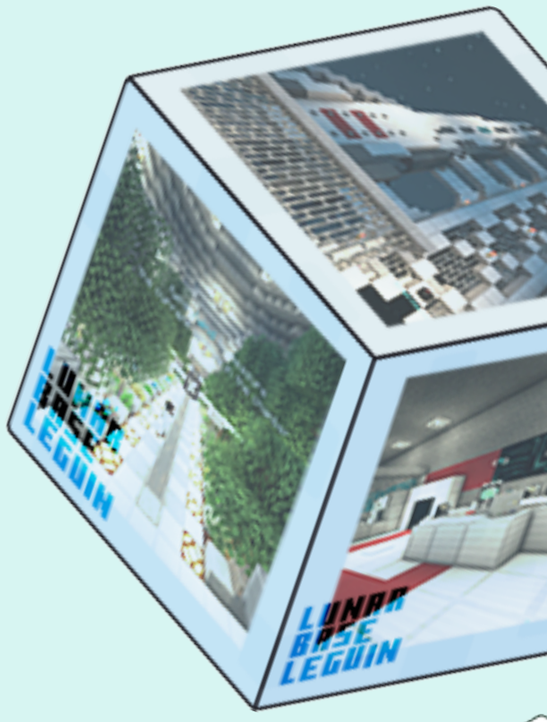
While Minecraft is commonly used as a platform for players to create and explore worlds, there is also potential for using it as an **educational tool.** By creating custom worlds and structures for others to interact with and explore, other players can use Minecraft to learn as they play through simulations of other worlds, environments, and situations. Minecraft has the potential to bring learners straight into the ideal learning environment in a way that encourages interactivity, curiosity, and creativity.

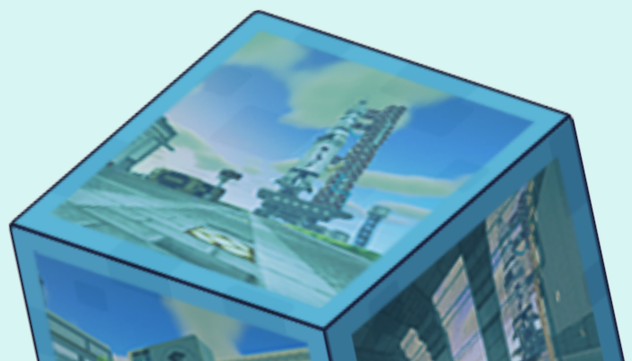


WHAT IS WHIMC?

What-If Hypothetical Implementations in Minecraft (WHIMC) is a collection of Minecraft worlds that aim to engage, excite, and generate interest and engagement in Science, Technology, Engineering and Mathematics (STEM) through the development of computer simulations. Built on Minecraft Java Edition, students can explore and interact with these worlds to learn about various topics in STEM. WHIMC hopes to raise aspiring scientists and engineers on an interactive server and give them a place to explore these growing interests.

As the educator, your role in the WHIMC project is to **guide the students through the various worlds while encouraging and engaging their curiosity**. There are a wide variety of missions within the WHIMC Worlds, but the primary goal is to create an educational experience that nurtures a continuing interest in STEM while also conducting activities that align with recognized standards for use in classrooms or workshops.



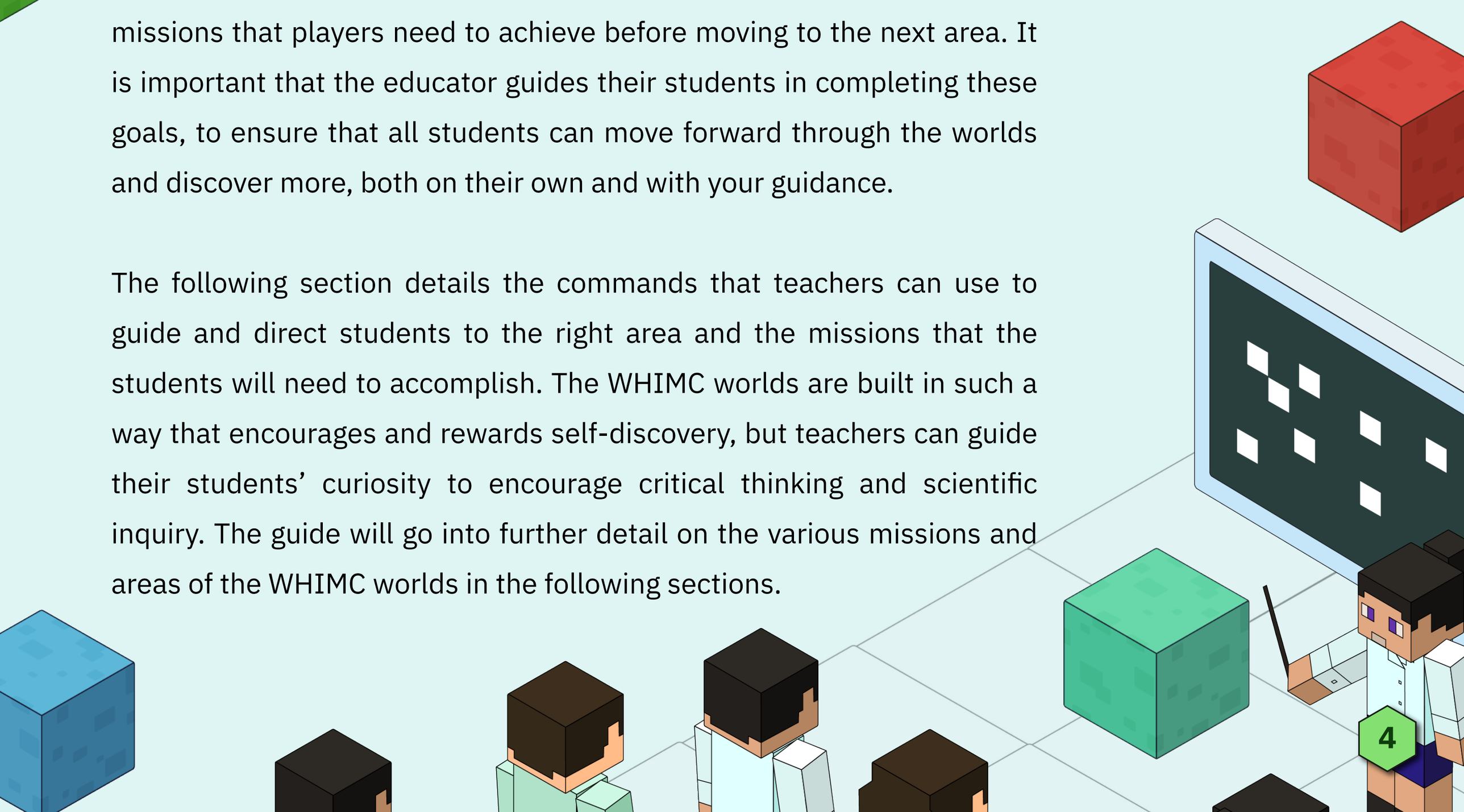


WHAT IS MY GOAL IN THE WHIMC WORLDS?

Your main goal is to guide your students, ensuring a fun and engaging experience for them as they interact with the simulations within the game. It's important to facilitate learning experiences and activities that align with the recognized standards currently used in STEM classrooms and workshops, in order to provide the best possible learning experience.

Each WHIMC world you visit will have a certain number of goals or missions that players need to achieve before moving to the next area. It is important that the educator guides their students in completing these goals, to ensure that all students can move forward through the worlds and discover more, both on their own and with your guidance.

The following section details the commands that teachers can use to guide and direct students to the right area and the missions that the students will need to accomplish. The WHIMC worlds are built in such a way that encourages and rewards self-discovery, but teachers can guide their students' curiosity to encourage critical thinking and scientific inquiry. The guide will go into further detail on the various missions and areas of the WHIMC worlds in the following sections.

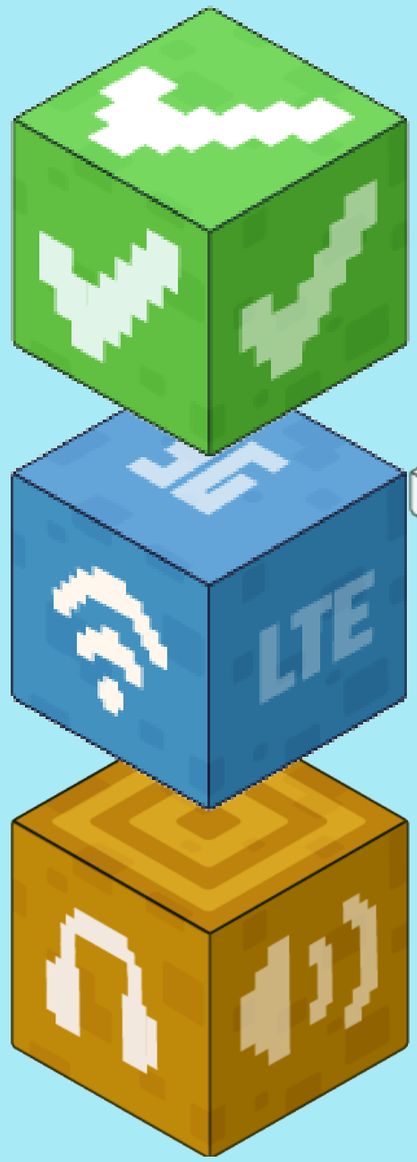


SECTION

DOWNLOAD & INSTALL

TO GET STARTED, CHECK YOUR SETTINGS

Before jumping into What-If Hypothetical Implementations in Minecraft (WHIMC), there are a few things you should check to make sure your journey goes smoothly.



INTERNET CONNECTION

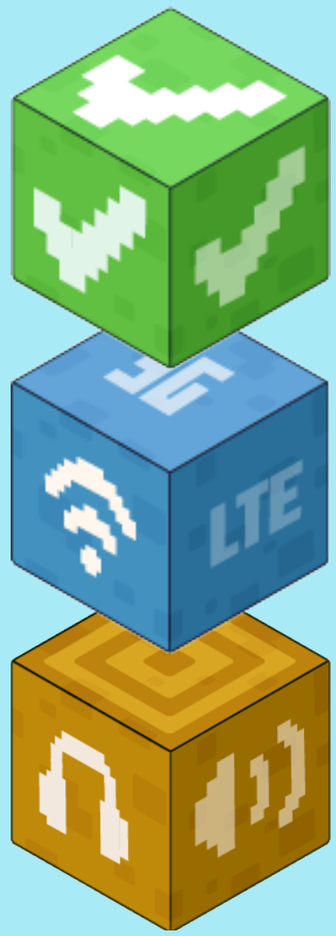
Make sure that you have an **Internet connection—either a broadband wired or wireless connection** will do, but a fast Internet connection will give you a smoother experience. It's recommended that you have a connection that is at least **7Mbps or a 3G connection**.

AUDIO

You'll also need **speakers or headphones**, as well as a mouse in order to get the best possible experience.

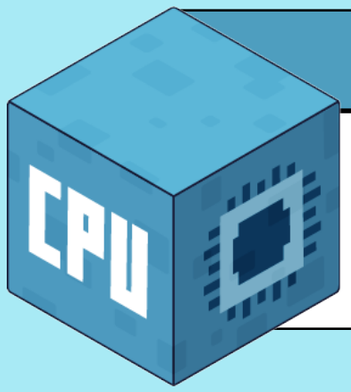
TO GET STAR-
CHECK YOUR SETTINGS

Work-provided laptops and computers may have limitations and firewalls in regards to software installation. In the case that you are unable to download or install Minecraft due to this, you may **coordinate with your school's administration to grant your device permissions** to run Minecraft Java Edition.



SYSTEM REQUIREMENTS

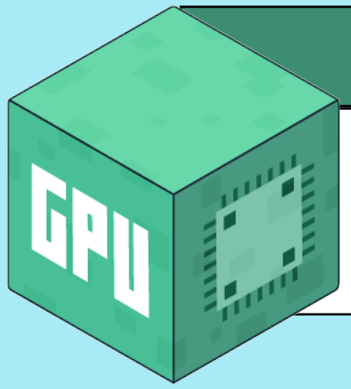
Though **Minecraft Java Edition** can run on many different devices, the server is best played on **desktop** with the following minimum technical requirements:



PROCESSOR

Intel Core i3-3210 3.2 GHz *or equivalent*

AMD A8-7600 APU 3.1 GHz *or equivalent*

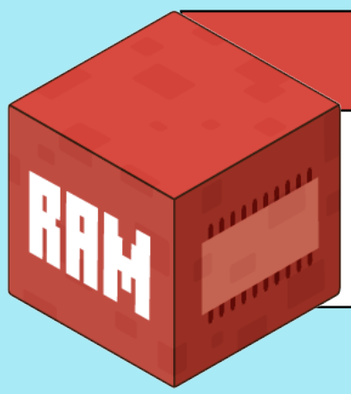


GRAPHICS

Intel HD Graphics 4000 (Ivy Bridge)*

AMD Radeon R5 series (Kaveri line)*

**with OpenGL 4.4*



MEMORY

4GB

STORAGE

At least 1GB for game core, maps and other files

SUPPORTED OPERATING SYSTEMS

Minecraft can run on many operating systems, but not all. Double-check to make sure that the operating system you are using is compatible. Minecraft can run on:

Windows 7 and up

Any 64-bit OS X using 10.9 Maverick or

Any modern 64-bit distributions from 2014 onwards

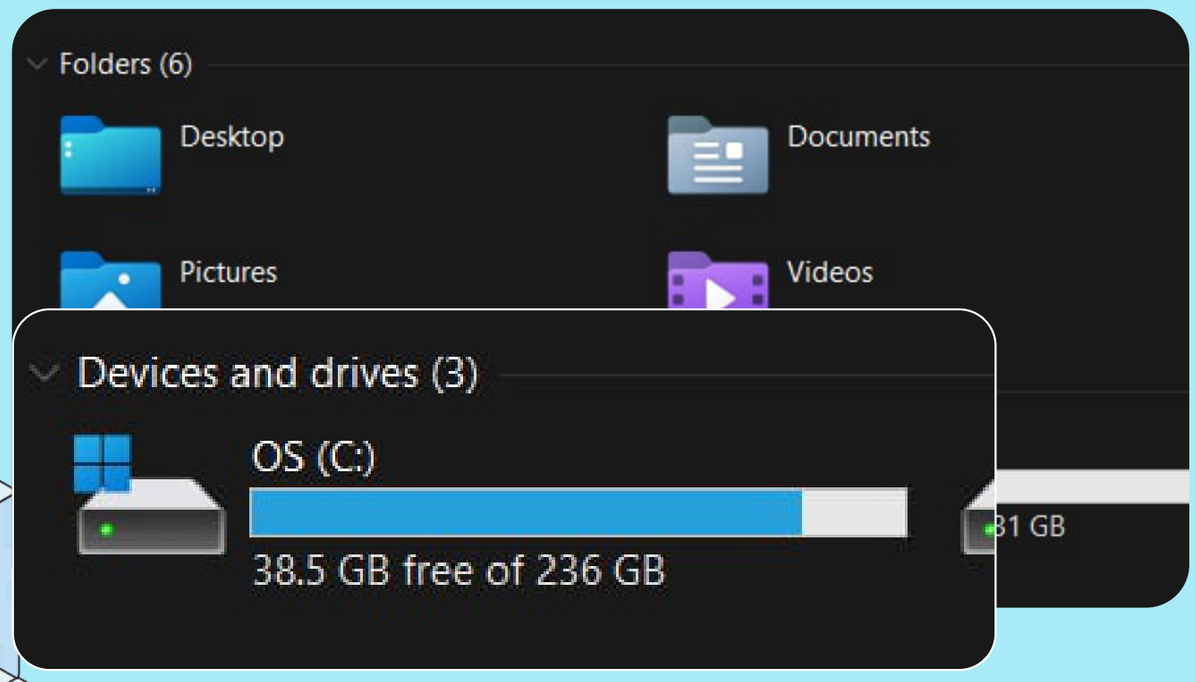
HOW TO DOWNLOAD AND INSTALL MINECRAFT

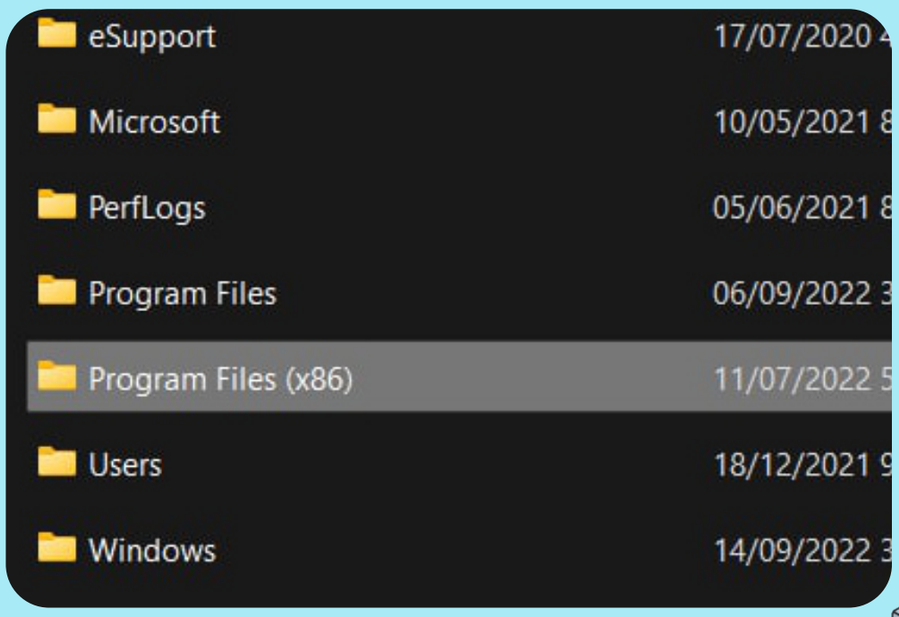
DOWNLOAD

1 Ready to dive in? Start by clicking he link below to download the launcher:

https://www.minecraft.net/en-us/download

2 Make sure that you are downloading the **latest version** onto the “**C:/**” drive of your system. This is the drive where your operating system is located and it will make the process smoother.



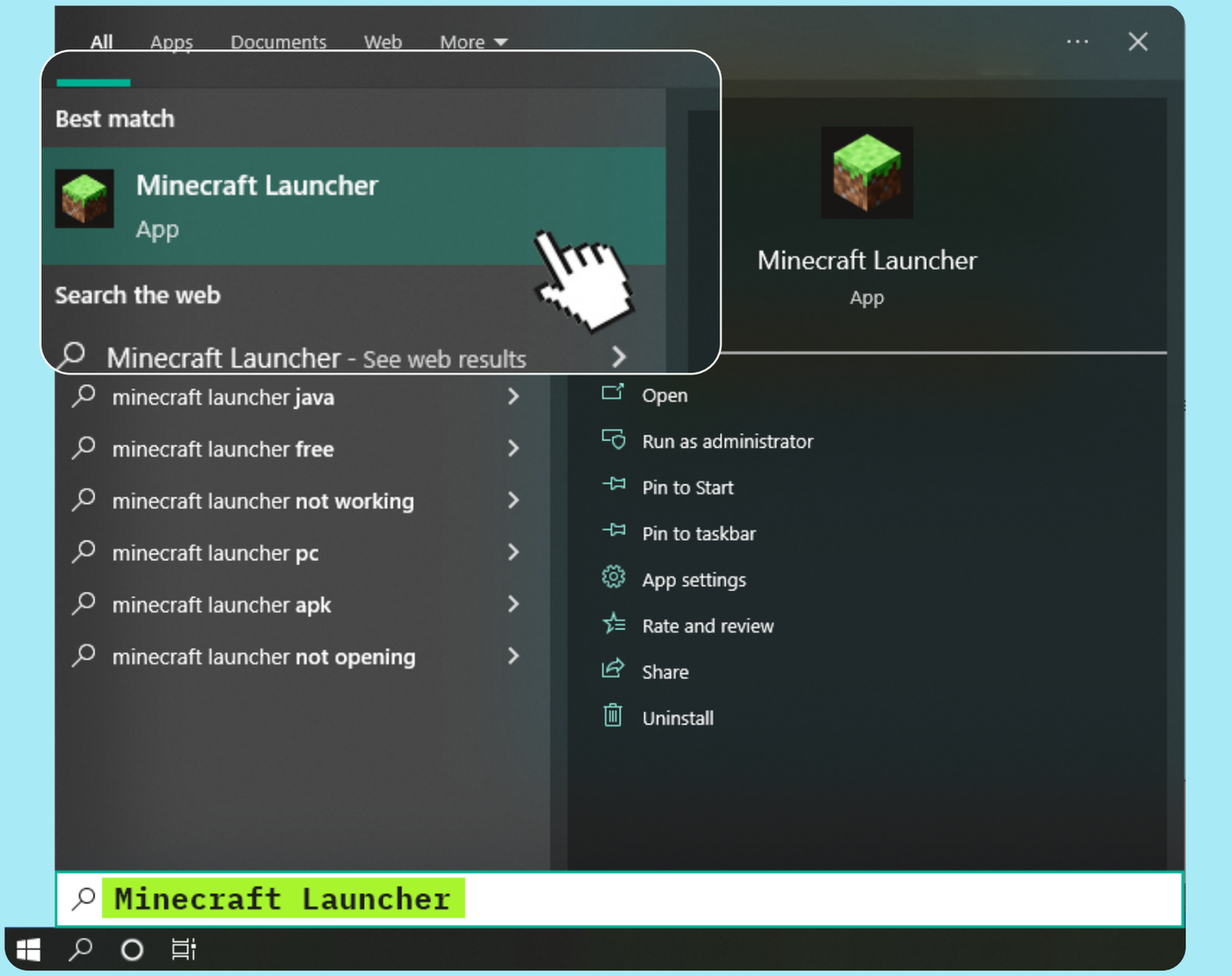


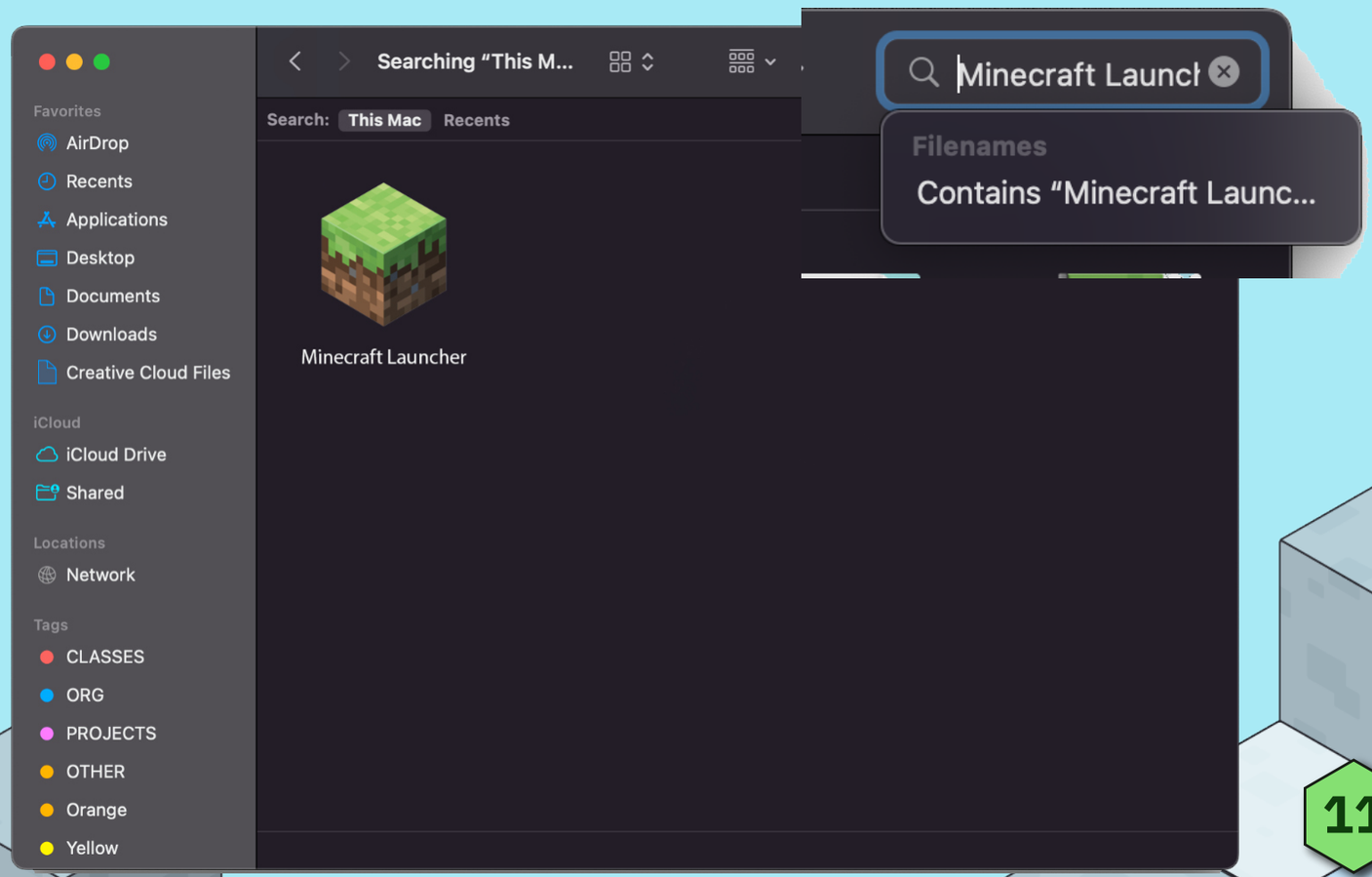
HOW TO DOWNLOAD AND INSTALL MINECRAFT

INSTALL

1

Once you've finished downloading the launcher, open it by searching for "**Minecraft Launcher**" in your **Windows start bar** or **search bar (for Mac)**.

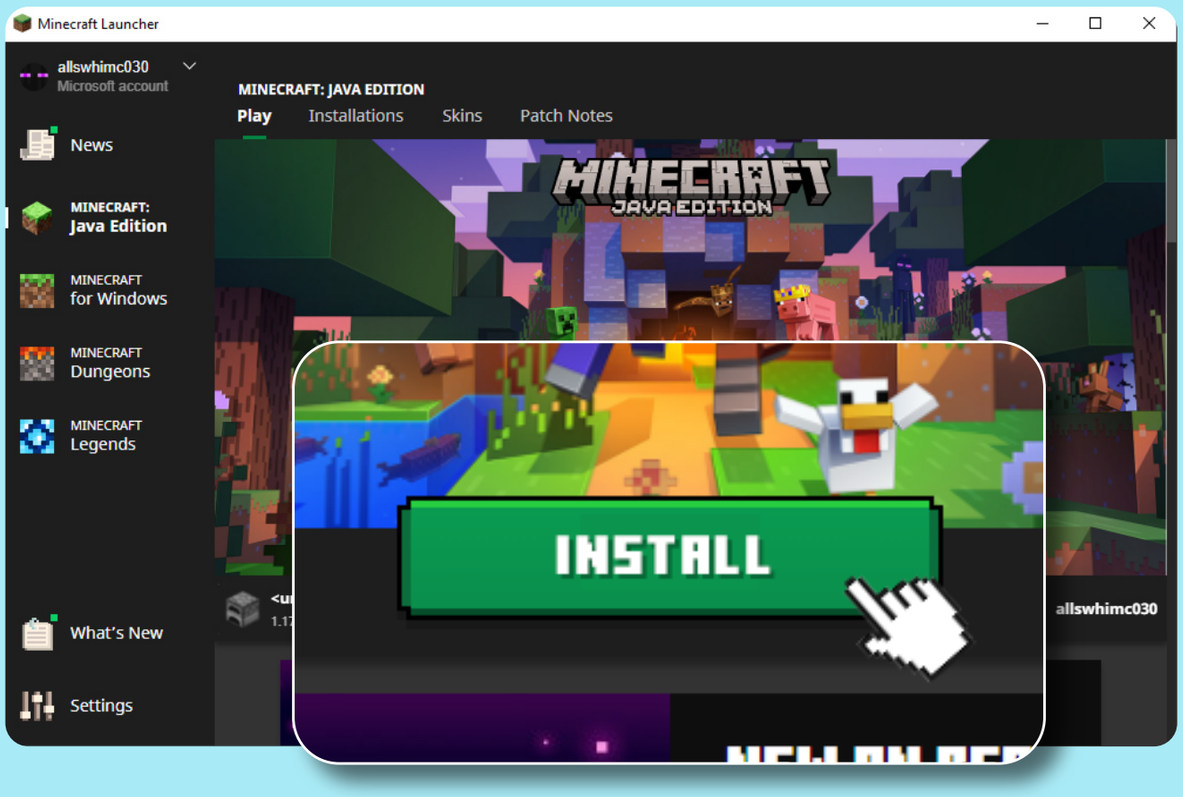




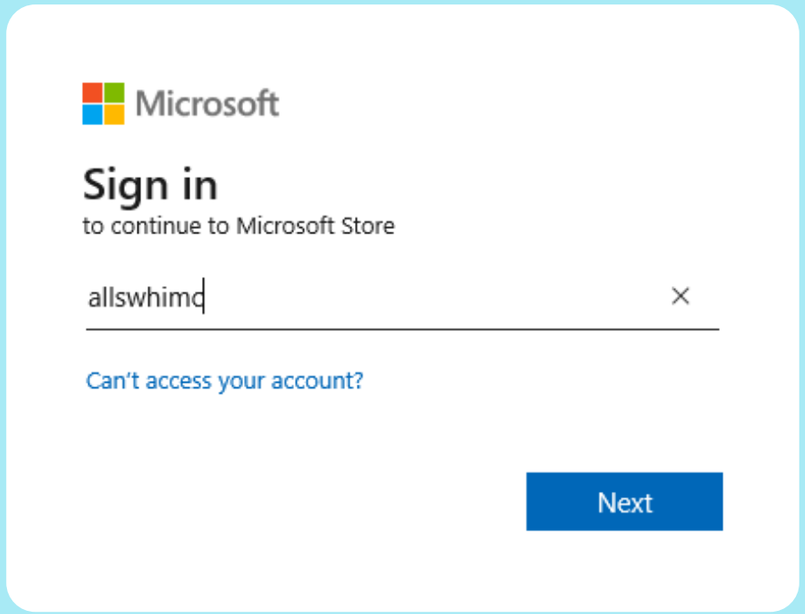
HOW TO DOWNLOAD AND INSTALL MINECRAFT

INSTALL *(cont.)*

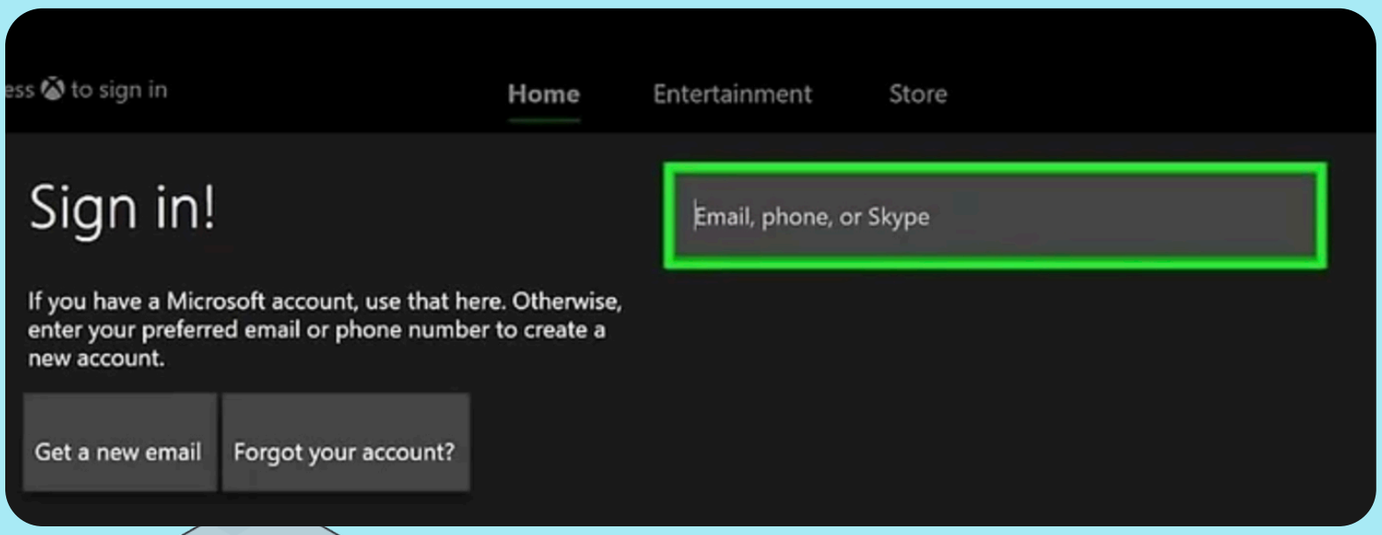
2 Once the launcher has opened, select “**Install**”.



3 The Launcher will ask you to log into your Microsoft account. Log-in with the **e-mail and password given to you for WHIMC**, this will give you access to the launcher and begin the download.



If you are redirected to the **Xbox Network login page**, use the **same credentials** as your **Microsoft account** to log-in and continue to the next step.

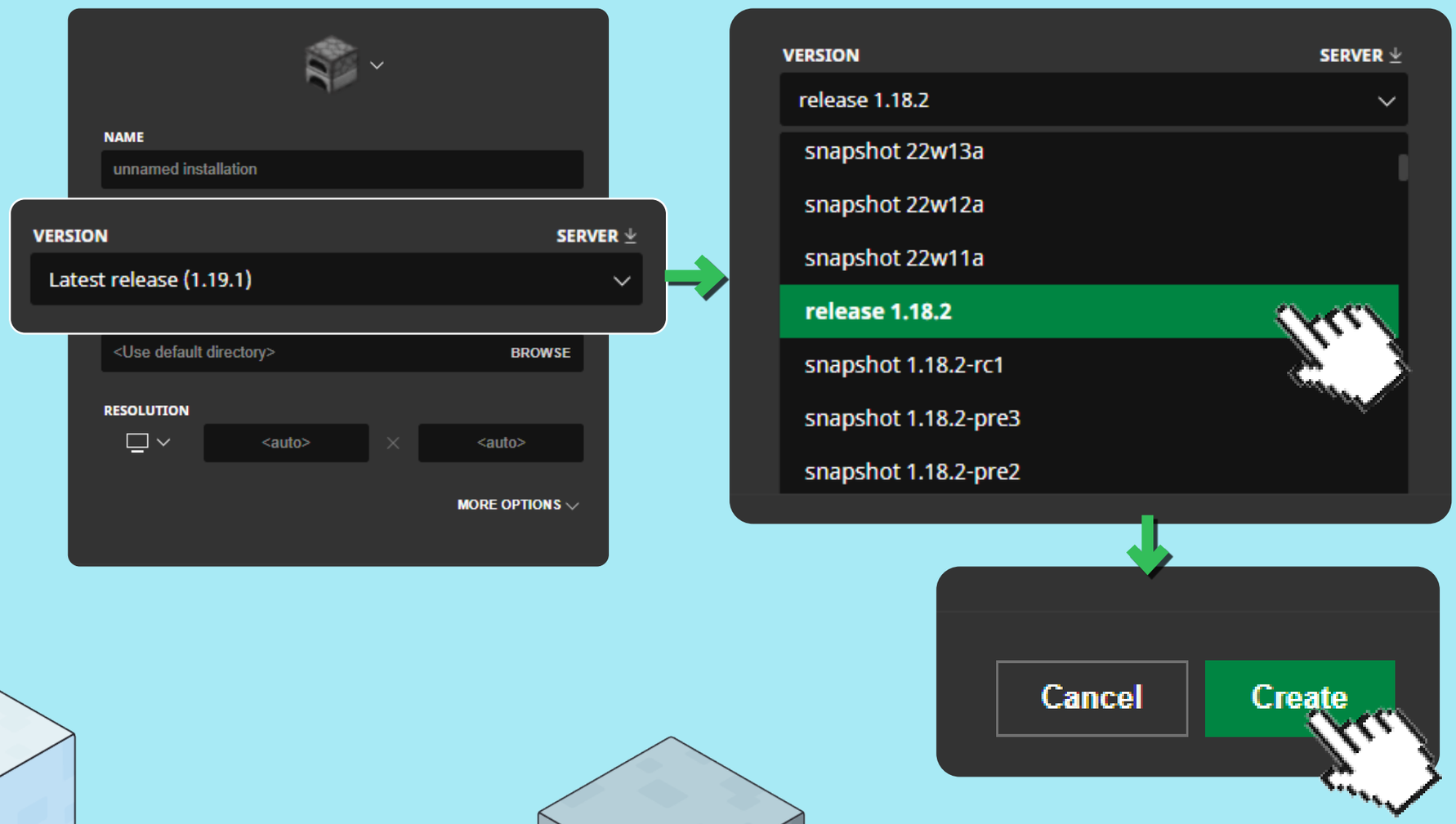


HOW TO DOWNLOAD AND INSTALL MINECRAFT

INSTALL *(cont.)*

4 Once you are logged in, make sure you are on **Minecraft Java Edition** and click on the “**Installations**” tab on top. Once there, click on “**New Installation**”.

5 From the dropdown menu of “Version”, select “**`Version 1.18.2`**” and click the “Create” button at the bottom-right.

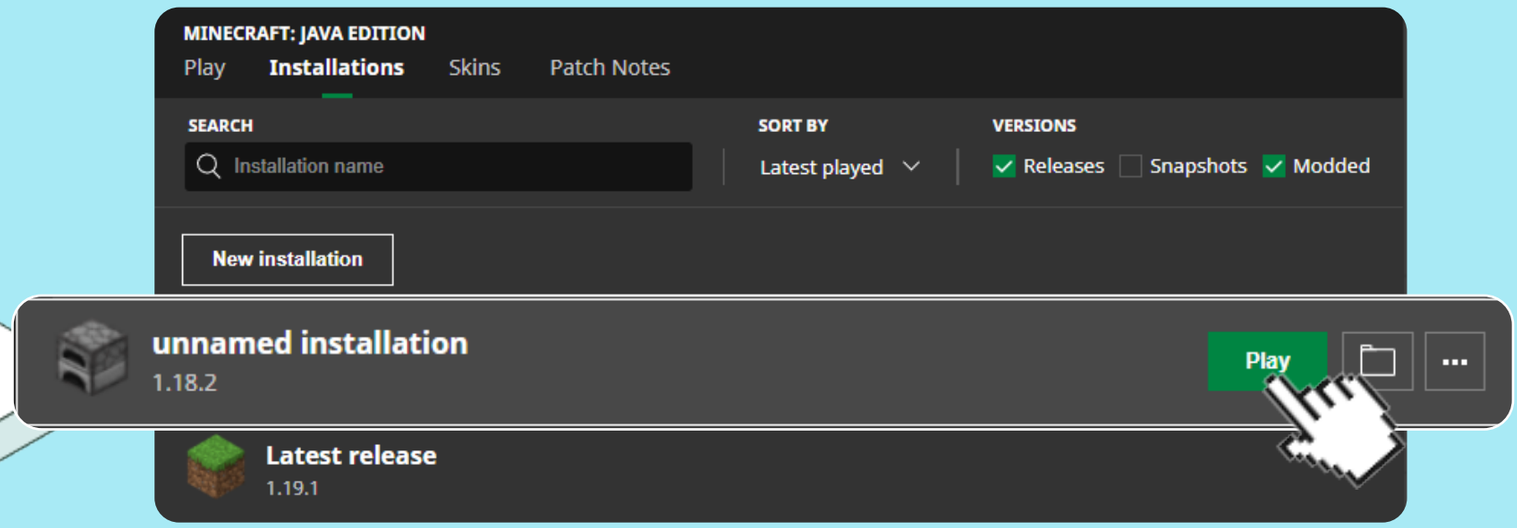


HOW TO DOWNLOAD AND INSTALL MINECRAFT

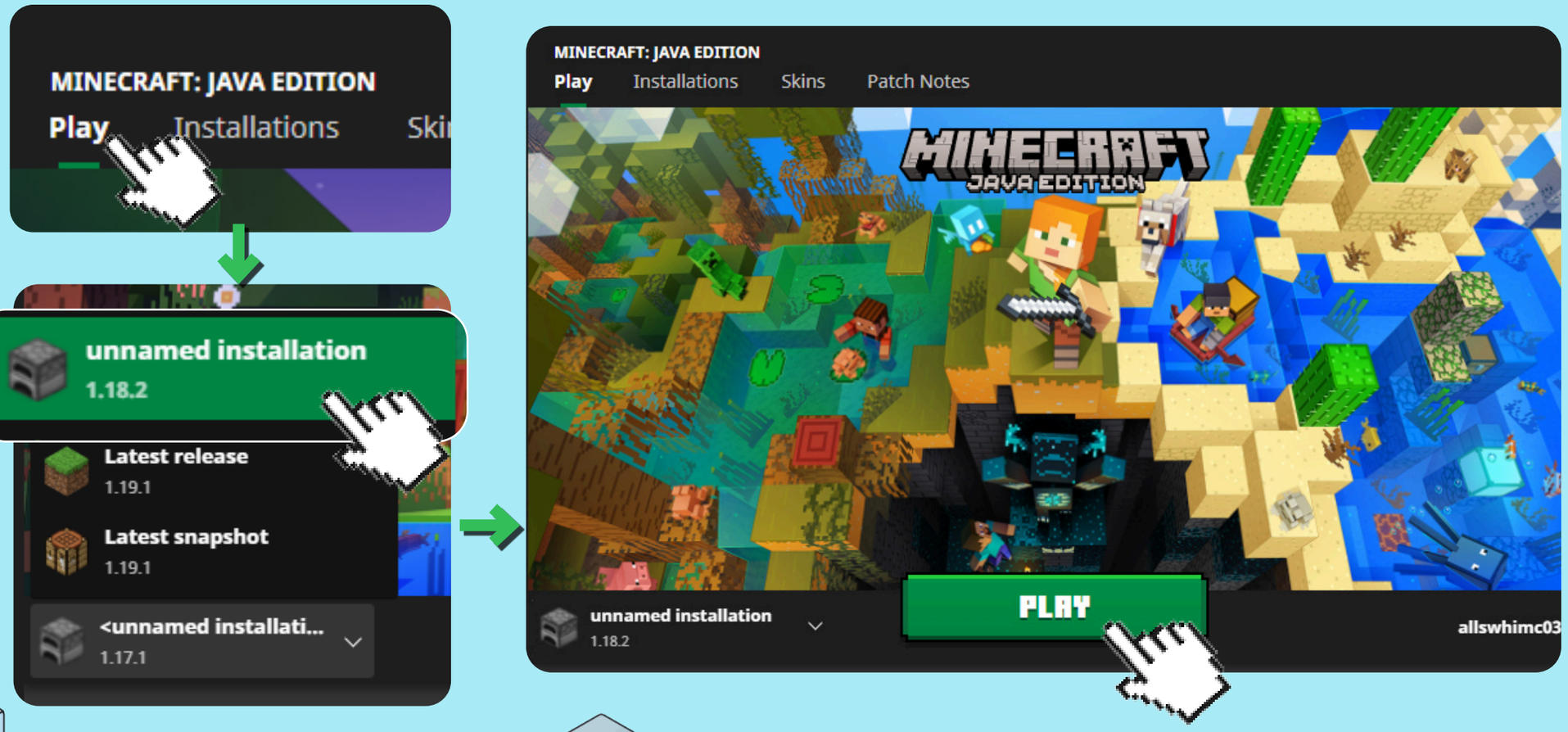
INSTALL *(cont.)*

6 Select **Version 1.18.2** and click the “**Play**” button next to it.

Wait for Version 1.18.2 to finish downloading.



7 Go to the **“Play” tab** on top and check if your version is set to **Version 1.18.2** by checking the information to the left of the “Play” button. Once everything’s set, click the **large green “Play”** button to launch the game.



HOW TO ACCESS THE SERVER

1 Open Minecraft and click on **“Multiplayer”** from the home screen.

2 Click on “**Add Server**” and enter the following details to access the server:

Server Name: **ALLS-WHIMC Server**

Server Address: **139.99.23.136:25565**

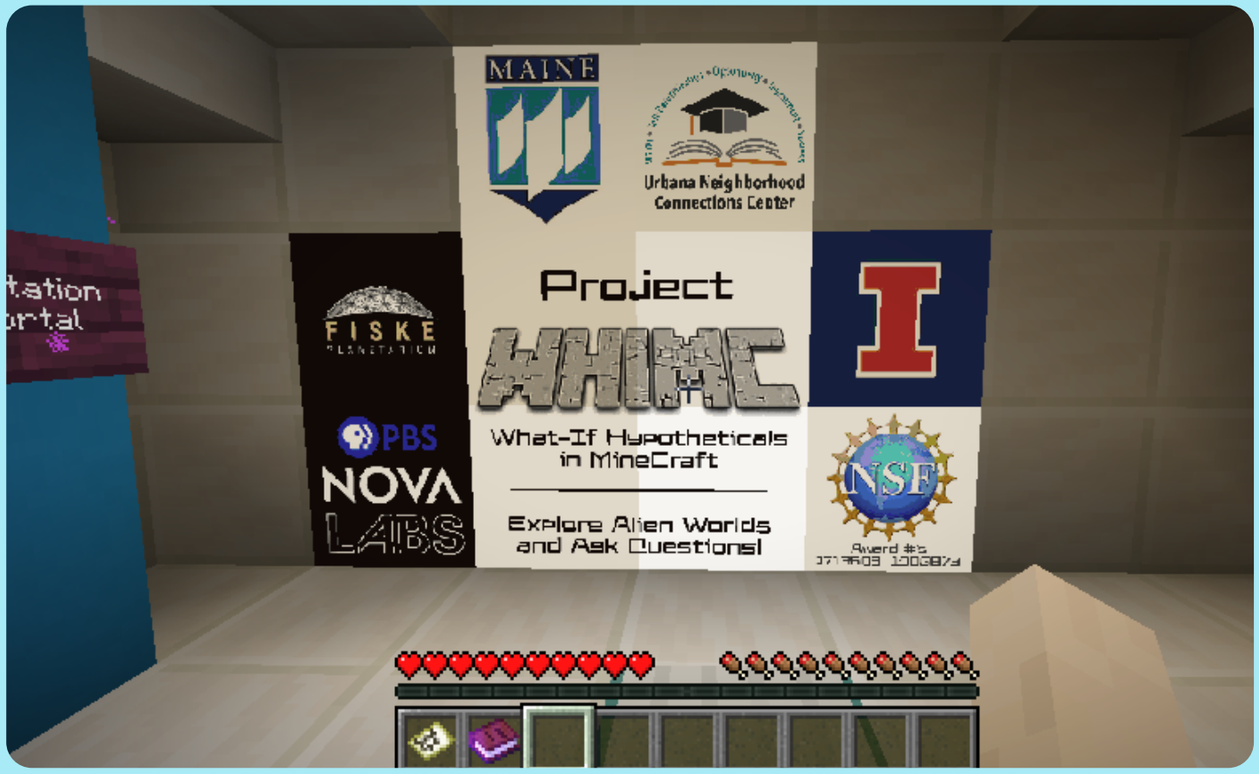
Click “**Done**” once you’ve finished.

HOW TO ACCESS THE SERVER

3 Once done, it will return you to the previous screen.

Select the **ALLS-WHIMC Server** then click the "**Join Server**" button.

4 **YOU'RE ALL SET!** The server will launch and you can begin exploring.



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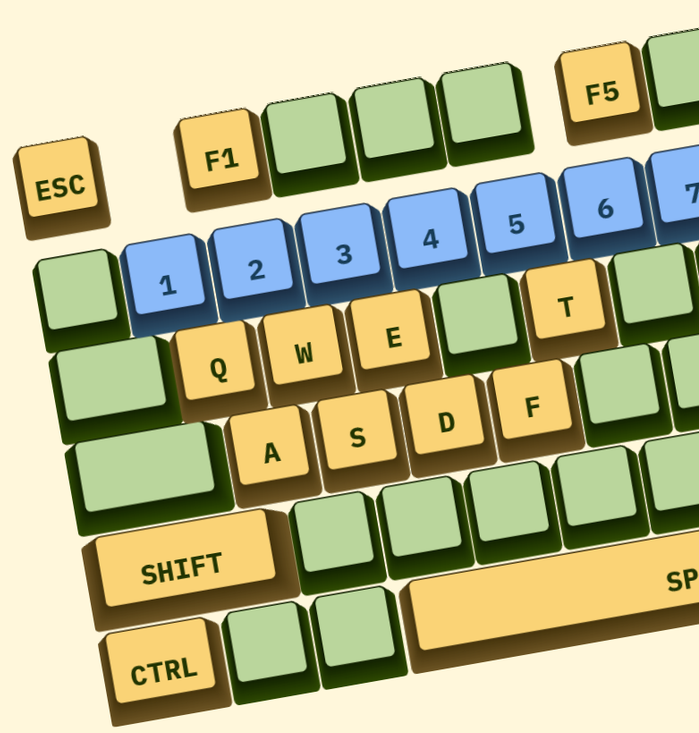
SECTION

COMMANDS & ACTIONS



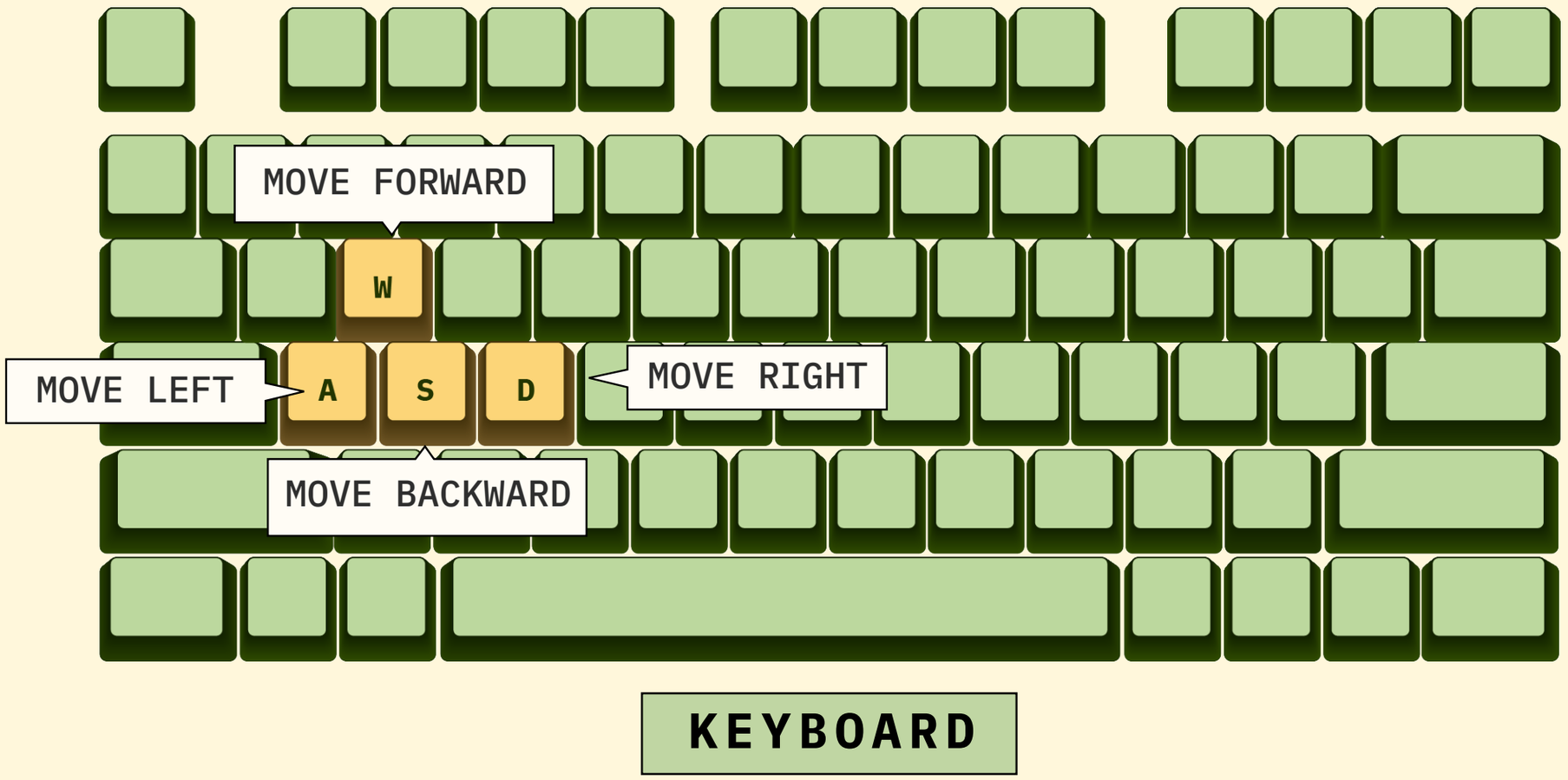
GUIDE TO BASIC GAMEPLAY

BASIC CONTROLS

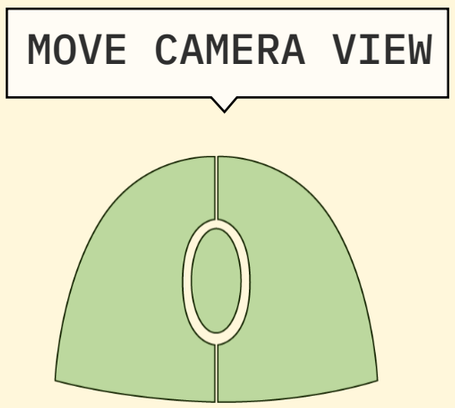
1 TO MOVE AROUND

Starting with basic controls, you move your character by using the W, A, S, D keys to go **forward (*W*)**, **left (*A*)**, **backward (*S*)**, and **right (*D*)** respectively.

You can adjust your view by moving around your **mouse.**



KEYBOARD



MOUSE

BASIC CONTROLS

2 TO JUMP

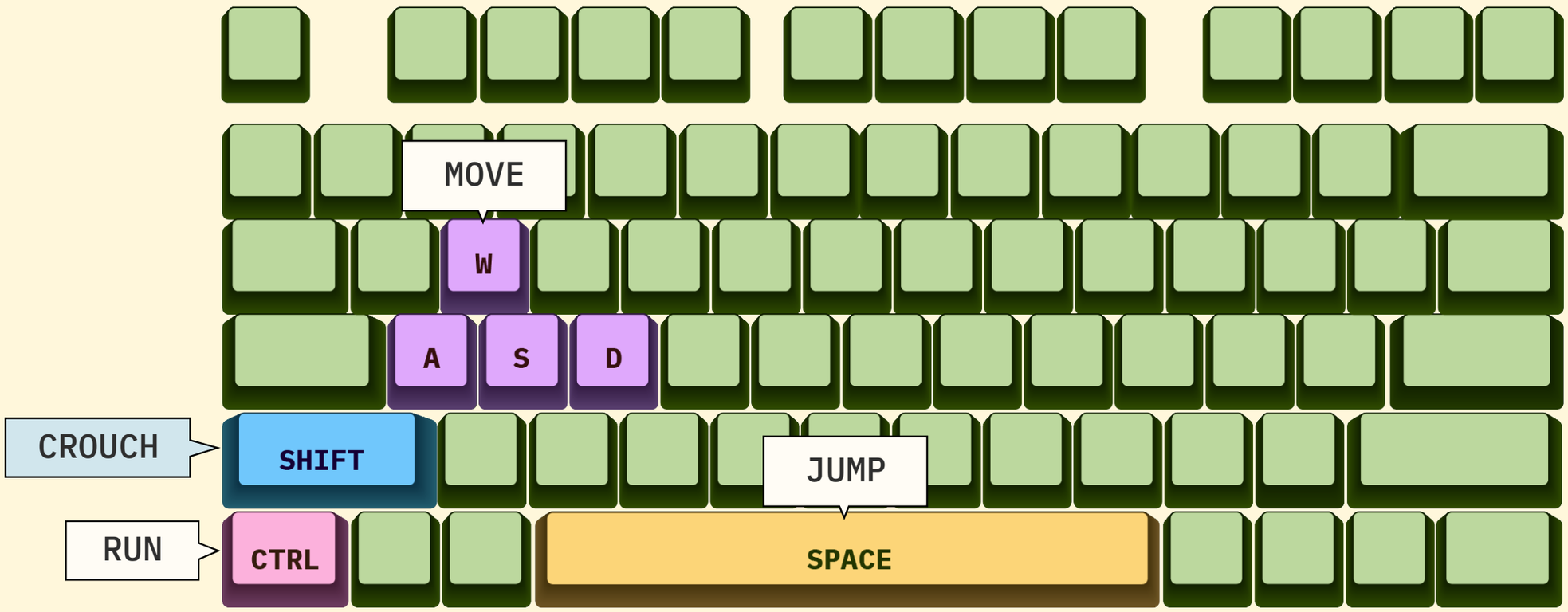
Press the ***spacebar*** key on the keyboard to **jump.**

3 TO RUN

To **run, press and hold the control key (*CTRL*) while moving** your character.

4 TO CROUCH *OPTIONAL*

Optional movement options that you can take note of, are crouching and running. To crouch, **press and hold the *shift* key while moving** your



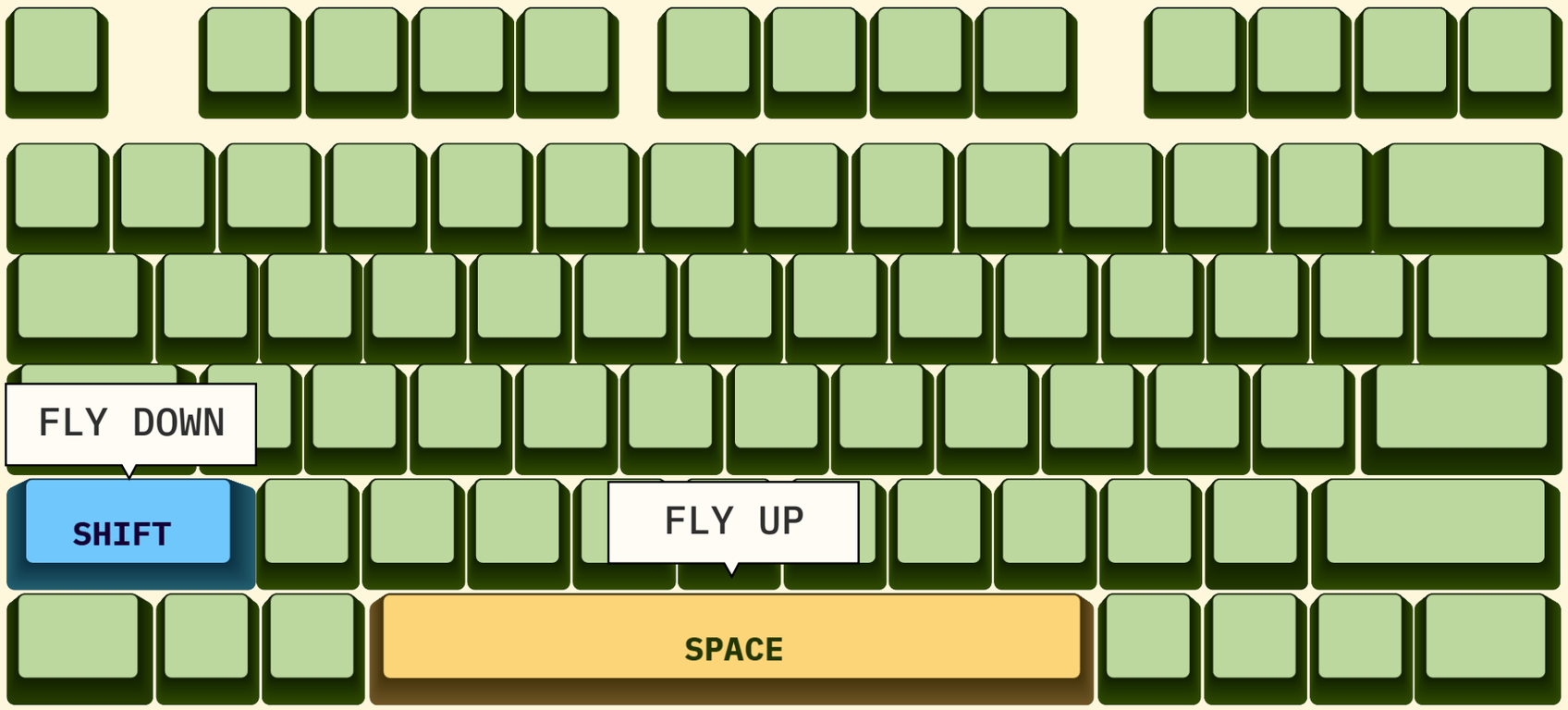
KEYBOARD

BASIC CONTROLS

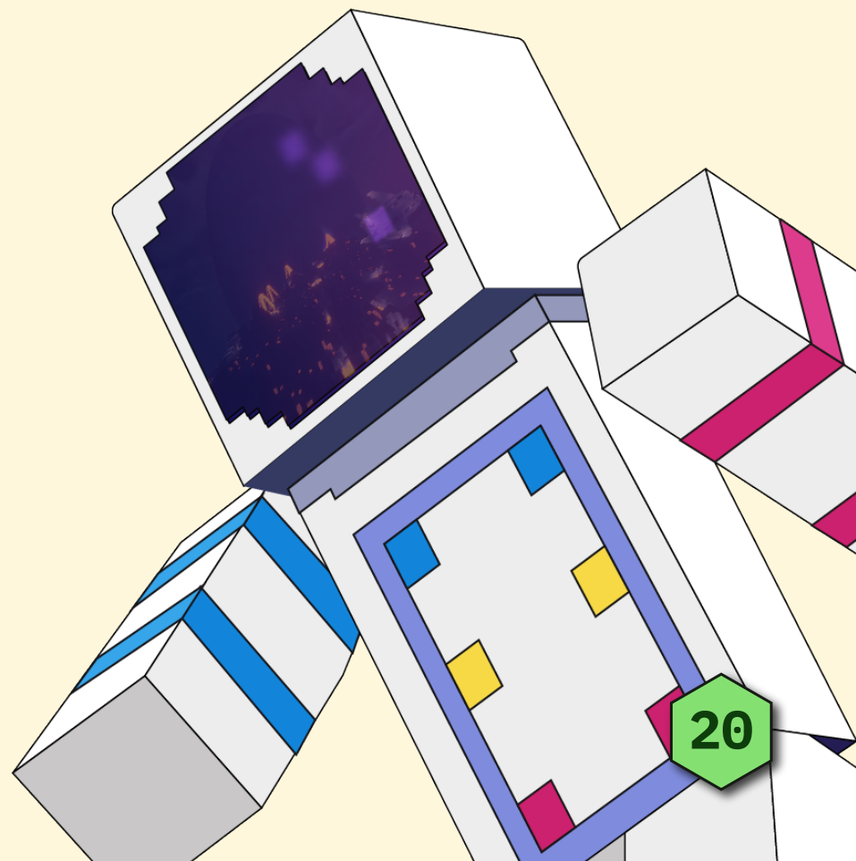
In some areas within the WHIMC worlds, you may also be given the ability to fly.

5 TO FLY

You can press the ***spacebar*** to **fly up** and the ***shift key*** to **fly down**.



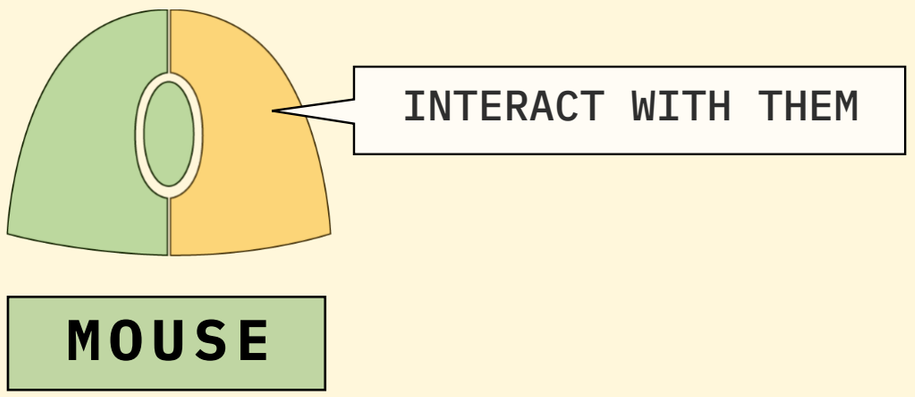
KEYBOARD



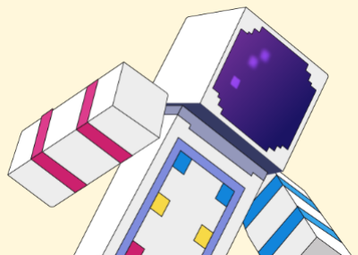
BASIC CONTROLS

6 TO INTERACT OR OPEN THE DIALOGUE WITH THE NON-PLAYER CHARACTERS (NPCS)

To interact with the characters within the WHIMC worlds, you can ***walk up to them*** and ***right click on your mouse*** to hear what they have to say.



MOUSE

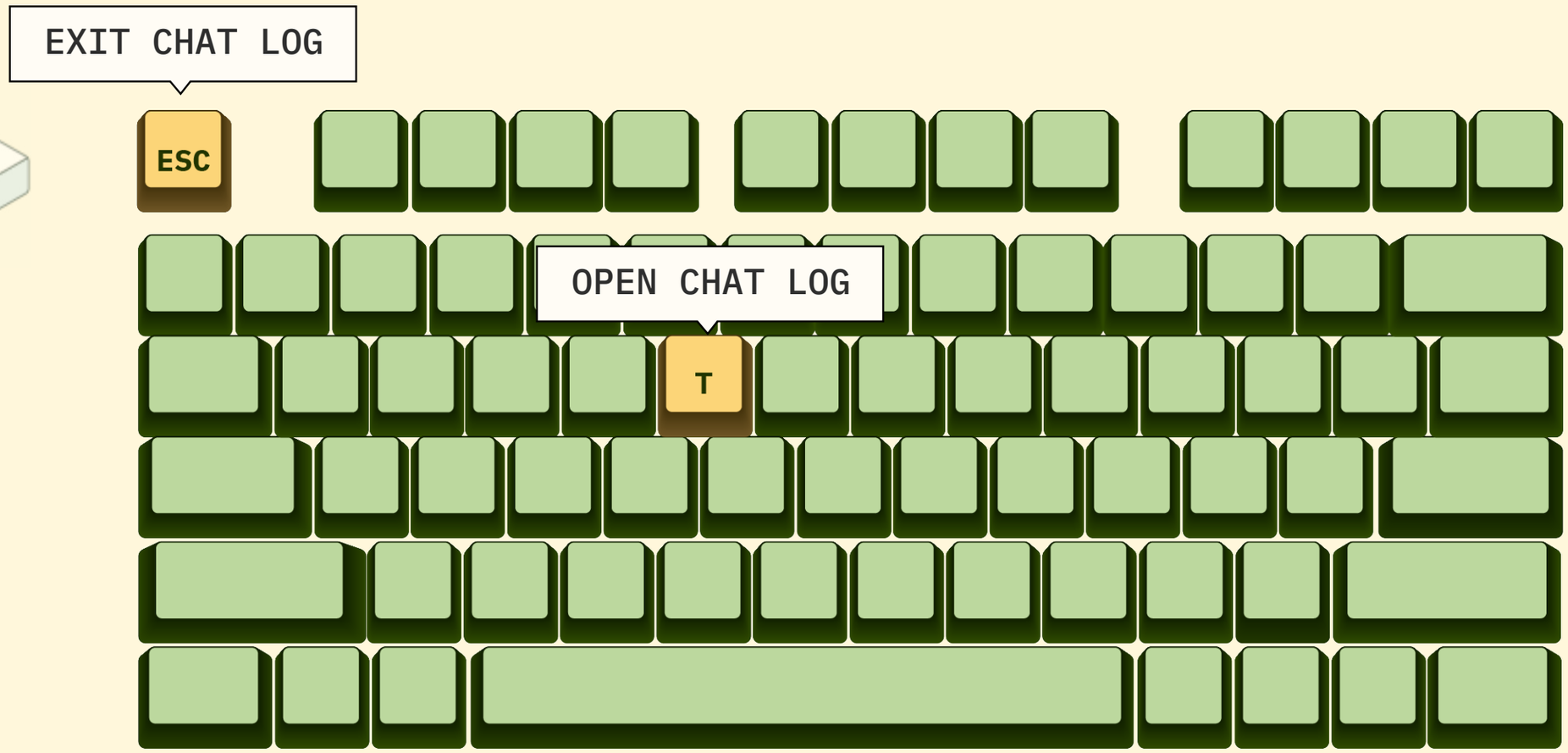


BASIC CONTROLS

7 TO OPEN CHAT LOG & VIEW DIALOGUE

If you happen to miss a piece of dialogue, you can **press *T*** to **open your chat log. Pressing *T*** also allows you to **chat with other people in the world with you, including your students**.

You can **press the escape key (*ESC*)** to **exit the chat log** and continue moving around.

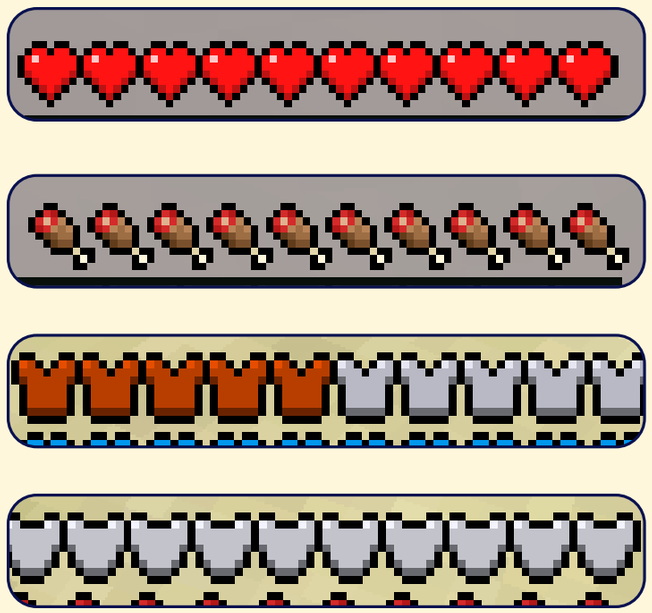


KEYBOARD

ON YOUR SCREEN

Upon entering the WHIMC world to see the Rocket Launch Facility, you will be met with multiple commands and tools. Starting with what you see on your screen, there is the toolbar at the bottom, grouped with your health, hunger, and armor indicators.

1 *Health, Hunger, Armor*

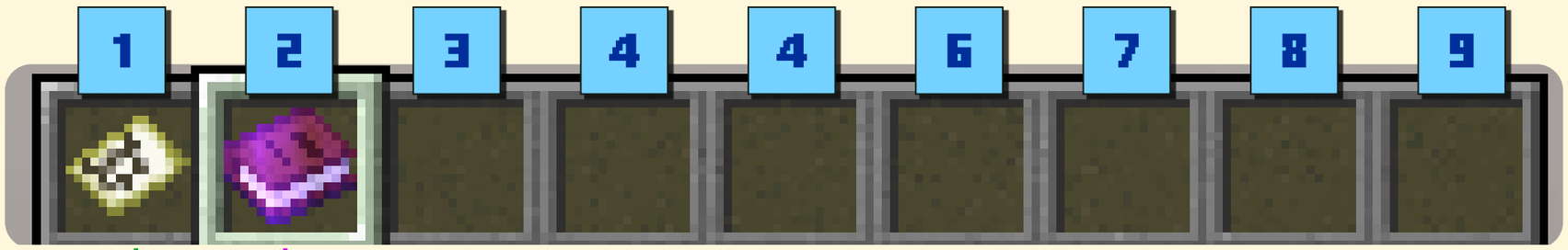


The **health, hunger, and armor** bars show the status of your character in Minecraft. While these status indicators are important in regular Minecraft gameplay, it **won't be necessary** to pay attention to these in the WHIMC worlds, as **nothing in these custom environments will harm the player's character.**

ON YOUR SCREEN

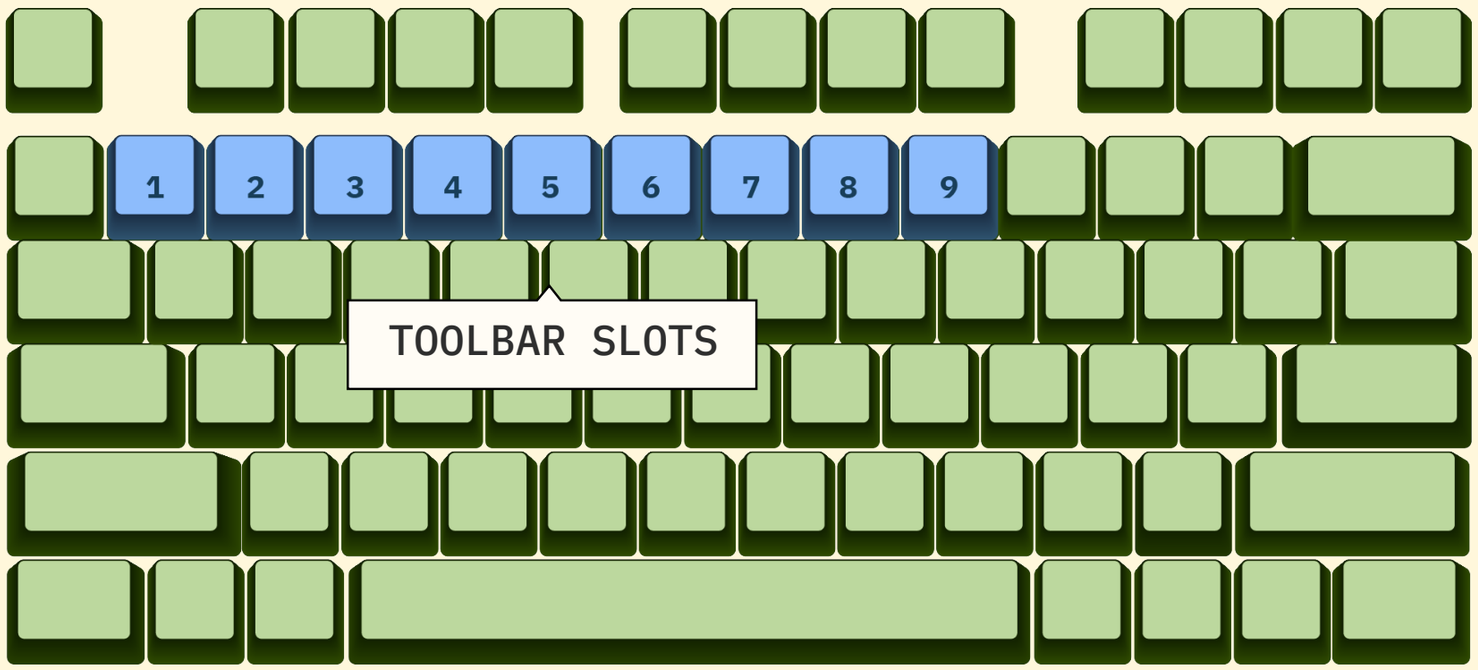
2 *Toolbar*

There are 9 slots in total for the toolbar, with each box corresponding to **numbers 1-9** on the keyboard respectively.



On the first slot, you will find your **Map**, which will guide you through each area.

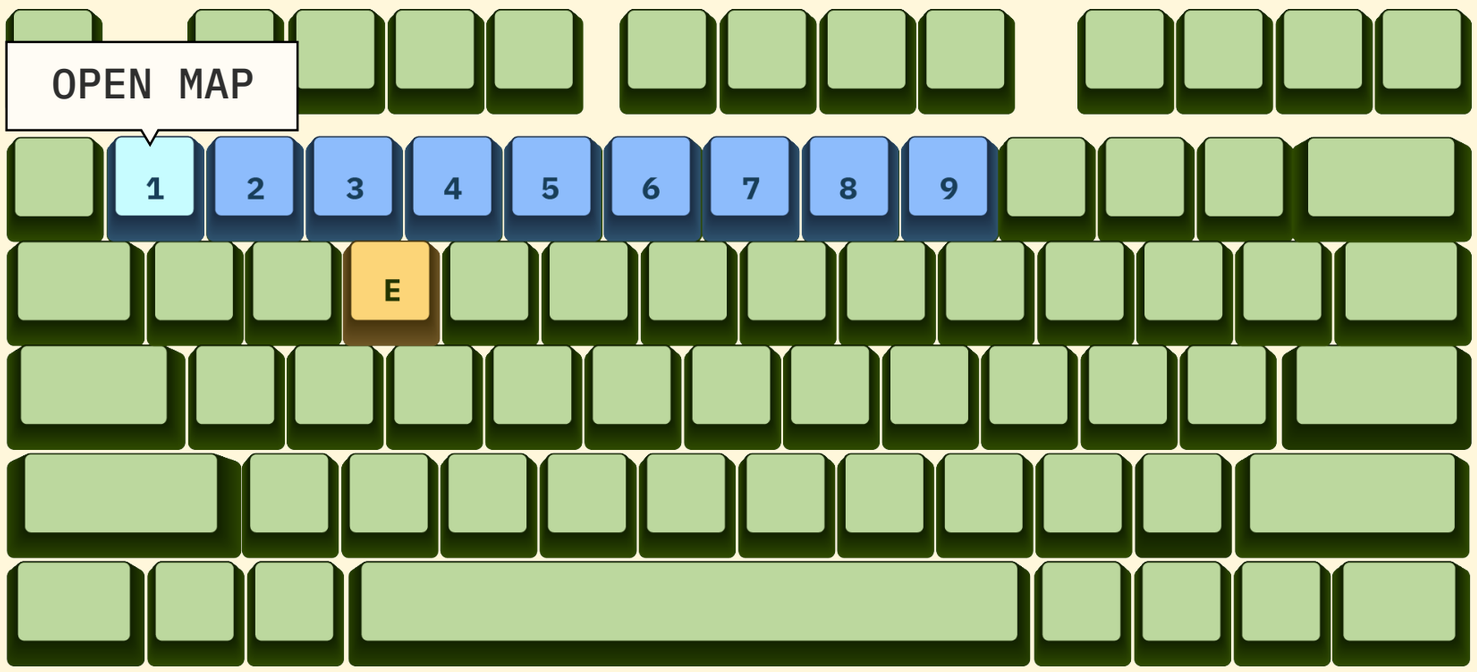
You can also opt to have your **Quest Journal** in your inventory, which will help you keep track of quests and automatically go to the second slot of your toolbar.

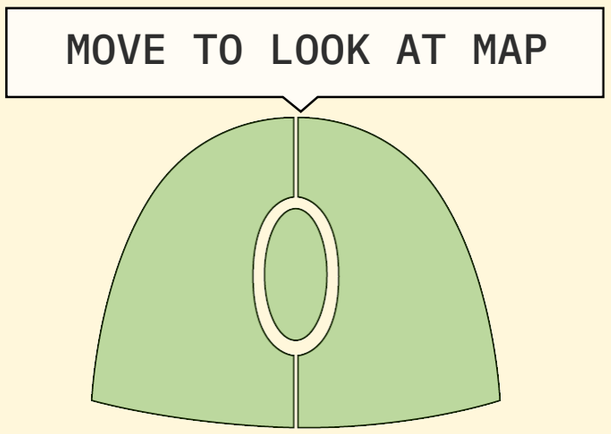


ITEMS

3 Map

Press 1 on the keyboard to select the map and **move your mouse downward** to look directly at it, as if looking down at a real map.



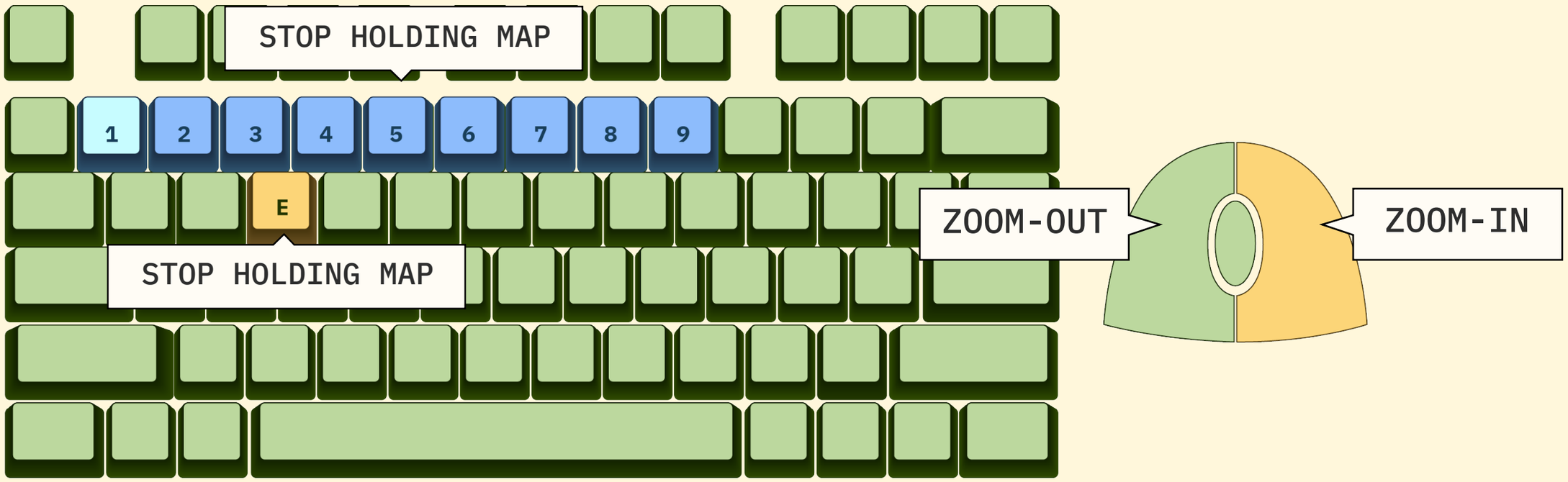


ITEMS

3 Map

You can then ***right click*** to **zoom-in** or ***left click*** to **zoom-out**, depending on your preference or need when consulting your map. Your map's orientation will **rotate according to the direction your character is facing**, and **you can walk around while holding it**.

If you want to **stop holding the map** while you walk around the WHIMC worlds, you can either **select any empty slot from your toolbar** using your ***number keys***, or **open**



4 *Quests Journal*

The quest journal **won't be on your toolbar from the start**, and is actually **rewarded to the player when they arrive on the moon.**

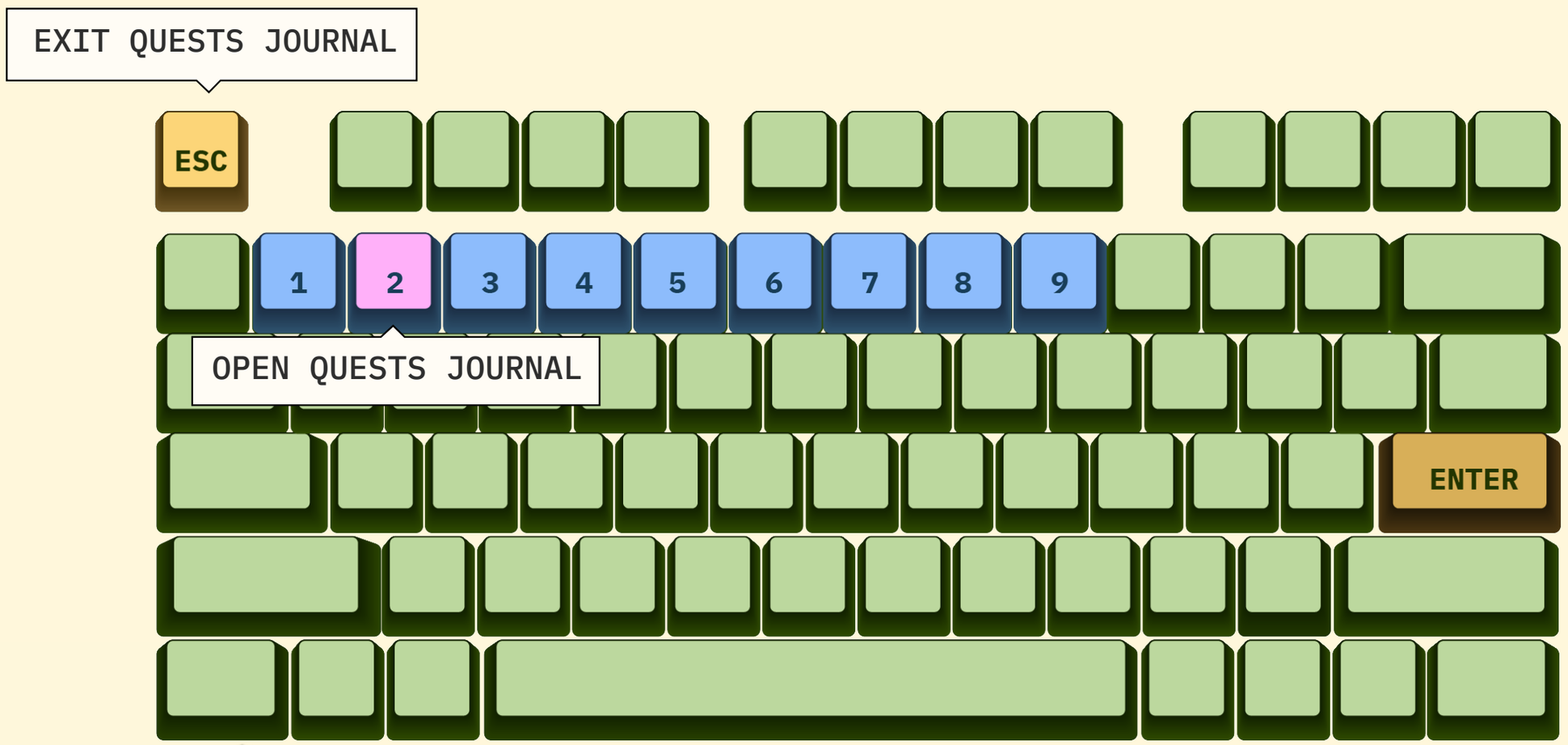
However, **in the event that the quest journal is not automatically added to the toolbar**, you may type `/quests journal` and press ***enter***.

ITEMS

4 Quests Journal

Typing the said command automatically places your quest journal in the second slot on your toolbar, and you can ***press 2*** to access it.

Opening your quest journal shows you a **short list of tasks that you need to complete.** You can press the escape key (***ESC***) to **exit your quest journal** and continue moving around.

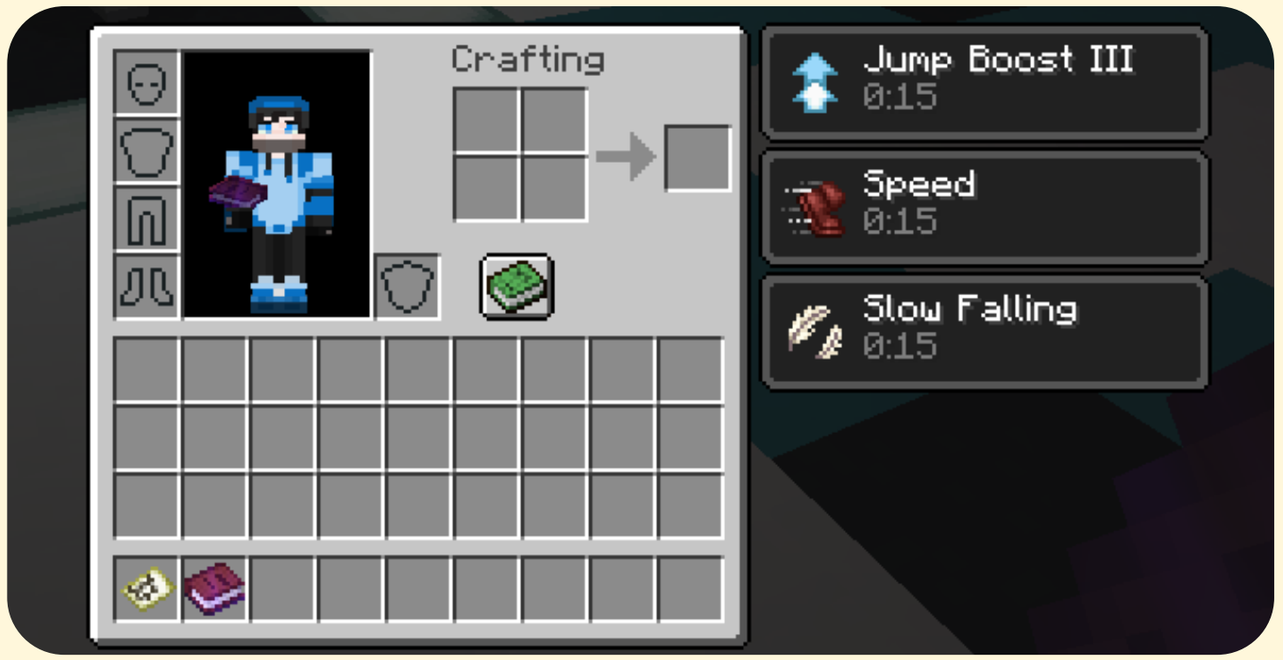


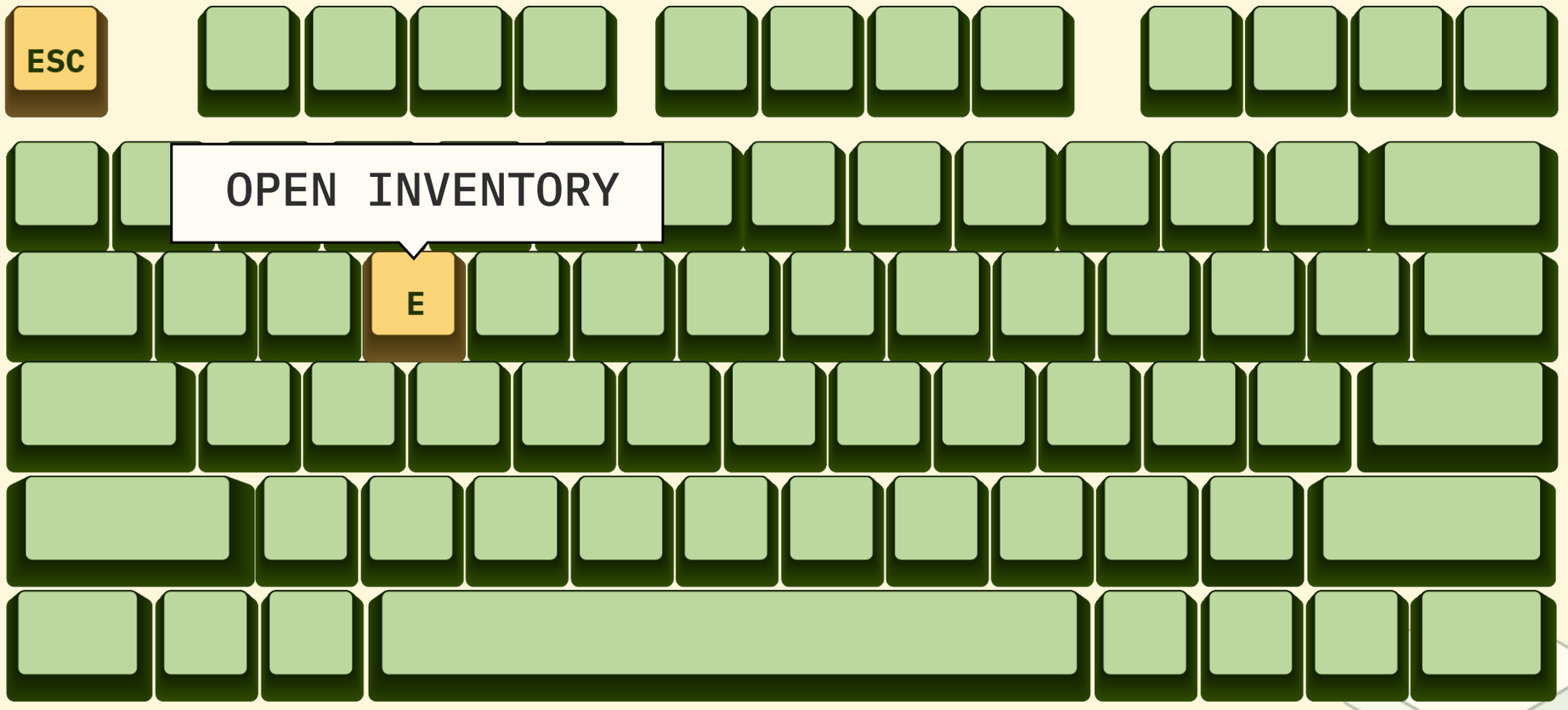
ITEMS

5 *Inventory*

Press ***E*** to **open your inventory.** Your inventory holds all your items and shows you what clothes you're wearing as well.

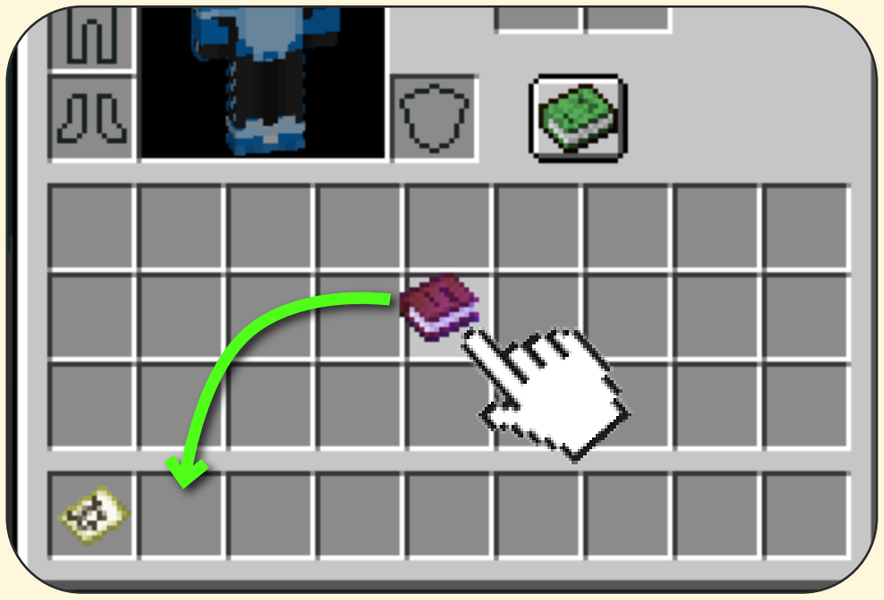
Though you'll start with no items other than your map, if you happen to pick anything up along the way, you can easily view them here.





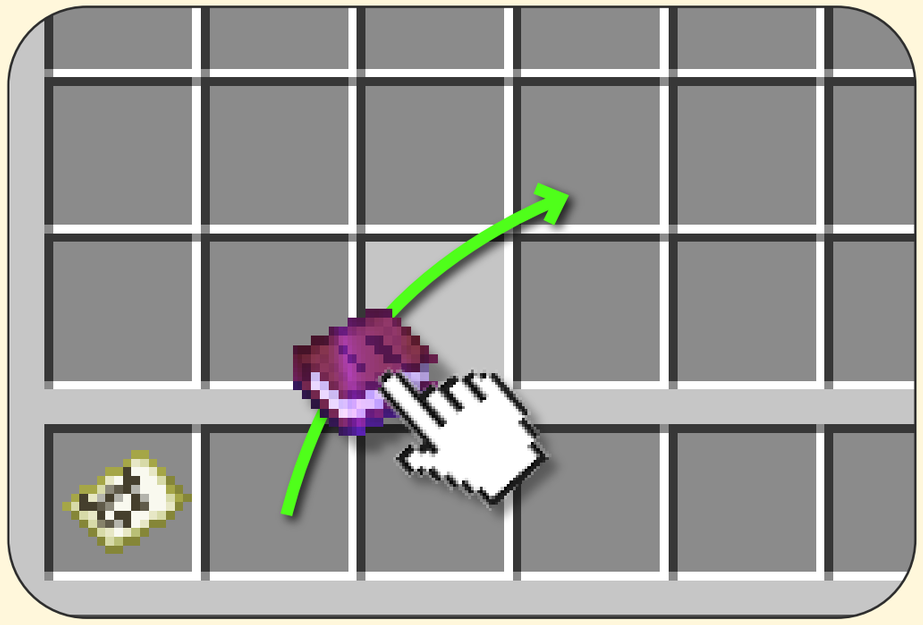
ITEMS

5 *Inventory*



If you wish to assign an item to your toolbar, click and drag any of the items in the first three rows and move them to the bottommost row.

The same goes for **removing items** from your toolbar, you can click and drag the item from the bottom to transfer it to any of the first three rows.



You can **press the escape key (*ESC*)** to **exit your inventory** and continue moving around.

LIST OF TEACHER COM-

As the teacher, you can request access to **commands that affect all users in the WHIMC world** you're currently in. This can make managing groups of students easier.

Access to these commands can be requested through ALLS' technical support.*

The request and details of implementation must be coordinated with technical support **at least one (1) week** before module implementation day to ensure that you are equipped and prepared to use the commands.

COMMAND	DESCRIPTION
`/map`	Give all players minimaps in their inventory.
`/observations list`	Lists all active observations
`/tp [user1] [user2]`	Teleports [user1] to [user2]
`/tp all [user1]`	Teleports everyone currently in the WHIMC world to [user1]

Teachers can also **request*** for the following commands:

- Opening/closing of portals to students.
- Giving students the rank of initiate, observer, explorer, or scientist.

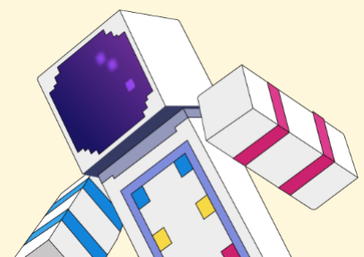
To request access to the teacher commands,* ***send an email* *to ALLS at* ***alls.sose@ateneo.edu***

LIST OF STUDENT COMMANDS

Students have access to a number of commands that can help them **navigate the WHIMC worlds** as well as **communicate with each other to collaborate and exchange information** as they explore.

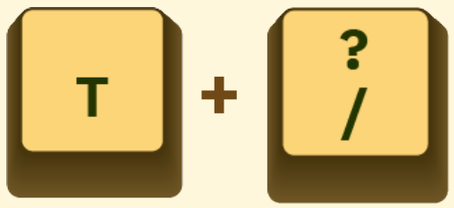
The most important student command is `/observe`, which students can use to **note their learnings and observations** as they explore, using prompts and templates to document and compare notable features between different worlds.

COMMAND	DESCRIPTION
`/mvspawn`	Teleports the student to the current world's spawn area (where the player starts).
`/observe`	Allows the student to choose an observation type.
`/quests journal`	Toggles the quest journal on and off.
`/msg [name] [message]`	Allows students to private message another user.



SCIENCE TOOL COMMANDS

As both teacher and students explore and encounter new environments, they can also use various tools to learn more about the world around them. You can make use of `/sciencetools` to **recognize and measure characteristics in the world that may influence one another, the geography of the world, and human life**. Using these science tools can help students make more informed observations about the worlds they encounter.



To use the provided science tools, press ***T*** to **open chat**, type " `/sciencetools measure` ", and hit the spacebar to see what tools are available. From there, you can type any tool as a short command, like `/altitude` or `("degrees celsius")` instead of using symbols (**°C**).

When inputting your observations, you can opt to **type out the terms** used

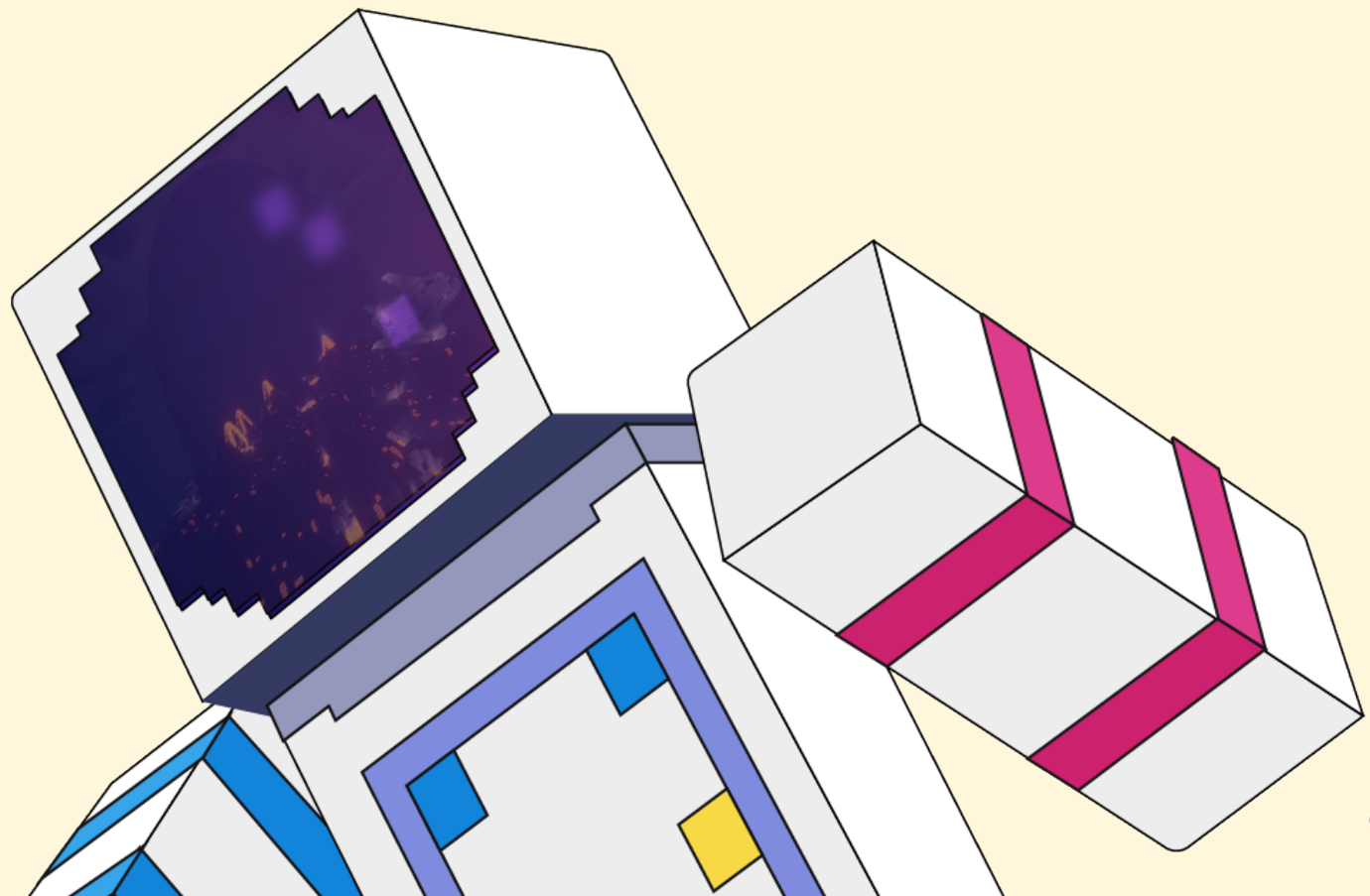
COMMAND	DESCRIPTION
`/altitude`	Shows the current measured altitude.
`/airflow`	Shows the current measured airflow.
`/atmosphere`	Shows the current measured atmosphere (e.g nitrogen, oxygen, argon, carbon dioxide).

SCIENCE TOOL COMMANDS

COMMAND	DESCRIPTION
`/gravity`	Shows the current measured gravitational pull.
`/humidity`	Shows the current measured humidity.
`/magnetic_field`	Shows the current magnetic field strength.
`/oxygen`	Shows the current oxygen level.
`/pressure`	Shows the current atmospheric pressure.
`/radiation`	Shows the current overall radiation exposure per year.
`/cosmicrays`	Shows the current power of localized galactic cosmic rays.
`/radius`	Shows the mean radius of the planet.
`/rotational_period`	Shows the planetary body rotational period.

SCIENCE TOOL COMMANDS

COMMAND	DESCRIPTION
`/tectonic`	Shows the current tectonic activity.
`/temperature`	Shows the ambient temperature.
`/tides`	Shows the current tidal variance activity.
`/tilt`	Shows the current axial tilt.
`/year`	Shows the current time to orbit the star.



SECTION

LOCATIONS & MISSIONS

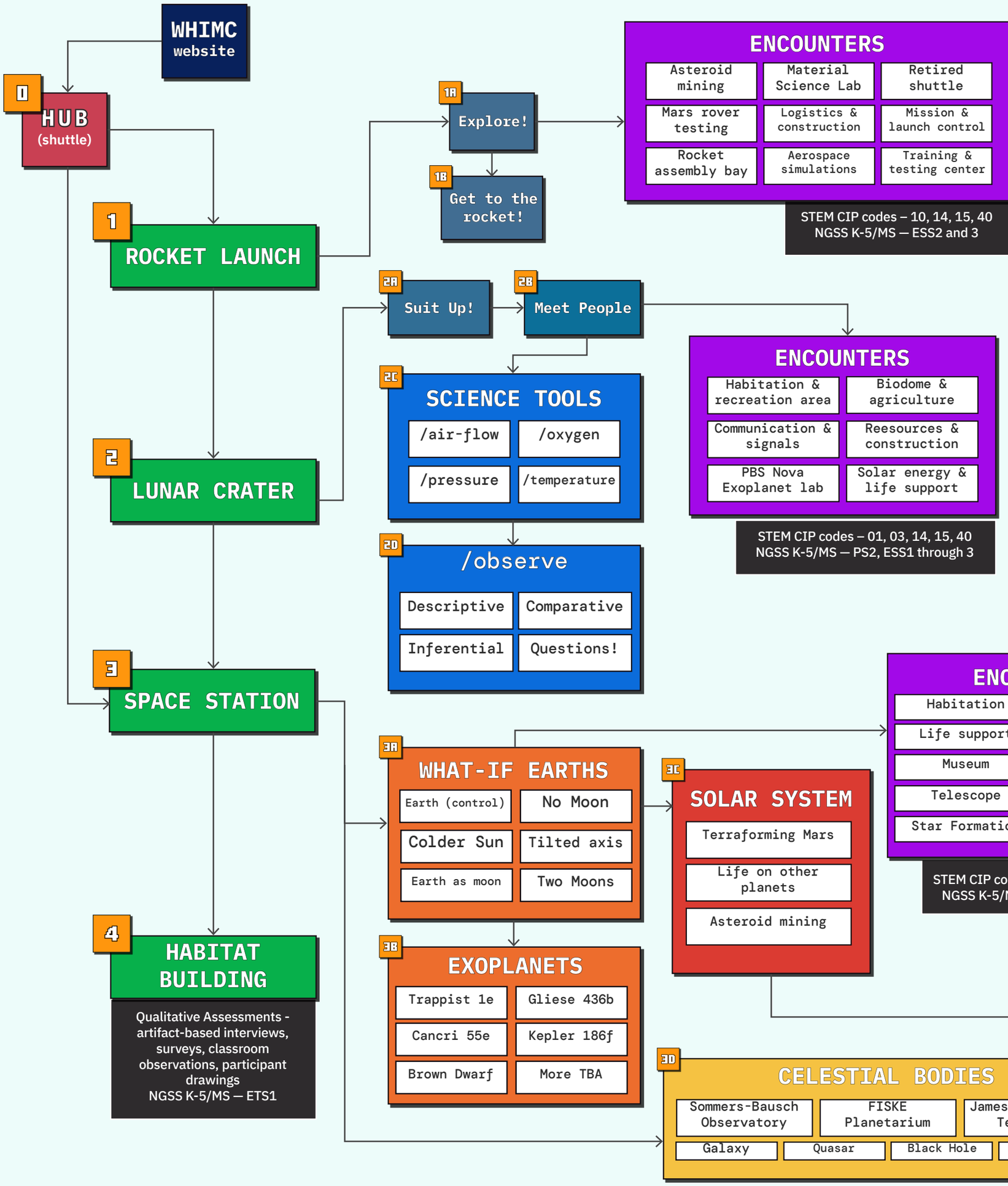
LIST OF MISSIONS

As you take your first few steps in the Rocket Launch Facility, you'll likely encounter a floating portion of text that says "**Your Mission**". These are your objectives, also called **quests**, and they change depending on your completion of previous missions as well as which area you are in.

Each WHIMC world has its own set of missions to be completed by players before they can progress to the next area, so it's important to keep an eye out for the mission prompts and keep your quest journal on hand as you explore the later WHIMC worlds.

LEARNER PATHWAYS THROUGH THE SERVER

The graphic below explains visually how participants might traverse through the WHIMC Worlds.



Automated Data Collection

- Encounter interactions (side quests)
- Path through building, time spent in each area

Interest Triggers

- Inspiring awe (affect) - *Whoa, Minecraft can do this??*
- Connecting to new knwoledge - *I didn't know NASA did that!*
- Personal relevance - *Building habitats on other planets*

Skills / Knowledge

- Practice navigating and interacting with the game
- You can talk to and interact with characters
- Encounter different kinds of applied STEM at NASA

Automated Data Collection

- Encounter interactions (side quests)
- Path through base, time spent in each area
- Science tools and observations input during tutorial quest

Interest Triggers

- Inspiring awe (affect) - *I can jump high on the moon! Look I can see the earth in the sky like a moon!*
- Connecting to new knwoledge - *I didn't know air had pressure and that buildings have to keep the air inside, it's so cold in a vacuum!*
- Accomplishment (challenges)- *I can learn about my environment to help others*

Skills / Knowledge

- Accepting and completing quests
- Encounter different kinds of applied STEM in a lunar setting
- Make scientific observations
- Understand what habitats on the moon require

Automated Data Collection

- Encounter interactions (side quests)
- Path through worlds
- Time spent in areas of significance
- Observations recorded
- Science tools employed
- Interactions with learner support AI

Interest Triggers

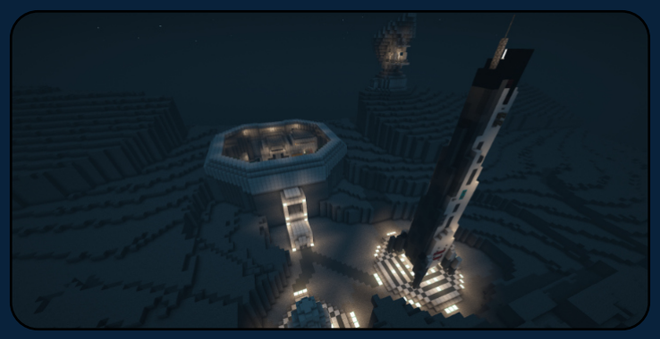
- Inspiring awe (affect) - *This "what-if" earth is CRAZY!*
- Connecting to new knwoledge - *I learned about new research in OUTER SPACE!*
- Novelty - *I had never thought about the BIG picture*
- Accomplishment (challenges) - *I applied knowledge to understand something and solve a puzzle*
- Personal relevance - *Look at all this cool stuff these sceinetists do - I want to do that some day too!*

Skills / Knowledge

- Apply STEM knowledge in hypothetical and unique settings
- Learn properties of exoplanets, moons, and asteroids
- understand how planetary conditions impact habitability
- Assess the suitability of worlds for supporting life
- Apply engineering principles to constuct habitats

THE WHIMC WORLDS

ROCKET LAUNCH FACILITY

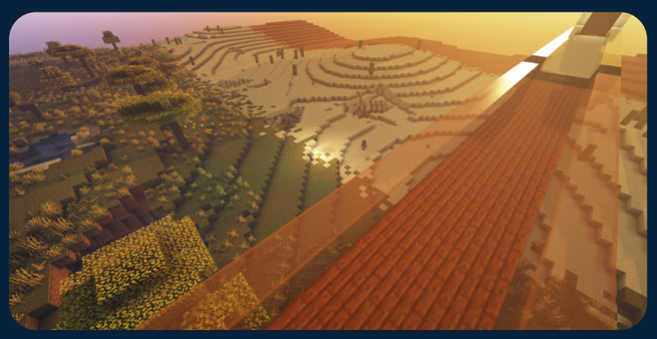


LUNAR BASE LEGUIN

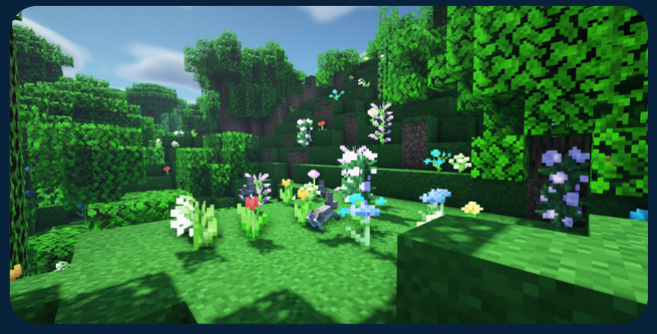
SPACE STATION HUB

UNALTERED EARTH

EARTH WITH NO MOON



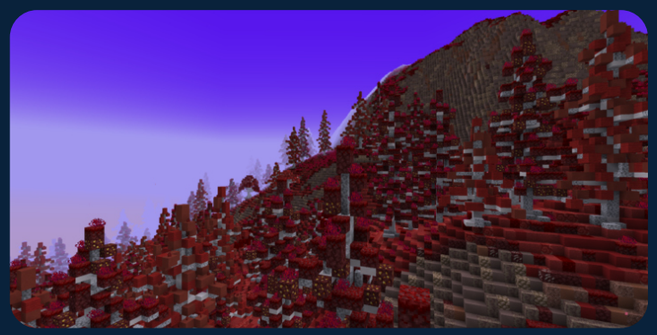
EARTH WITH COLDER SUN



TILTED EARTH

EARTH AS MOON (MYNOA)

EARTH WITH TWO MOONS



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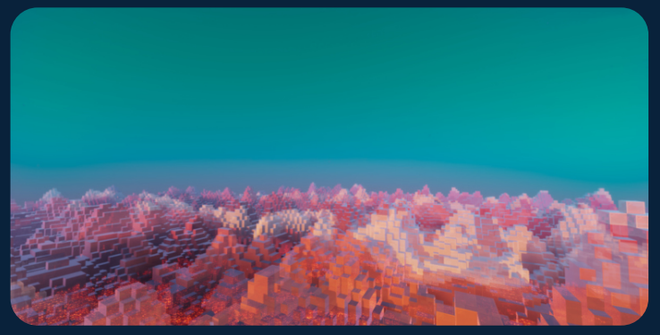
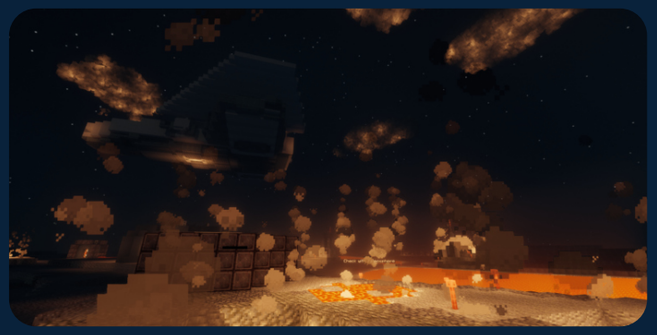
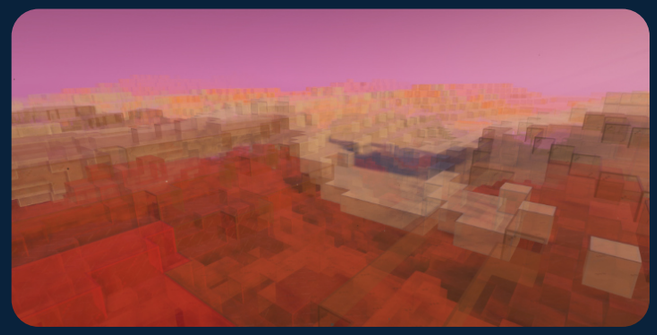


GLIESE



CANCRI

TRAPPIST



BROWN DWARF

LEARNER PATHWAYS THROUGH THE SERVER

WHIMC website

0 HUB (shuttle)

1 ROCKET LAUNCH

1A Explore!

1B Get to the rocket!

ENCOUNTERS

Asteroid mining	Material Science Lab	Retired shuttle
Mars rover testing	Logistics & construction	Mission & launch control
Rocket assembly bay	Aerospace simulations	Training & testing center

STEM CIP codes – 10, 14, 15, 40
NGSS K-5/MS — ESS2 and 3

Automated Data Collection
- Encounter interactions (side quests)
- Path through building, time spent in each area

Interest Triggers
- Inspiring awe (affect) - *Whoa, Minecraft can do this??*
- Connecting to new knwoledge - *I didn't know NASA did that!*
- Personal relevance - *Building habitats on other planets*

Skills / Knowledge
- Practice navigating and interacting with the game
- You can talk to and interact with characters
- Encounter different kinds of applied STEM at NASA

2 LUNAR CRATER

2A Suit Up!

2B Meet People

2C SCIENCE TOOLS

/air-flow	/oxygen
/pressure	/temperature

2D /observe

Descriptive	Comparative
Inferential	Questions!

ENCOUNTERS

Habitation & recreation area	Biodome & agriculture
Communication & signals	Reesources & construction
PBS Nova Exoplanet lab	Solar energy & life support

STEM CIP codes – 01, 03, 14, 15, 40
NGSS K-5/MS — PS2, ESS1 through 3

Automated Data Collection
- Encounter interactions (side quests)
- Path through base, time spent in each area
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Interest Triggers
- Inspiring awe (affect) - *I can jump high on the moon! Look I can see the earth in the sky like a moon!*
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- Accomplishment (challenges)- *I can learn about my environment to help others*

Skills / Knowledge
- Accepting and completing quests
- Encounter different kinds of applied STEM in a lunar setting
- Make scientific observations
- Understand what habitats on the moon require

3 SPACE STATION

3A WHAT-IF EARTHS

Earth (control)	No Moon
Colder Sun	Tilted axis
Earth as moon	Two Moons

3B EXOPLANETS

Trappist 1e	Gliese 436b
Cancri 55e	Kepler 186f
Brown Dwarf	More TBA

3C SOLAR SYSTEM
- Terraforming Mars
- Life on other planets
- Asteroid mining

ENCOUNTERS

Habitation	Physical sciences
Life support	Life sciences
Museum	0G construction
Telescope	PBS Nova Lab
Star Formation	Astronomers

STEM CIP codes – 01, 10, 14, 15, 26, 40
NGSS K-5/MS — PS2, ESS1 through 3

Automated Data Collection
- Encounter interactions (side quests)
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- Inspiring awe (affect) - *This "what-if" earth is CRAZY!*
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3D CELESTIAL BODIES

Sommers-Bausch Observatory	FISKE Planetarium	James Webb Space Telescope

Galaxy	Quasar	Black Hole	Neutron Star

Skills / Knowledge
- Apply STEM knowledge in hypothetical and unique settings
- Learn properties of exoplanets, moons, and asteroids
- understand how planetary conditions impact habitability
- Assess the suitability of worlds for supporting life
- Apply engineering principles to constuct habitats

4 HABITAT BUILDING

Qualitative Assessments - artifact-based interviews, surveys, classroom observations, participant drawings
NGSS K-5/MS — ETS1

THE WHIMC WORLDS

1 ROCKET LAUNCH FACILITY

As the very first location one encounters when entering the WHIMC world, the Rocket Launch Facility serves as an introduction area, and is the perfect place to practice moving around, interacting with your environment, and learning about the foundations of space travel.

Here, you and your students will take a look at the base of operations on Earth, where people work hard to make space travel a reality. The facility also serves as a tutorial to familiarize players with WHIMC basics. Through exploring and speaking with the scientists around the base, students can learn more about the work that goes into a rocket launch and even go on a rocket themselves to enter the next area.

THE WHIMC WORLDS

1 ROCKET LAUNCH FACILITY

ENCOUNTERS

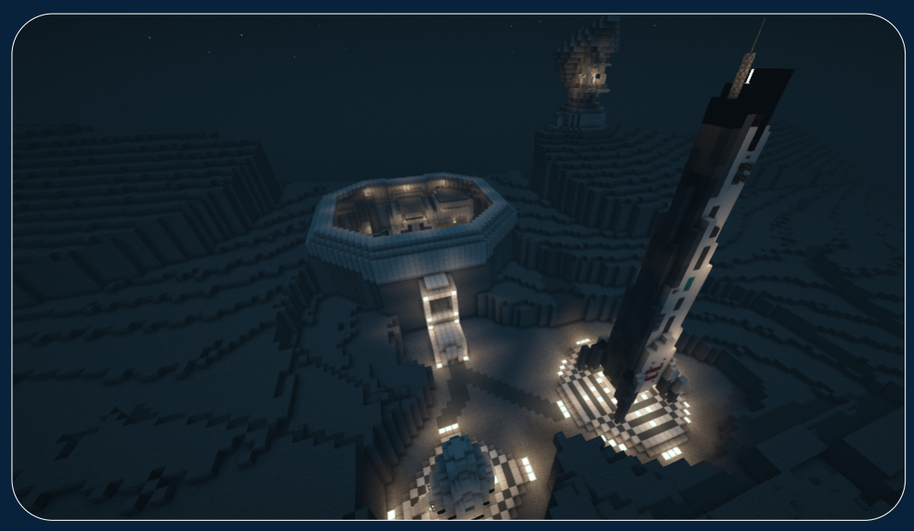
- *Asteroid Mining*
- *Material Science Lab*
- *Retired Shuttle*
- *Mars Rover Testing*
- *Logistics and Construction*
- *Mission and Launch Control*
- *Rocket Assembly Bay*
- *Aerospace Simulations*
- *Training and Testing Center*

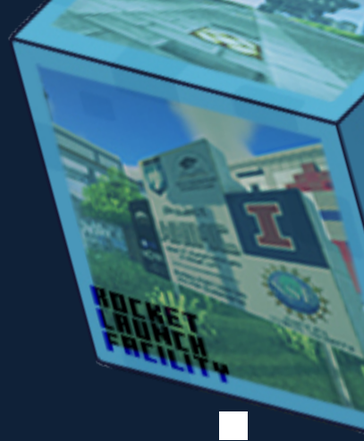
LEARNING OUTCOMES

- Practice navigating and interacting with the game.
- You can talk to and interact with characters.
- Encounter different kind of applied STEM at

GRANTS ACCESS TO:

- *Lunar base LeGuin*





1 ROCKET LAUNCH FACILITY

MISSIONS

QUEST	PURPOSE
Explore	Encourages the player to visit all rooms and speak to NPCs within the facility.
Get to the rocket!	Introduces players to quests while giving them something to look for as they explore. Indicates to the player that they are going to space. ***Reward: Access to Lunar Base LeGuin***
**Reusable Rockets*	Introduces the connection between environmental concerns and space exploration. Players can also meet and speak to a real PBS scientist, Anjali Tripathy.

****Secondary quest or "Side-quest", not required to progress to the next***

1 ROCKET LAUNCH FACILITY MAP

1. Spawn
2. Dr. Ginger / Prof. Chad
3. Attendant
4. Neil Comins
5. Robotics Engineer
6. Materials Scientist
7. Impressed Scientist
8. Launch Control Engineer
9. Mission-Coordinator
10. NASA Historian
11. Computer Scientist
12. Anjali Tripathi
13. J. Morgan
14. Rocket Elevator

View the FULL TEACHER'S GUIDE for the ROCKET LAUNCH FACILITY here

LEARNER PATHWAYS THROUGH THE SERVER

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NGSS K-5/MS — ESS2 and 3

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2 LUNAR CRATER

2A Suit Up!

2B Meet People

ENCOUNTERS

Habitation & recreation area	Biodome & agriculture
Communication & signals	Reesources & construction
PBS Nova Exoplanet lab	Solar energy & life support

STEM CIP codes – 01, 03, 14, 15, 40
NGSS K-5/MS — PS2, ESS1 through 3

2C SCIENCE TOOLS

/air-flow	/oxygen
/pressure	/temperature

2D /observe

Descriptive	Comparative
Inferential	Questions!

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Brown Dwarf	More TBA

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Galaxy	Quasar	Black Hole	Neutron Star

ENCOUNTERS

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Telescope	PBS Nova Lab
Star Formation	Astronomers

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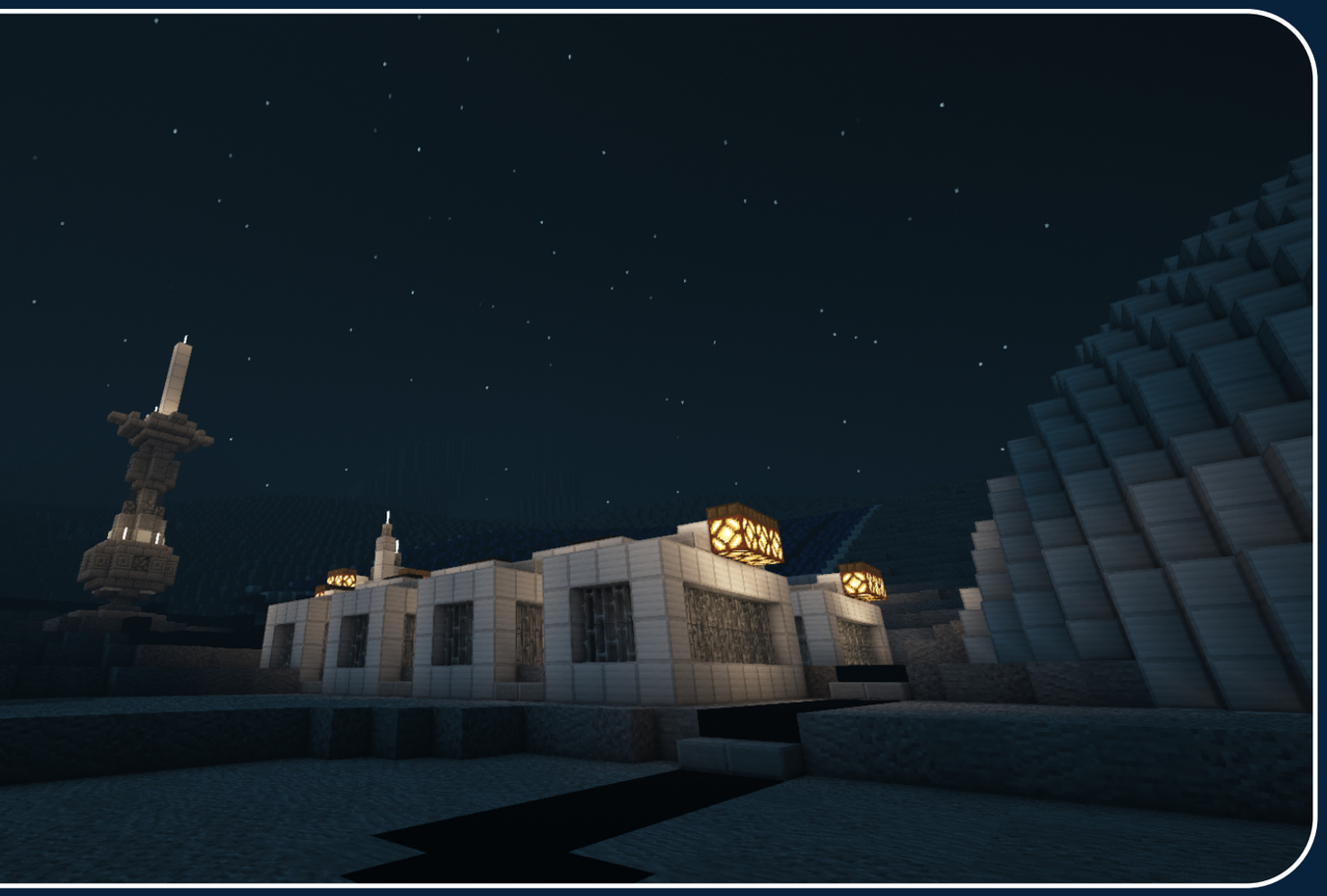
- Learn properties of exoplanets, moons, and asteroids
- understand how planetary conditions impact habitability
- Assess the suitability of worlds for supporting life
- Apply engineering principles to constuct habitats

4 HABITAT BUILDING

Qualitative Assessments - artifact-based interviews, surveys, classroom observations, participant drawings
NGSS K-5/MS — ETS1

2 LUNAR BASE LEGUIN



The Lunar Base LeGuin is the students' introduction to the moon, and they can explore the area to observe and experience the differences between Earth and the moon. Lunar Base LeGuin is the second area and it introduces the player to more complex missions and scenarios.

The player is tasked with meeting fellow astronauts and taking an active role in ensuring life on the Lunar Base is well-maintained by observing how humans live on the moon. Students take on missions to take part in the operations and learn about the research and work it takes to maintain a lunar base with human life.

2 LUNAR BASE LEGUIN

THE WHIMC WORLDS

2 LUNAR BASE LEGUIN

ENCOUNTERS

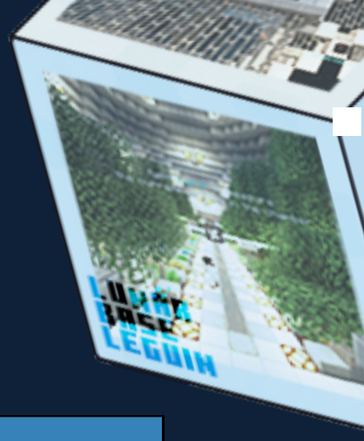
- *Habitation and Recreation Area*
- *Biodome and Agriculture*
- *Communication and Signals*
- *Resources and Construction*
- *Logistics and Construction*
- *PBS Nova Exoplanet Lab*
- *Solar Energy and Life Support*

LEARNING OUTCOMES

- Accepting and completing quests.
- Encounter different kinds of applied STEM on the moon.
- Make scientific observations.
- Understand what habitats the moon require.

GRANTS ACCESS TO:

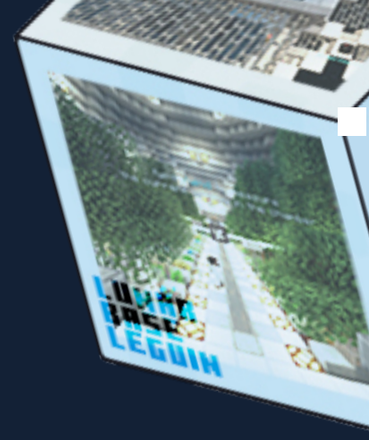
- *Observation Training Area*
- *Space Station Hub*



2 LUNAR BASE LEGUIN

MISSIONS

QUEST	PURPOSE
Welcome to Lunar Base LeGuin!	Further familiarizes students with the quest mechanic as well as introduces low gravity, the need for space suits, and the concept of moon domes and living on the moon.
Meeting people	Introduces players to different kinds of scientists and science tools within the WHIMC world.
Feeling the pressure	Harlem explains **/pressure.** Buildings have their strength shaped inward to keep air inside, which is always trying to burst out.
What's Cooler than being cool?	Misavo teaches about relative **/temperature** and how water is needed on the moon.
Not-so-solar- wind	Huxley indicates the need for **/airflow** (or **/wind**). Encourages characters to explore habitation areas to better understand life on the moon.
A breath of fresh air	Olivia asks players to help find an airlock **/oxygen** leak. This explains to players the value of airlocks and how air is a limited resource in a place like the moon.



2 LUNAR BASE LEGUIN

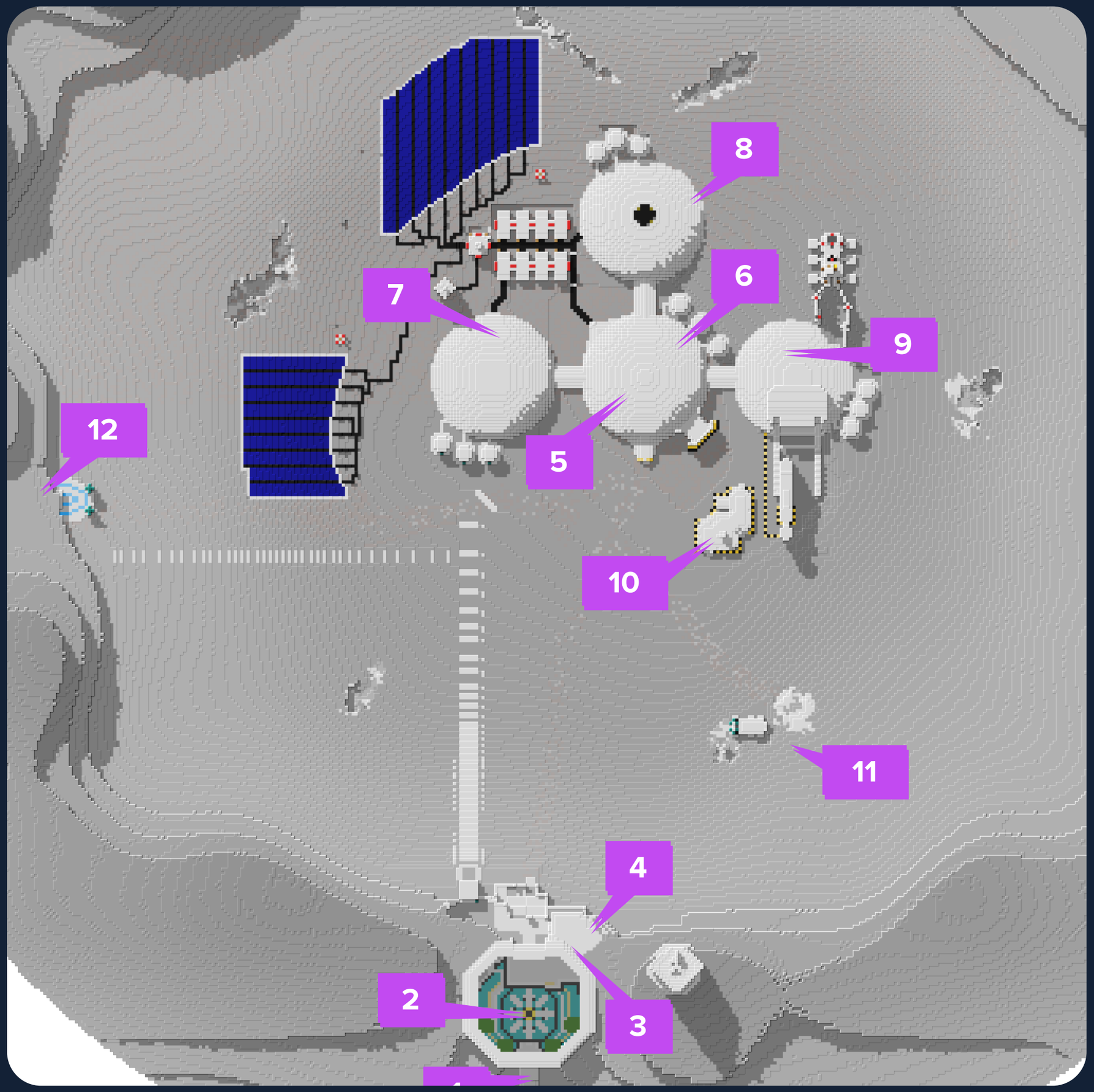
MISSIONS (CONT.)

QUEST	PURPOSE
Space station access	Reminds players to fulfill all tasks on the Lunar Base to gain access to the Space Station Hub. ***Reward: Access to the Space Station Hub***
**Exoplanet Hub*	Connect to external PBS Nova Lab activity

****Secondary quest or "Side-quest", not required to progress to the next***

2 LUNAR BASE LEGUIN MAP

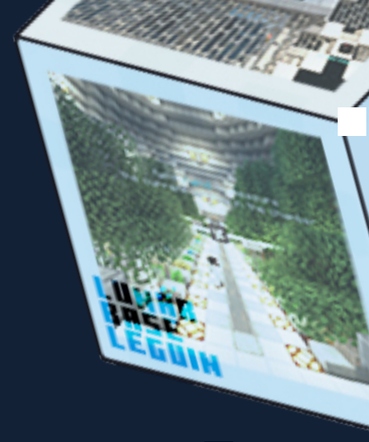
1. Spawn
2. Roger M.
3. Heinlen R.
4. Wells O.
5. E.A. Blair
6. Portal / Abe K.
7. Huxley A. (Biodome)
8. Herbet F.
9. Olivia C. (Materials Lab)
10. Harlem R. (Construction)
11. Misavo I. (Ice Storage)
12. PBS Nova Exoplanet Lab
13. Portal
14. Rocket Elevator



View the FULL TEACHER'S GUIDE for LUNAR BASE LEGUIN here

2.1 Observation Training Area

At the Observation Training Area, students can learn and practice making observations in the game, which will prove to be useful as they begin exploring more complex areas.



2.1 Observation Training Area

MISSIONS

QUEST	PURPOSE
*Observation Tutorial	Teaches three kinds of more scientific ways to observe: descriptive, comparative, and inferential ***Reward: Grants the “observer” rank to players***

***Secondary quest or “Side-quest”, not required to progress to the next**

LEARNER PATHWAYS THROUGH THE SERVER

WHIMC website

0 HUB (shuttle)

1 ROCKET LAUNCH

1A Explore!

1B Get to the rocket!

ENCOUNTERS

Asteroid mining	Material Science Lab	Retired shuttle
Mars rover testing	Logistics & construction	Mission & launch control
Rocket assembly bay	Aerospace simulations	Training & testing center

STEM CIP codes – 10, 14, 15, 40
NGSS K-5/MS — ESS2 and 3

Automated Data Collection
- Encounter interactions (side quests)
- Path through building, time spent in each area

Interest Triggers
- Inspiring awe (affect) - *Whoa, Minecraft can do this??*
- Connecting to new knwoledge - *I didn't know NASA did that!*
- Personal relevance - *Building habitats on other planets*

Skills / Knowledge
- Practice navigating and interacting with the game
- You can talk to and interact with characters
- Encounter different kinds of applied STEM at NASA

2 LUNAR CRATER

2A Suit Up!

2B Meet People

2C SCIENCE TOOLS

/air-flow	/oxygen
/pressure	/temperature

2D /observe

Descriptive	Comparative
Inferential	Questions!

ENCOUNTERS

Habitation & recreation area	Biodome & agriculture
Communication & signals	Reesources & construction
PBS Nova Exoplanet lab	Solar energy & life support

STEM CIP codes – 01, 03, 14, 15, 40
NGSS K-5/MS — PS2, ESS1 through 3

Automated Data Collection
- Encounter interactions (side quests)
- Path through base, time spent in each area
- Science tools and observations input during tutorial quest

Interest Triggers
- Inspiring awe (affect) - *I can jump high on the moon! Look I can see the earth in the sky like a moon!*
- Connecting to new knwoledge - *I didn't know air had pressure and that buildings have to keep the air inside, it's so cold in a vacuum!*
- Accomplishment (challenges)- *I can learn about my environment to help others*

Skills / Knowledge
- Accepting and completing quests
- Encounter different kinds of applied STEM in a lunar setting
- Make scientific observations
- Understand what habitats on the moon require

3 SPACE STATION

3A WHAT-IF EARTHS

Earth (control)	No Moon
Colder Sun	Tilted axis
Earth as moon	Two Moons

3B EXOPLANETS

Trappist 1e	Gliese 436b
Cancri 55e	Kepler 186f
Brown Dwarf	More TBA

3C SOLAR SYSTEM
- Terraforming Mars
- Life on other planets
- Asteroid mining

3D CELESTIAL BODIES

Sommers-Bausch Observatory	FISKE Planetarium	James Webb Space Telescope

Galaxy	Quasar	Black Hole	Neutron Star

ENCOUNTERS

Habitation	Physical sciences
Life support	Life sciences
Museum	0G construction
Telescope	PBS Nova Lab
Star Formation	Astronomers

STEM CIP codes – 01, 10, 14, 15, 26, 40
NGSS K-5/MS — PS2, ESS1 through 3

Automated Data Collection
- Encounter interactions (side quests)
- Path through worlds
- Time spent in areas of significance
- Observations recorded
- Science tools employed
- Interactions with learner support AI

Interest Triggers
- Inspiring awe (affect) - *This "what-if" earth is CRAZY!*
- Connecting to new knwoledge - *I learned about new research in OUTER SPACE!*
- Novelty - *I had never thought about the BIG picture*
- Accomplishment (challenges) - *I applied knowledge to understand something and solve a puzzle*
- Personal relevance - *Look at all this cool stuff these sceinetists do - I want to do that some day too!*

Skills / Knowledge
- Apply STEM knowledge in hypothetical and unique settings
- Learn properties of exoplanets, moons, and asteroids
- understand how planetary conditions impact habitability
- Assess the suitability of worlds for supporting life
- Apply engineering principles to constuct habitats

4 HABITAT BUILDING

Qualitative Assessments - artifact-based interviews, surveys, classroom observations, participant drawings
NGSS K-5/MS — ETS1

3 SPACE STATION HUB

The Space Station Hub is the central point of WHIMC. It has two main quests for the player: to see the “What-if” worlds, and to see the exoplanets. Using the Space Station Hub as an arrival and departure point, players can travel and explore various worlds to fulfill their missions and work towards unlocking the explorer and scientist ranks. Speaking to the non-playable character (NPC) Jeff Ginger at the front can lead students to the “What-if” worlds.

At the Space Station Hub, students can also fulfill quests and explore, as the area is large and free to roam around in, with multiple NPCs to speak to. Ultimately, the use of the hub depends on the goal of the educator and the students alike. The hub can be skipped to opt for a focus on the “What-if” worlds, but can also be explored to encourage self-discovery and curiosity.

THE WHIMC WORLDS

3 SPACE STATION HUB

LEARNING OUTCOMES

Accepting and completing quests.

GRANTS ACCESS TO:

- ***What-if Earths***
  - Unaltered Earth
  - No Moon
  - Colder Sun
  - Tilted Earth
  - Mynoa
  - Two Moons
- ***Exoplanets***
  - Kepler 186f
  - Gliese 436b
  - Cancri 55e
  - Trappist 1e
  - Brown Dwarf

For future development:

- ***Solar System***
- ***Celestial Bodies***

3 SPACE STATION HUB

MISSIONS

QUEST	PURPOSE
Explore [What-If] Earths	An introduction to the “What-if” worlds one can visit. Players begin with observing Earth in its default state before exploring Earth with dramatically different astronomical conditions. ***Rewards:*** ***Grants the “explorer” rank*** ***Gains access to all exoplanets***
Tour de exoplanet	A tour of the simulations of exoplanets one can visit. Players can learn about science-related variables that make these extreme worlds uninhabitable. ***Reward:*** ***Grants the “scientist” rank*** ***Gains access to all solar system***
*Singing plants	PBS scientist Anjali Tripathy asks players to think about recycling beyond trash, involving also air and water.

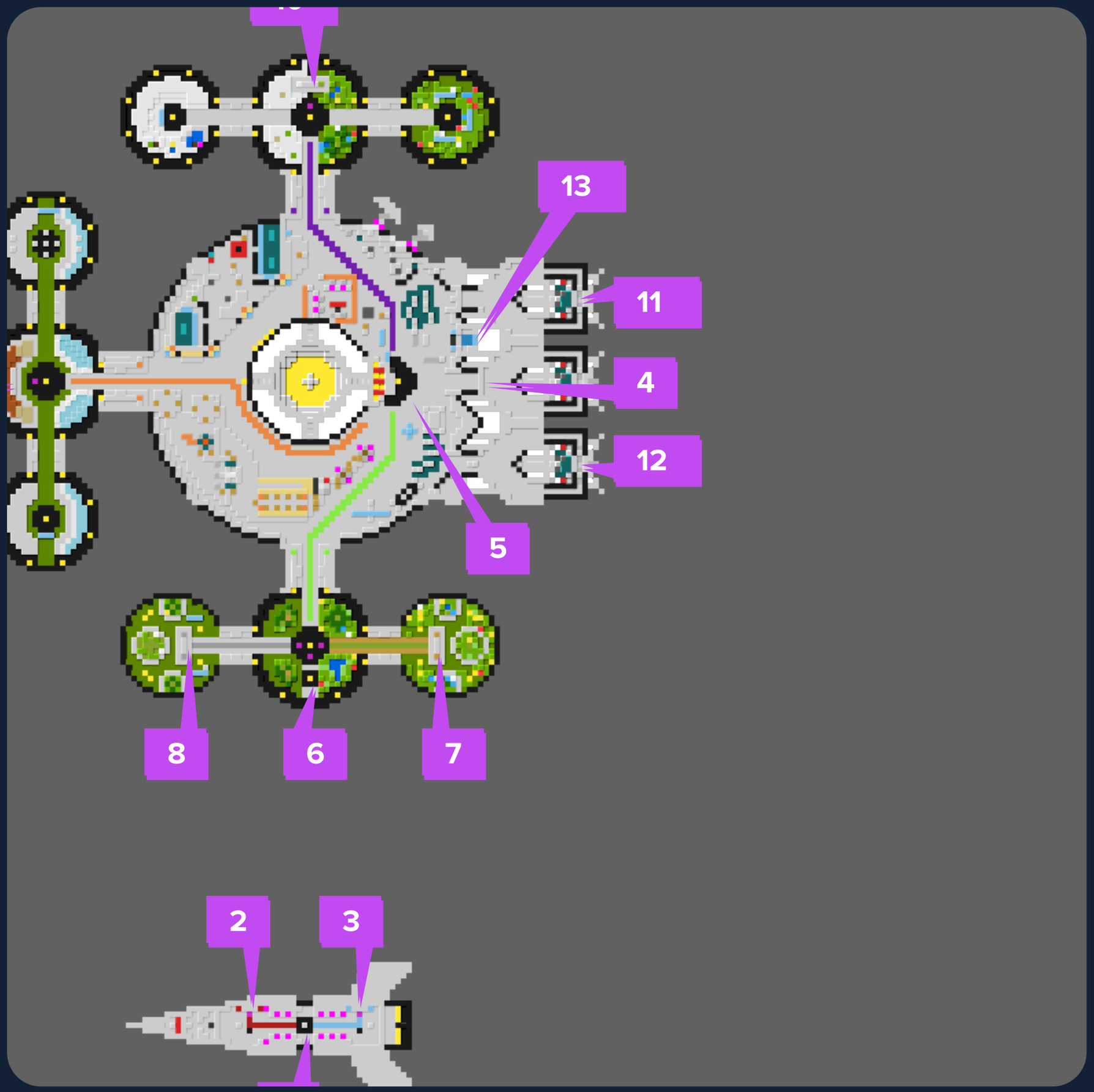
***For future development

*Secondary quest or “Side-quest”, not required to progress to the next

3 SPACE STATION HUB MAP

1ST FLOOR

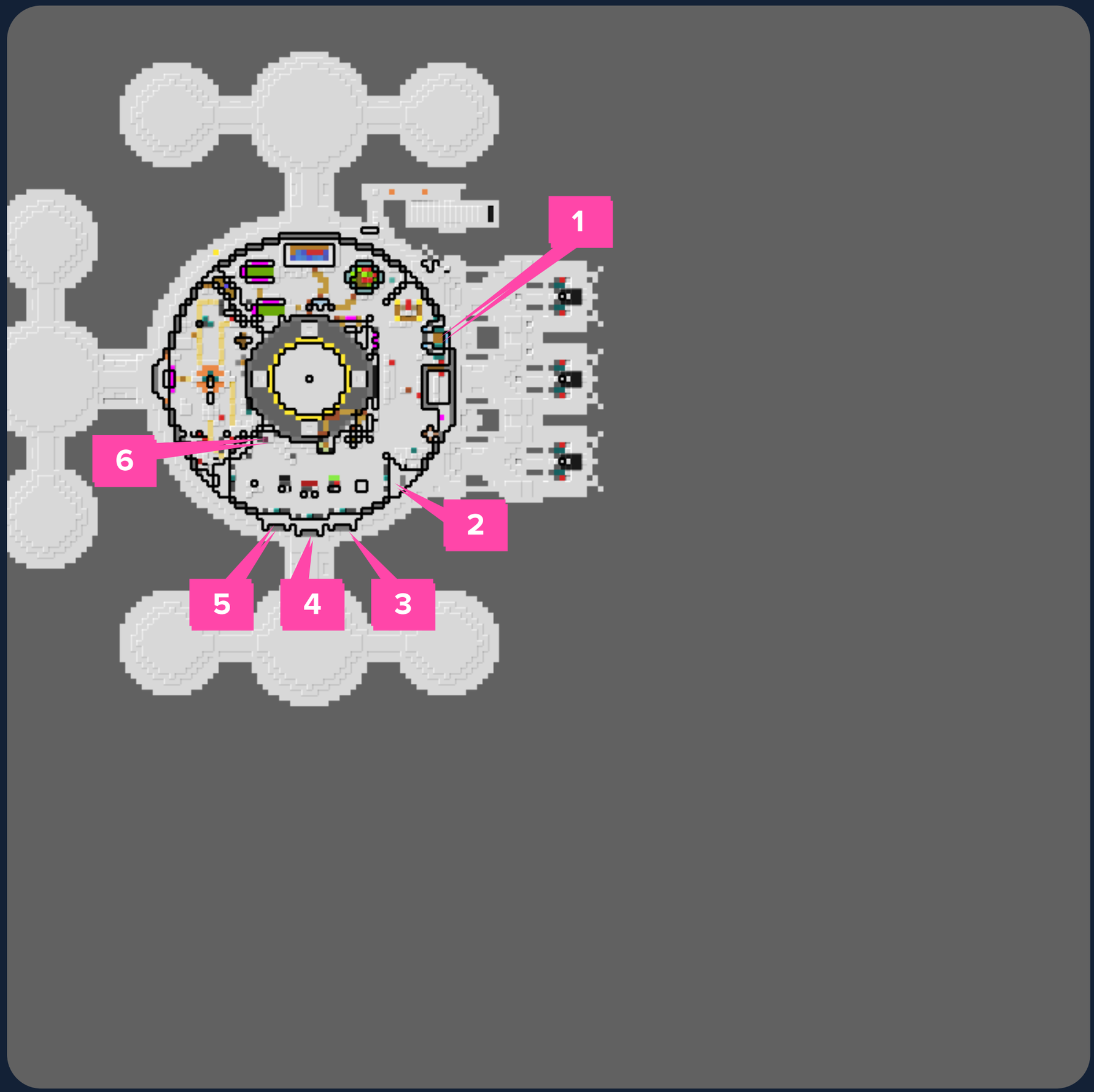
1. Spawn
2. Portal to Rocket
3. Portal to Hub
4. Portal to Moon Base
5. Jeff Ginger
6. [What-If] Guide
7. Portal to Earth Control
8. Portal to No Moon
9. Portal to Colder Sun
10. Portal to Tilted Earth
11. Portal to Two Moons
12. Portal to Mynoa
13. Elevator to 2nd Floor



3 SPACE STATION HUB MAP

2ND FLOOR

1. Elevator to 1st Floor
2. Portal to Kepler
3. Portal to Gliese
4. Portal to Cancri
5. Portal to Trappist
6. Portal to Brown Dwarf

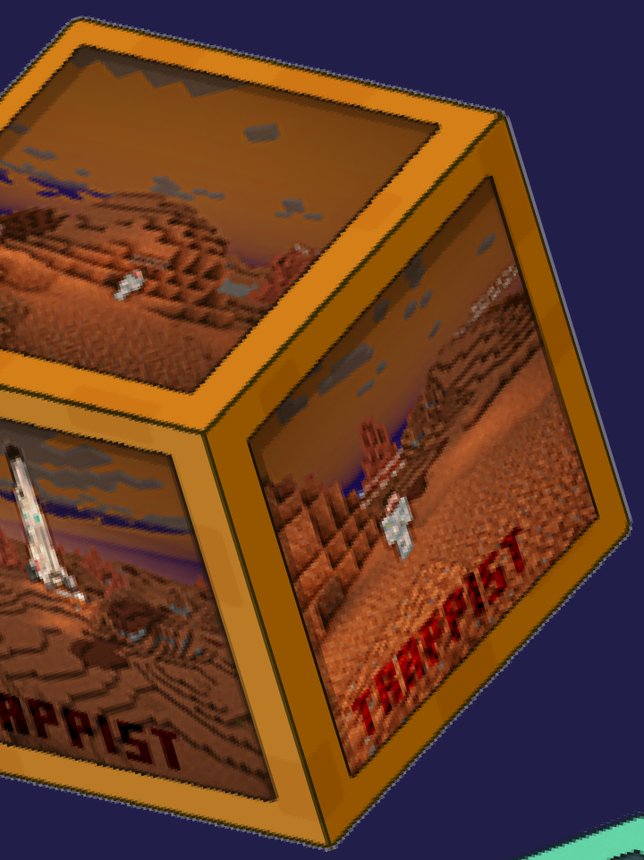


View the FULL TEACHER'S GUIDE for the SPACE STATION HUB here

THE WHIMC WORLDS

3.1 WHAT-IF WORLDS

The “What-if” Earths are **simulations of our world** with differing **astronomical conditions that affect life on Earth**. Here, students can experience and make observations on what life may look like on an Earth with no moons, two moons, and so on.



The observations are categorized three ways:

DESCRIPTIVE

Descriptive observations are related to **color, temperature, quantity,** and **other physical attributes.**

COMPARATIVE

Comparative observations compare one **natural phenomenon** to another.

INFERENTIAL

Inferential observations **propose an explanation** of something.

THE WHIMC WORLDS

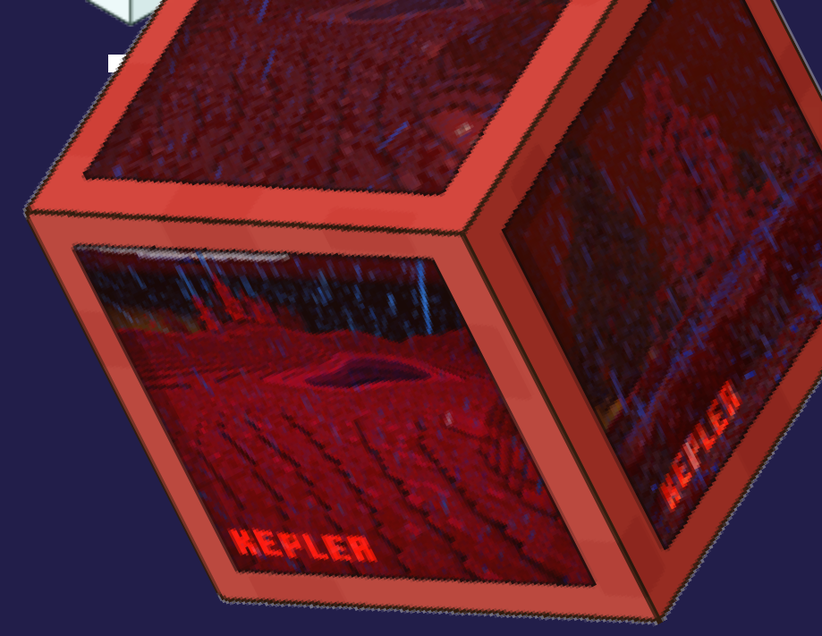
3.1 WHAT-IF WORLDS

ENCOUNTERS

- *Habitation*
- *Physical Sciences*
- *Life Support*
- *Life Sciences*
- *Museum*
- *0G Construction*
- *Telescope*
- *PBS Nova Lab*
- *Star Formation*
- *Astronomers*

LEARNING OUTCOMES

- Apply STEM knowledge in hypothetical and unique settings.
- Learn properties of exoplanets, moons, and asteroids.
- Understand how planetary conditions impact habitability.
- Assess if the worlds are suitable for supporting life.
- Apply engineering principles to make habitats.



WHAT-IF EARTHS

1 UNALTERED EARTH

The Unaltered Earth serves as the basis of observation for the other “What-if” worlds. It’s a **regular version of Earth with no changes made**, and it serves as a practice world for students to make observations and ground their understanding of the worlds somewhere “normal”.

MISSIONS

QUEST	PURPOSE
*Baseline	Asks students to take baseline measures of astronomy-related variables for later comparison, as they travel to Earths with unique conditions.

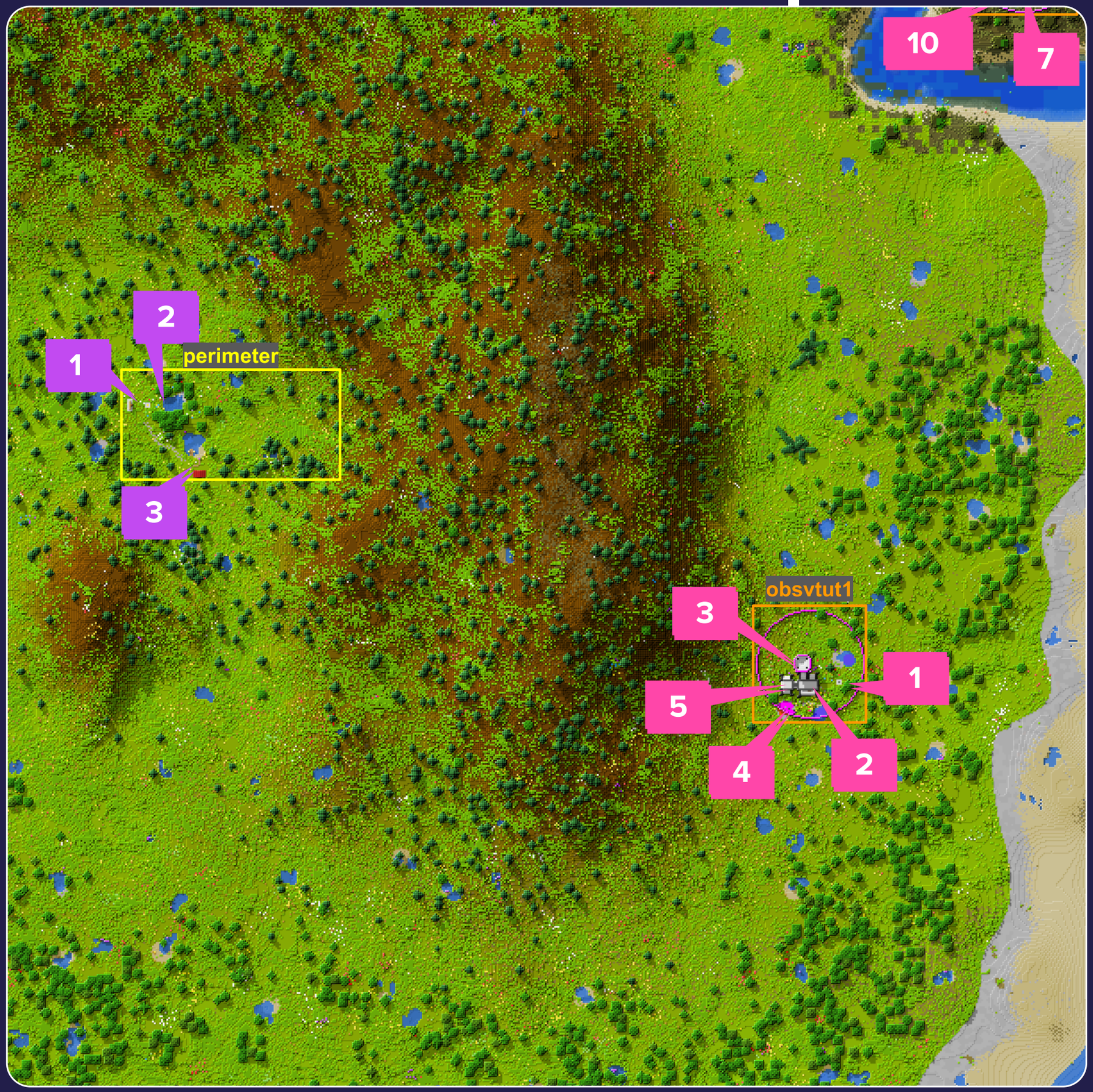
***Secondary quest or “Side-quest”, not required to progress to the next**

1 UNALTERED EARTH MAP

1. Spawn
2. Dr. Neil Comins
3. Eshana P.

OBSERVATION TUTORIAL

1. Spawn / Guide 1 (start)
2. Guide 2 (describe)
3. Guide 3 (tower)
4. Guide 4 (lava)
5. Portal
6. Portal / Guide 5 (swamp)
7. Guide 6 (compare) / Guide 9 (infer)
8. Guide 7 (tower)
9. Guide 8 (coast)
10. Exit



View the FULL TEACHER'S GUIDE for UNALTERED EARTH here

2 EARTH WITH NO MOON

The Earth with No Moon is the first “What-if” and serves as the first step for students to really explore and observe. Players can note **how the moon has a great impact on Earth’s tides and winds.**

MISSIONS

QUEST	PURPOSE
Observe with the wind	Asks students to make an observation with /wind. ***Reward:*** ***Grants the “observer” rank*** ***Gains access to the other “what-if” Earths***

2 EARTH WITH NO MOON MAP

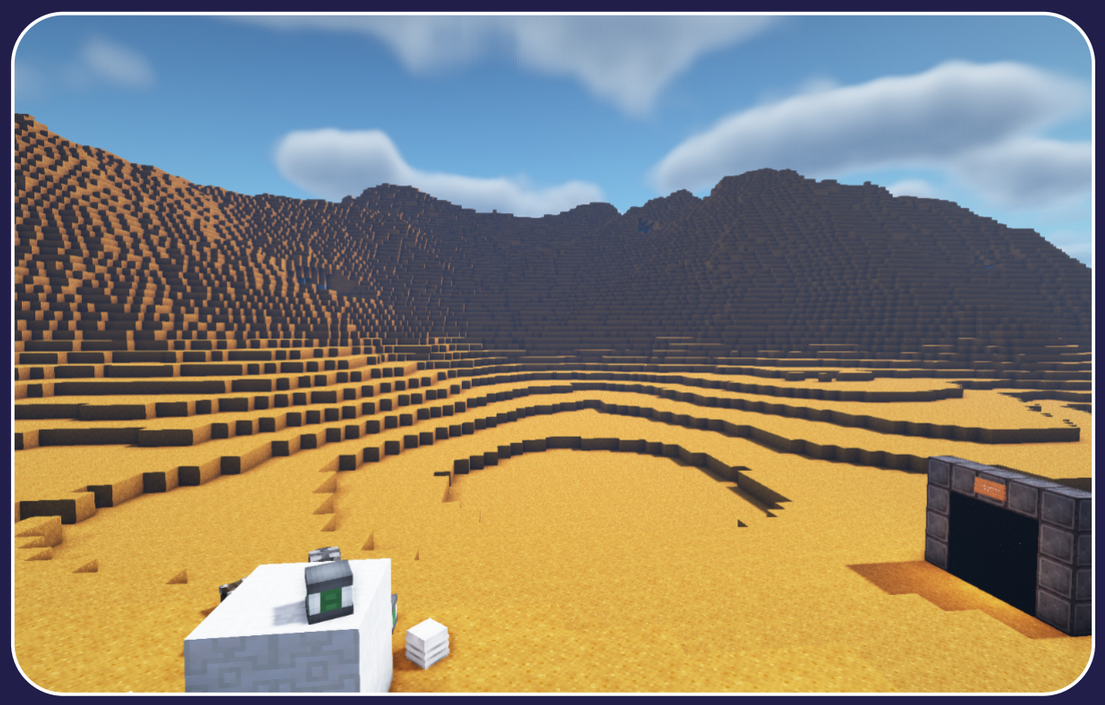
1. Spawn/Rocket
2. Carl S.
3. Tanya J.
4. Kwali T.

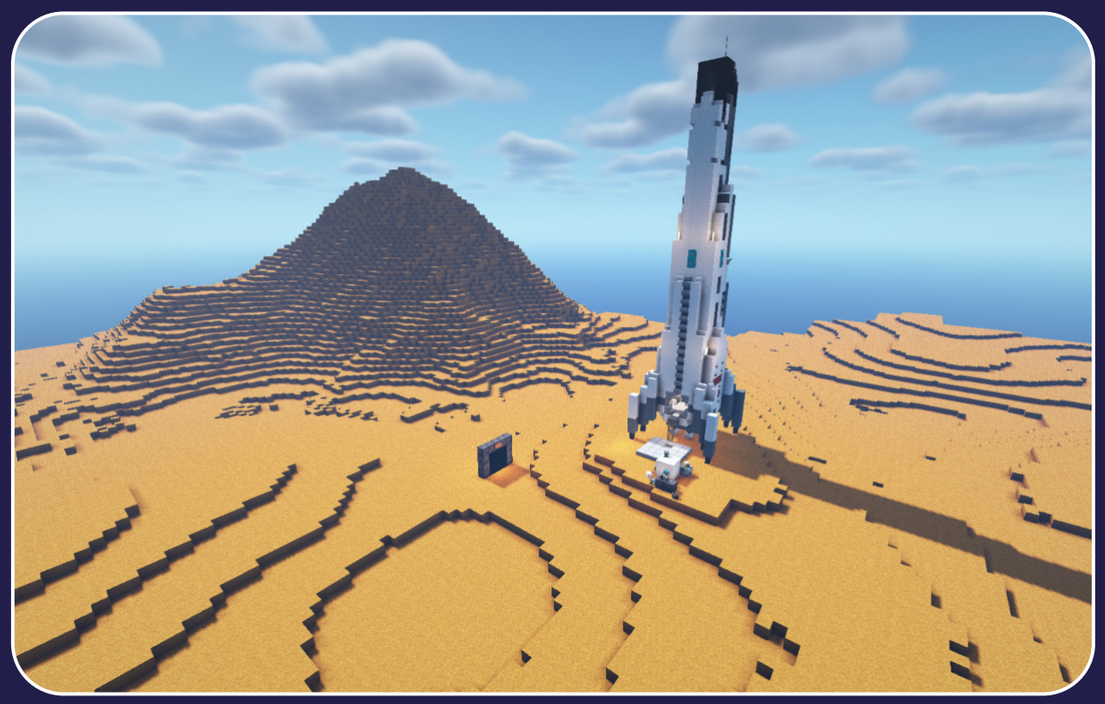
View the FULL TEACHER'S GUIDE for EARTH WITH NO MOON here

3 EARTH WITH COLDER SUN

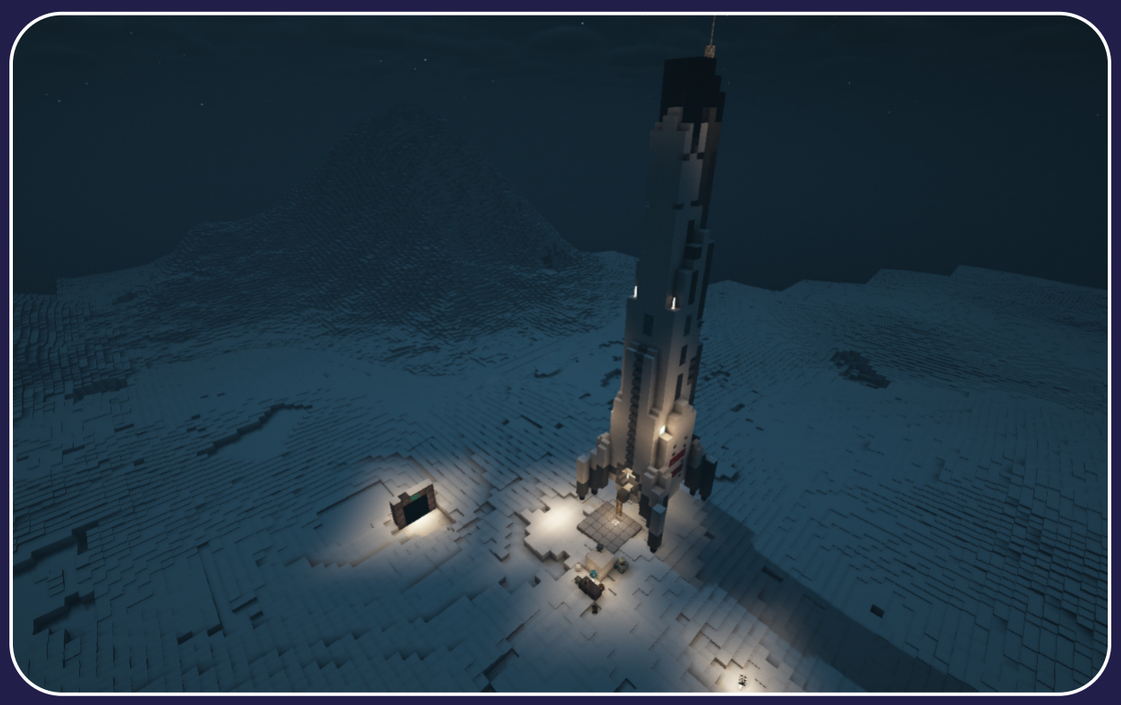
In the Earth with a Colder Sun world, players can note the changes in the environment brought about by **shifts in the temperature**. They can also observe the ways that life on Earth could change and continue to survive given **extreme temperature changes**. Additionally, students can learn about **renewable energy sources** and **how people may adapt in this unique environment.**

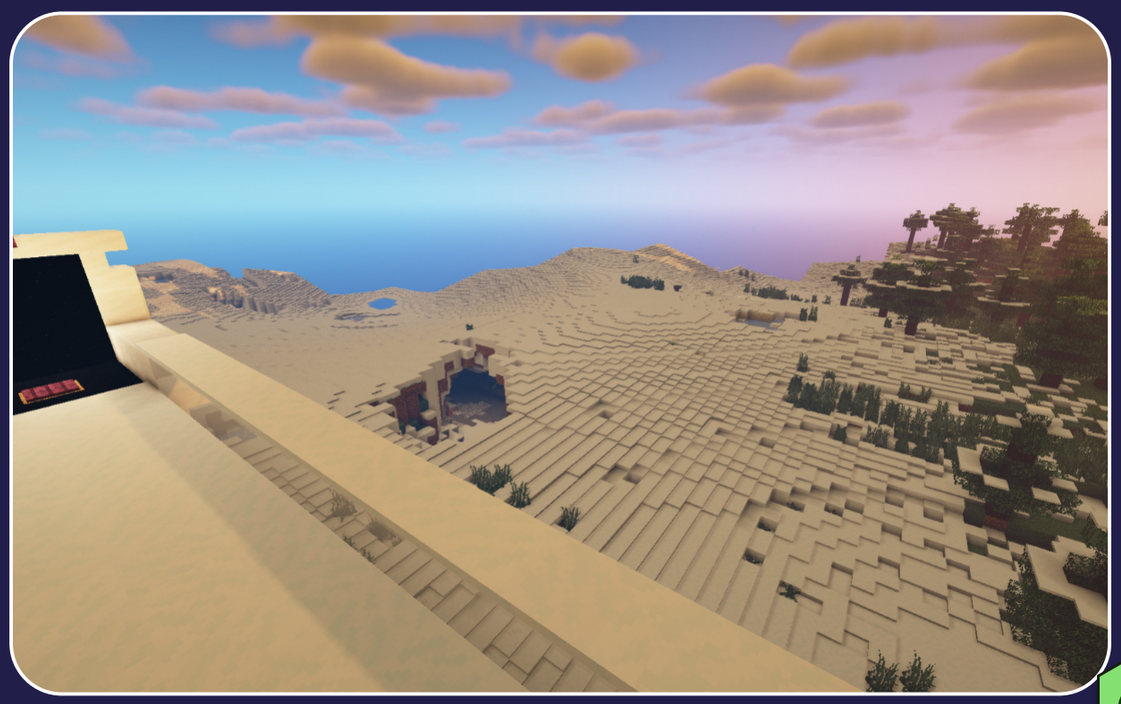
Western Area (Desert)





Eastern Area (Snowy)





WHAT-IF EARTHS

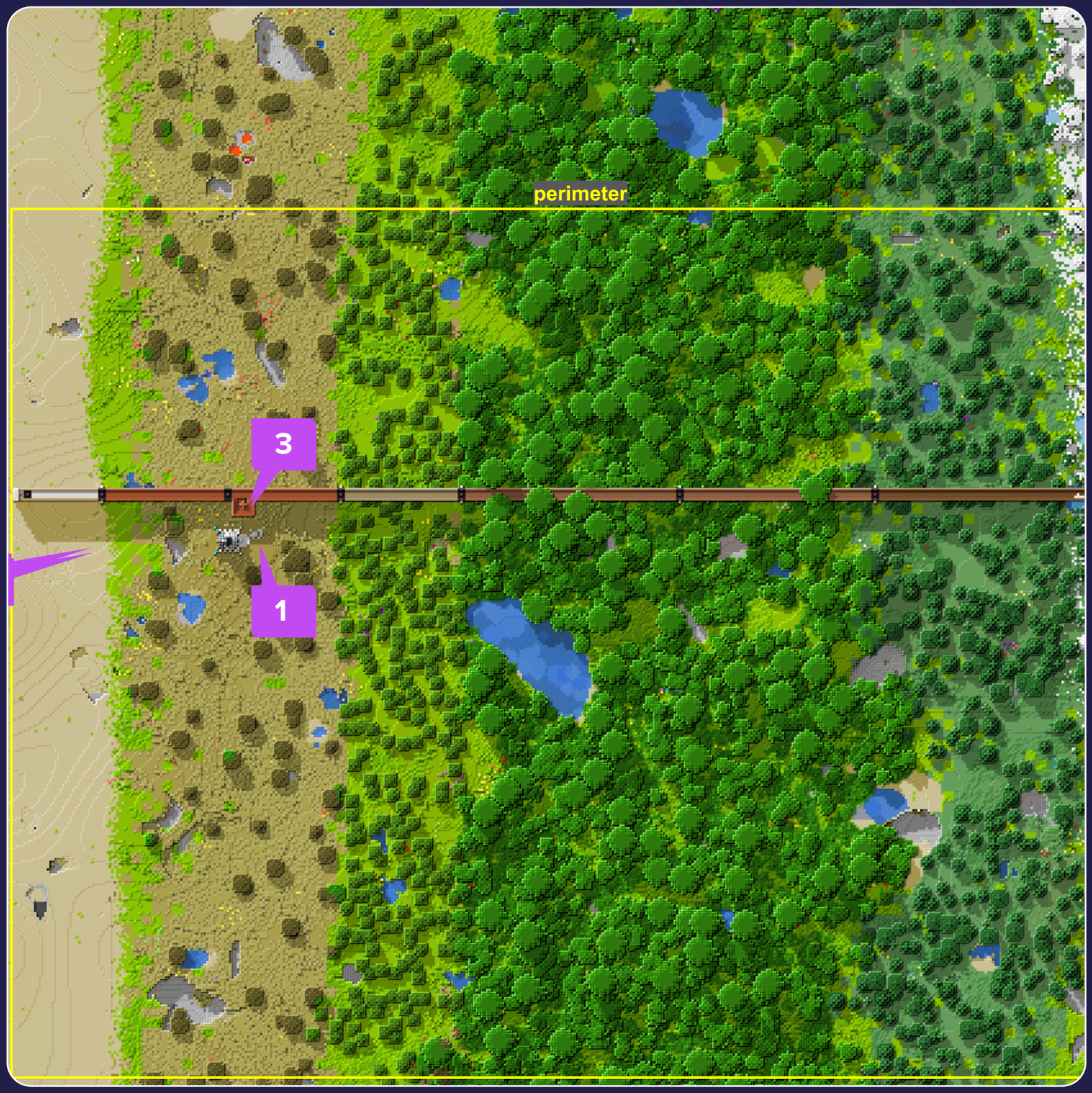
3 EARTH WITH COLDER SUN

MISSIONS

QUEST	PURPOSE
On the Edge	Visit Astronomer-Artist Jorge Perez-Gallego on the edge of the desert and then travel around the planet to make **3** **/observe** commands, taking note of the tidal lock condition.
*Cave Life	Observe how life for flora and fauna (or humans) look like in the extreme conditions of this world. Meet characters in sheltered caves who will explain more.

3 EARTH WITH COLDER SUN MAPS

Habitable Strip



1. Spawn/Rocket
2. Dr. Jorge
3. Simulation Analyst
4. West Portal
5. East Portal

3 EARTH WITH COLDER SUN MAPS

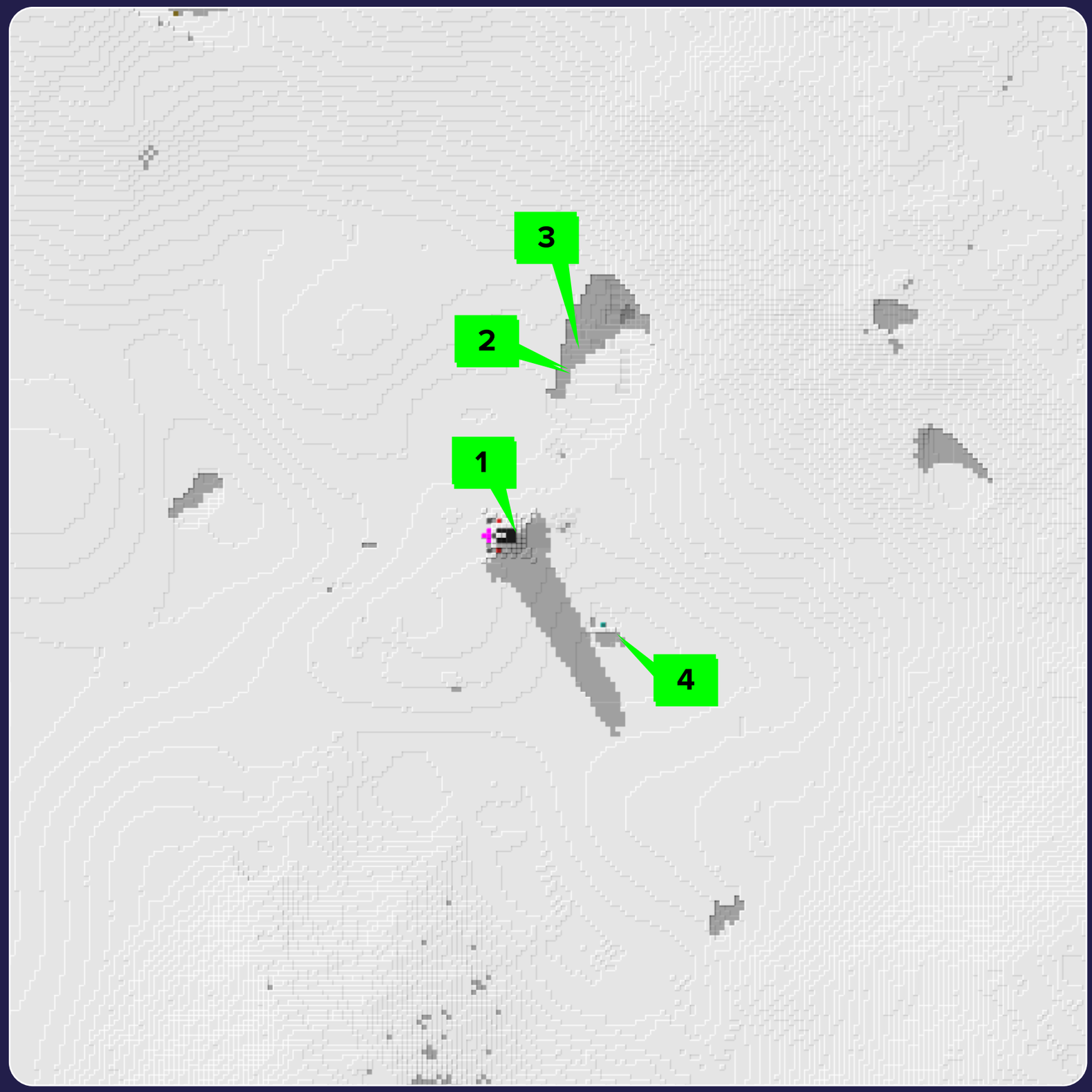
Western Area (Desert)

1. Spawn/Rocket
2. Josephina R.
3. Damien K.
4. Pierre B.
5. Anita J.
6. Portal to Habitable Strip

3 EARTH WITH COLDER SUN MAPS

Habitable Strip

1. Spawn/Rocket
2. Jack L.
3. Vera K.
4. Portal to Habitable Strip

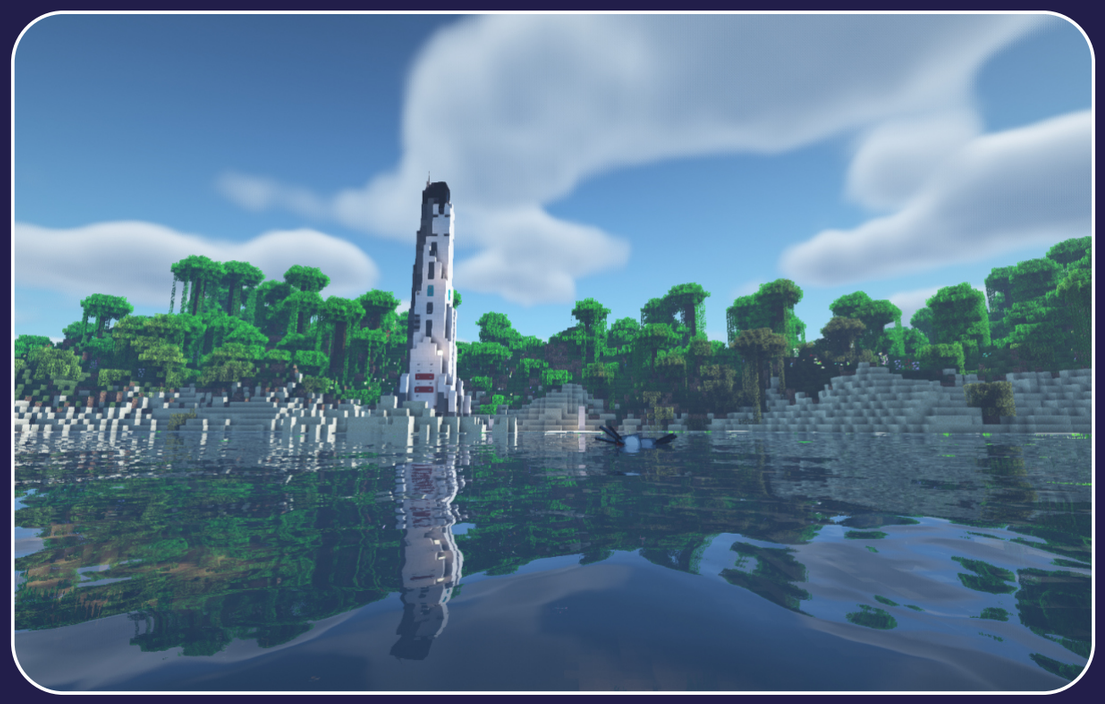


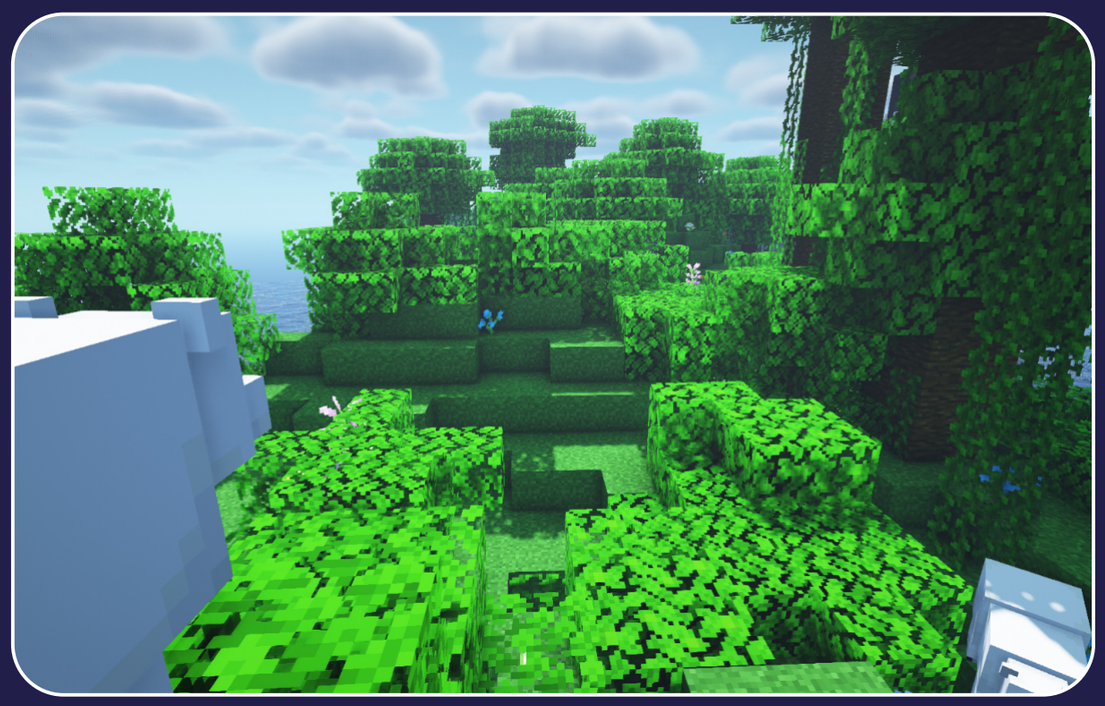
View the FULL TEACHER'S GUIDE for EARTH WITH COLDER SUN here

4 TILTED EARTH

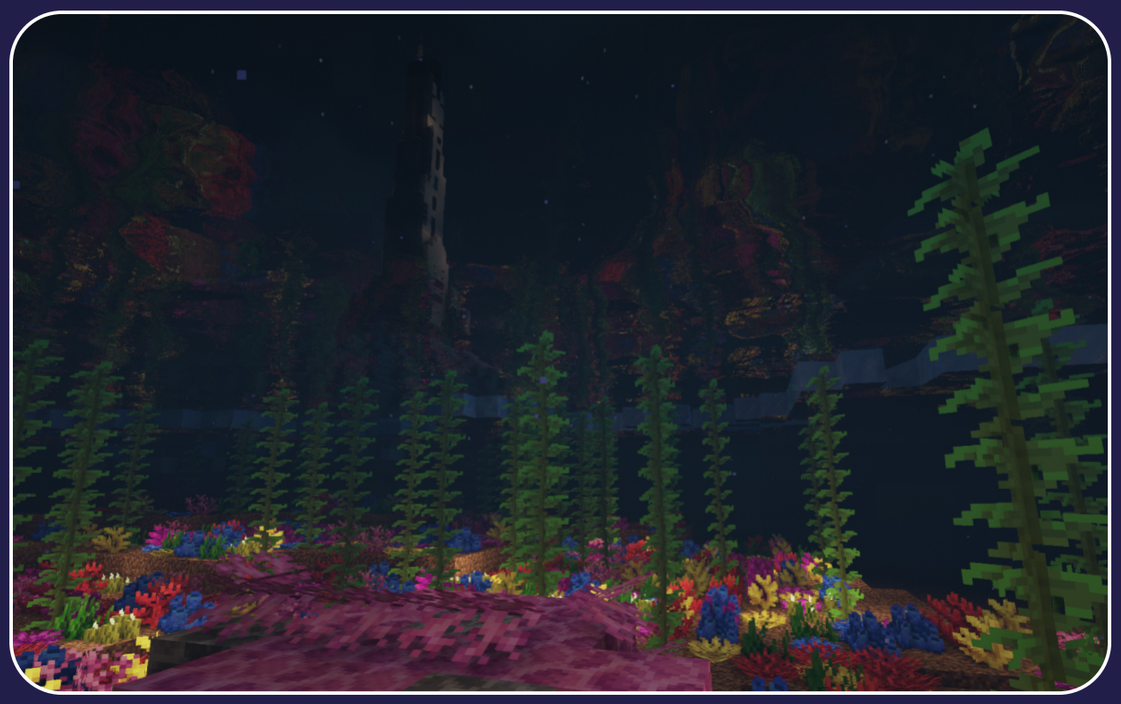
In the Tilted Earth scenario, players can observe what happens i**f the Earth's axis and rotational patterns were different**. They will see what impact these shifts have on the **seasons' timing and temperatures**. Additionally, students can observe **how plant and animal life cycles would adapt and change.**

6 Months in the Future





3 More Months in the Future



4 TILTED EARTH

MISSIONS

QUEST	PURPOSE
Time traveler	Visit Astrochemist Clara Sousa-Silva. Players are tasked with observing what happens to animal life when the planet changes seasons and conditions rapidly.
*Measuring Migrations	Find more animals and learn even more about severe and rapid weather conditions impacting various species.

*Secondary quest or “Side-quest”, not required to progress to the next

WHAT-IF EARTHS

4 TILTED EARTH MAPS

Jungle Island

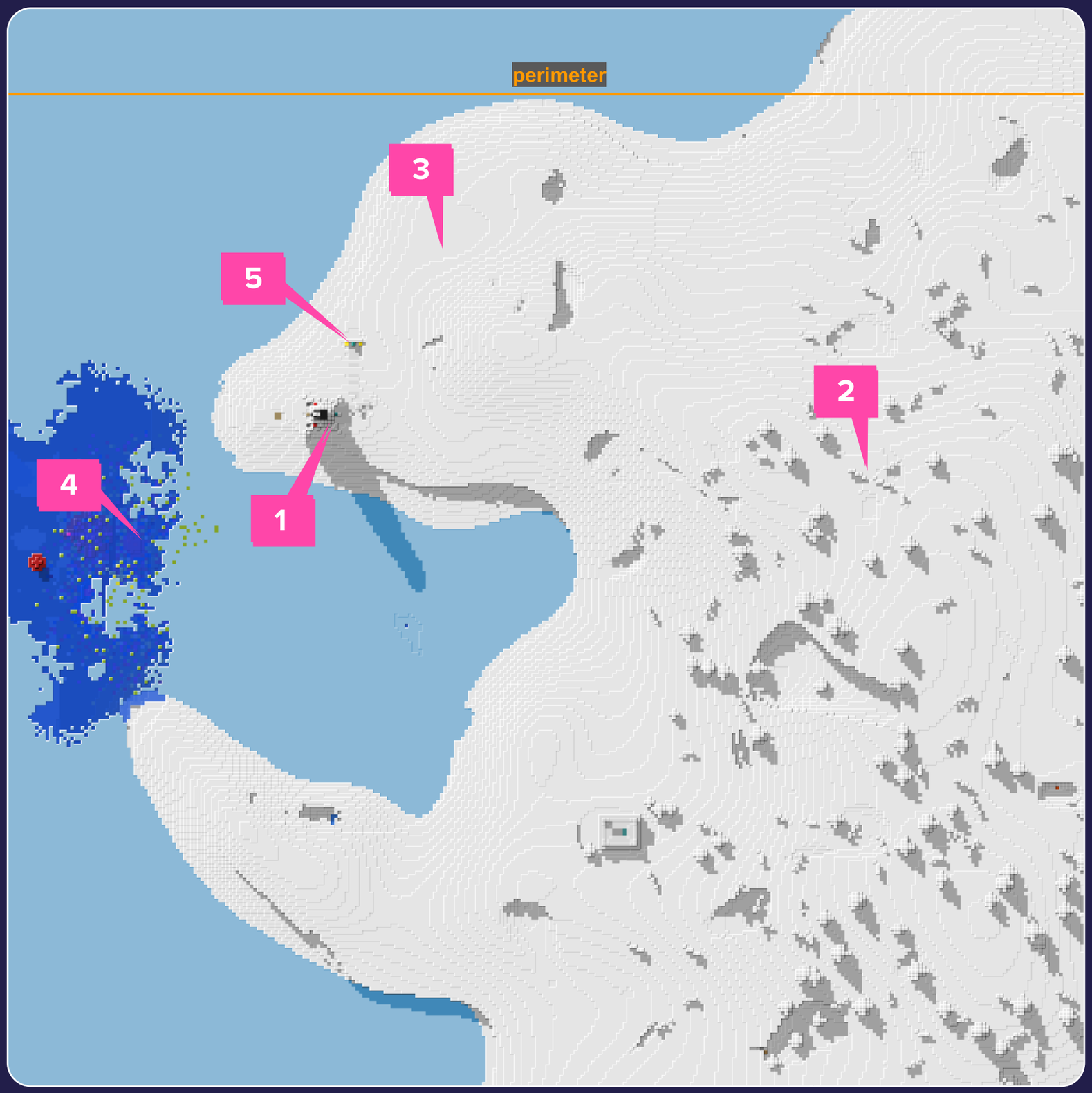
1. Spawn/Rocket
2. Clara Sousa-Silva
3. Zoologist
4. Rabbits
5. Polar Bears
6. Tower
7. Birds
8. Amphibians
9. Portal to Frozen

WHAT-IF EARTHS

4 TILTED EARTH MAPS

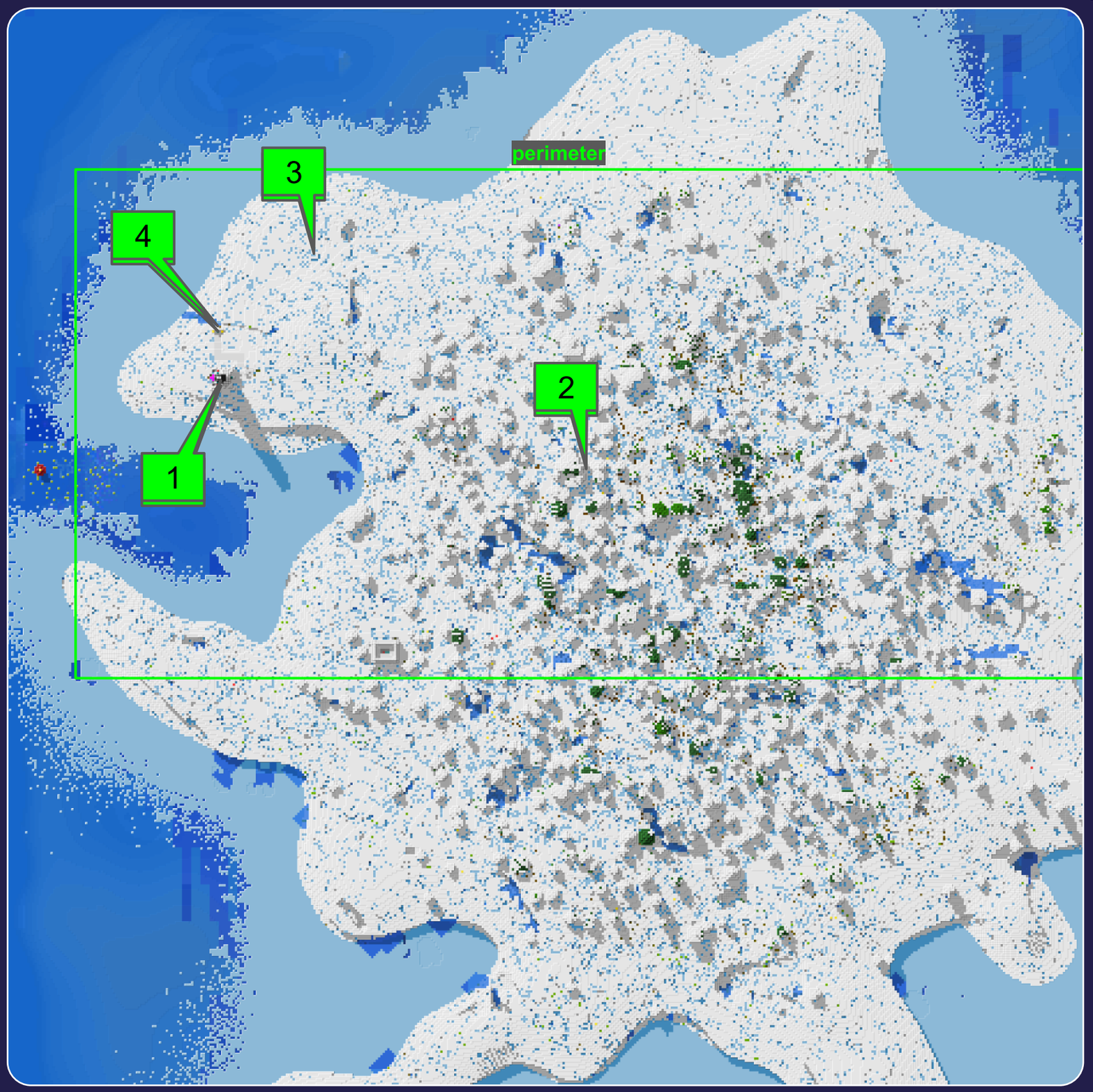
Frozen

1. Spawn/Rocket
2. Rabbits
3. Polar Bears
4. Amphibians
5. Portal to Melting



4 TILTED EARTH MAPS

Melting

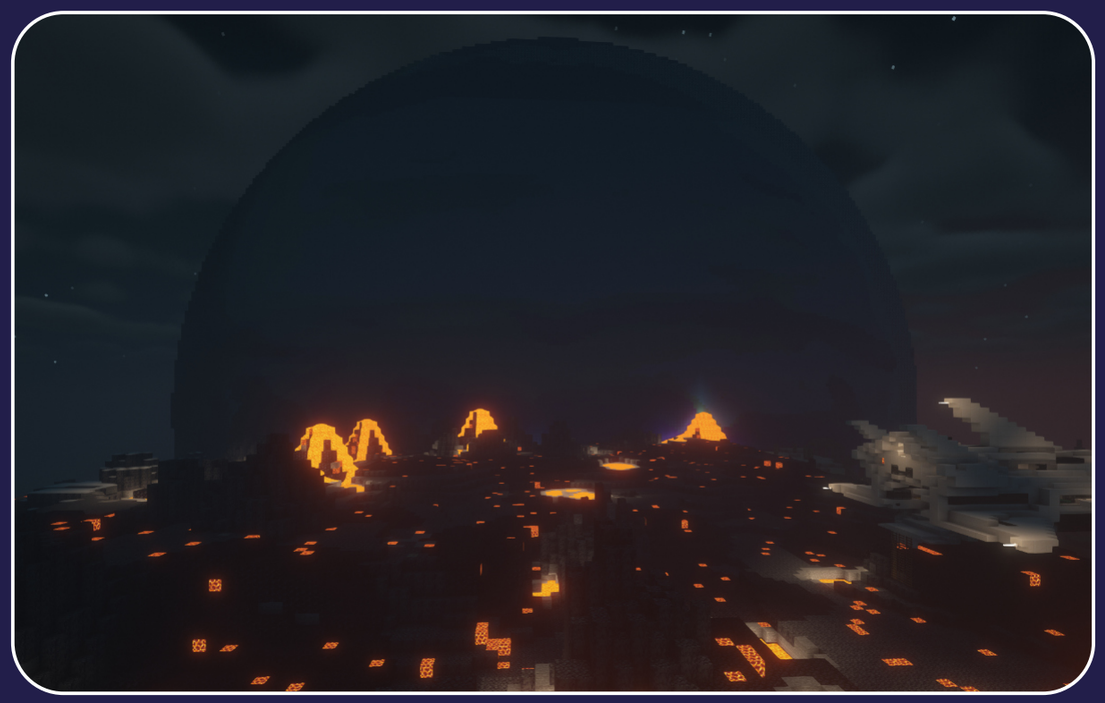


1. Spawn/Rocket
2. Rabbits
3. Polar Bears
4. Portal to Cold

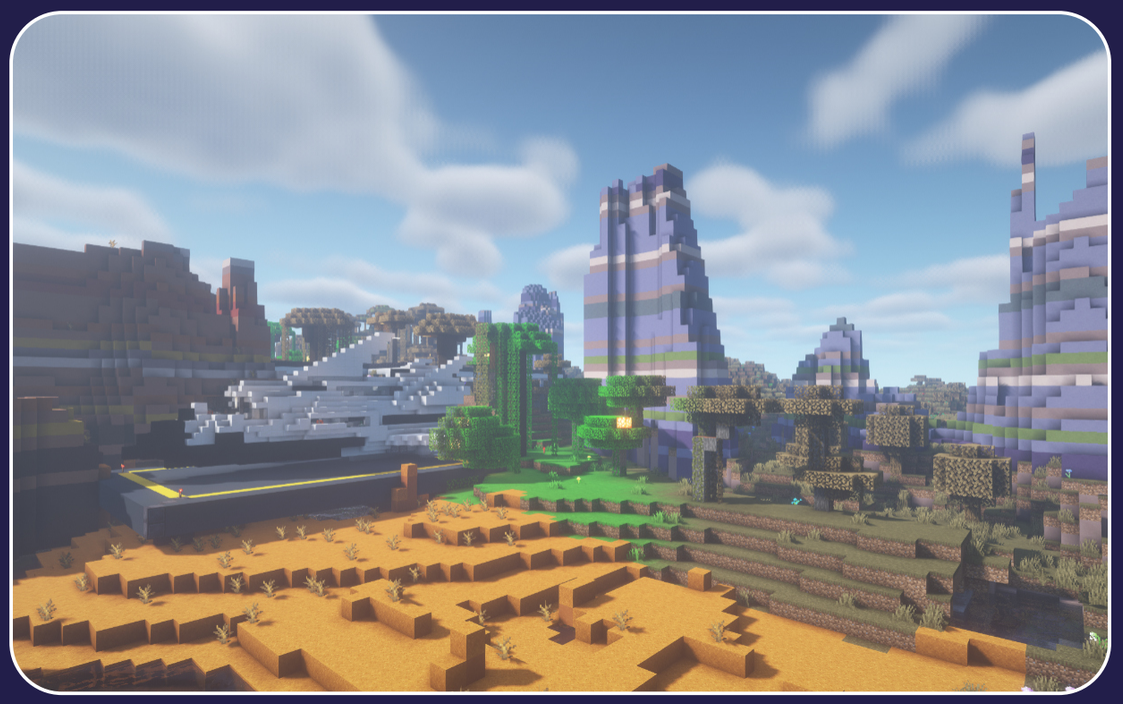
View the FULL TEACHER'S GUIDE for TILTED EARTH here

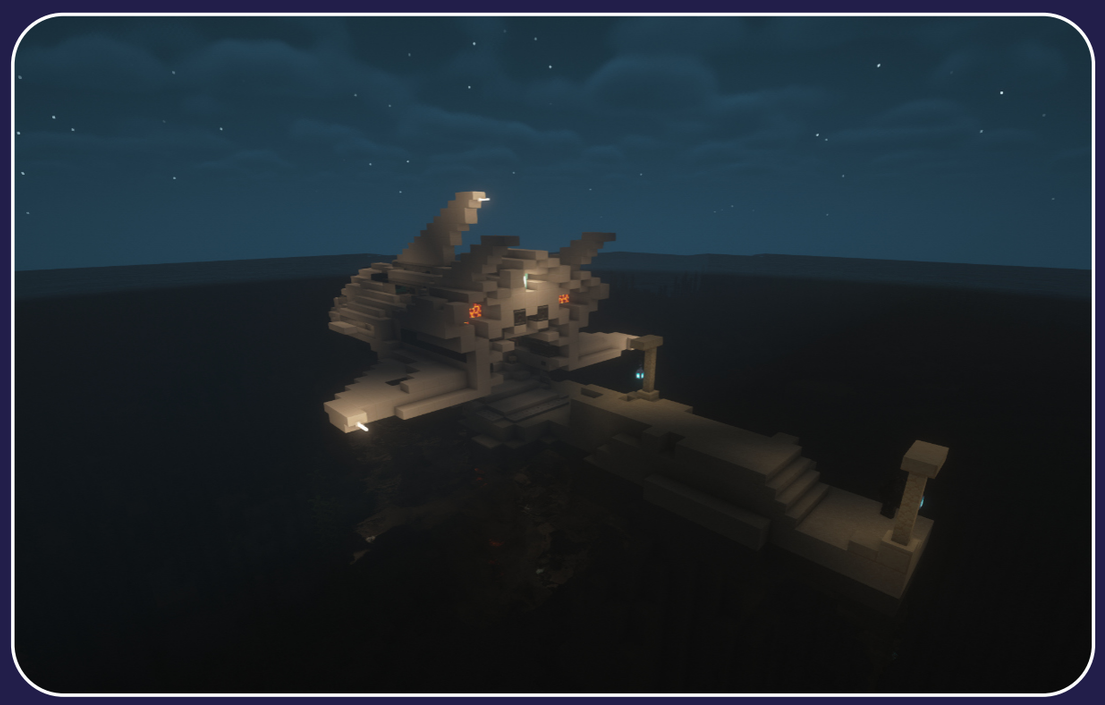
5 MYNOA

Mynoa is an exoplanet **orbiting a large gas giant called Tyran**. Players can observe what kind of environments an **Earth-sized moon in the orbit of a gas giant** might have. Students can also learn about **how ecosystems and tides are affected by gravity.**



Far side of Mynoa





5 MYNOA

MISSIONS

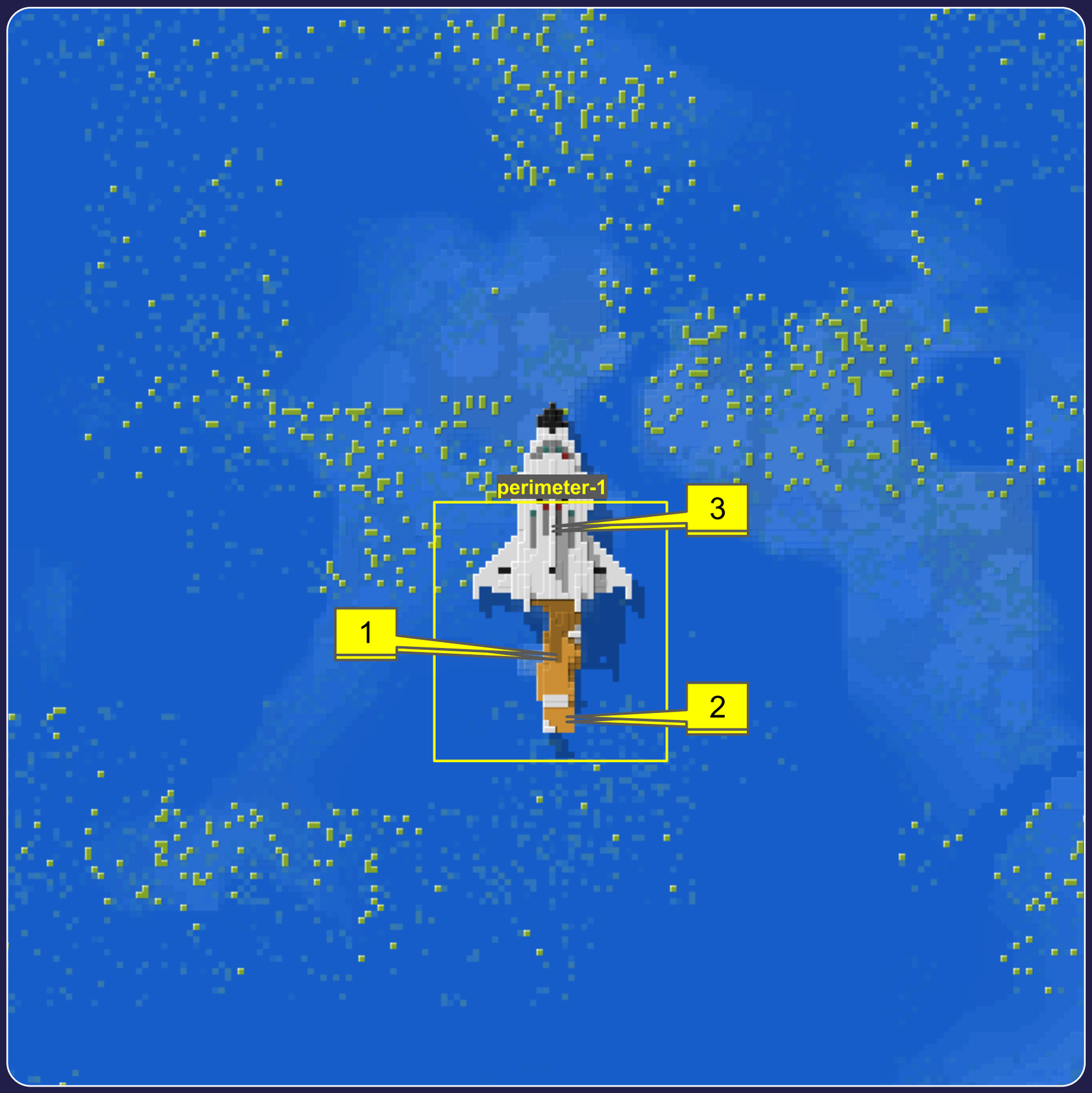
QUEST	PURPOSE
*That's no moon	Visit each side of Mynoa to observe differences with Earth.
*Solis defuit	Make observations on why the area is dark, take a temperature measurement, and observe why the temperature is so low.
*Wanna knowa Mynoa?	Measure the temperature in this area and compare it to the close side of Mynoa. Measure the magnetic field and observe how and why it is so strong.
*Mynoa museum mania!	Observe the museum's display of the size difference between Mynoa and Tyran.

*Secondary quest or "Side-quest", not required to progress to the next

5 MYNOA MAPS

Near side

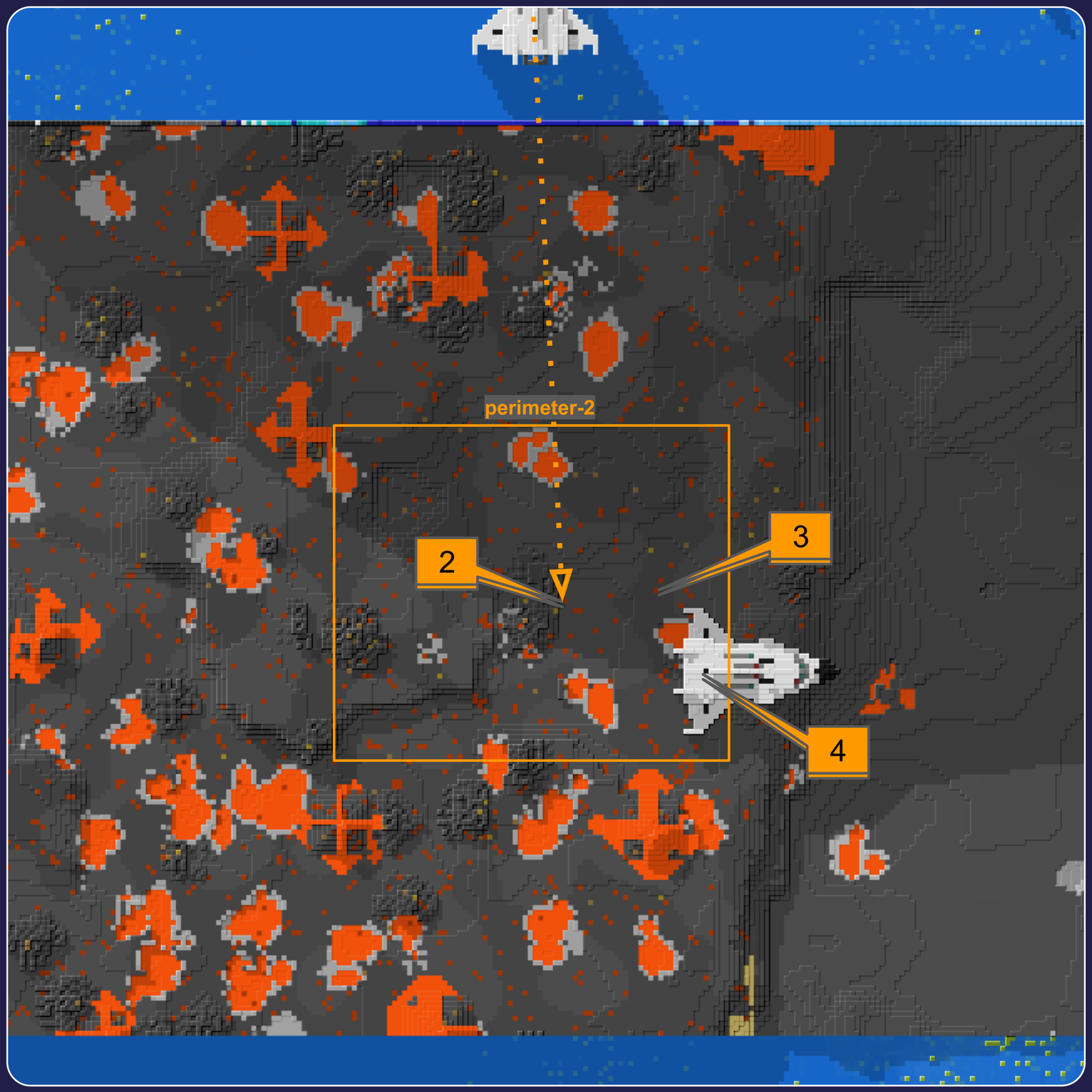
1. Spawn
2. Shadowy Mynoan Creature
3. Portal to Half



5 MYNOA MAPS

Near side

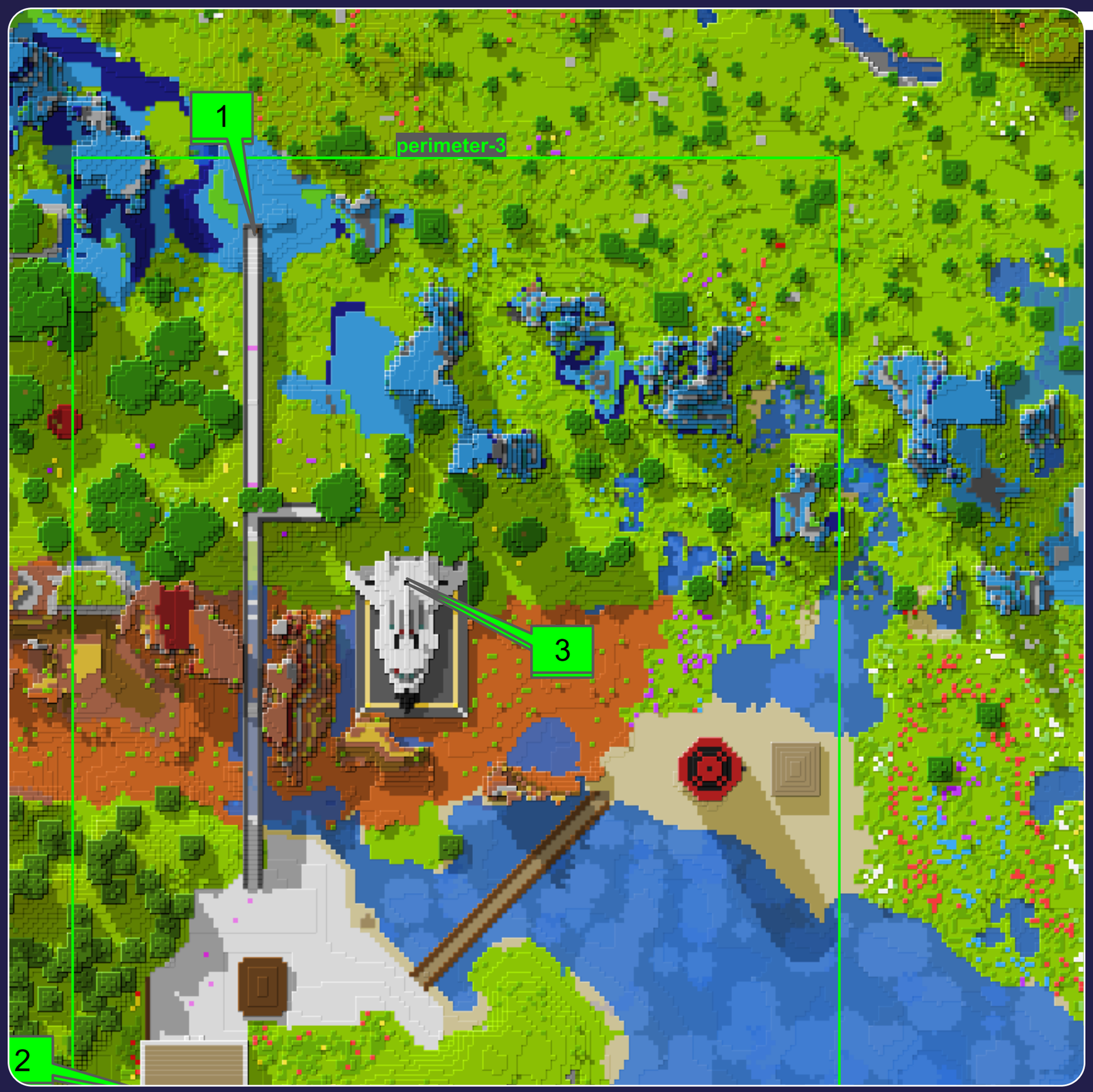
1. Rocket
2. Spawn
3. Mysterious Mynoan
4. Rocket to Far



WHAT-IF EARTHS

5 MYNOA MAPS

Near side



1. Spawn
2. Visitor
3. Rocket to Hub

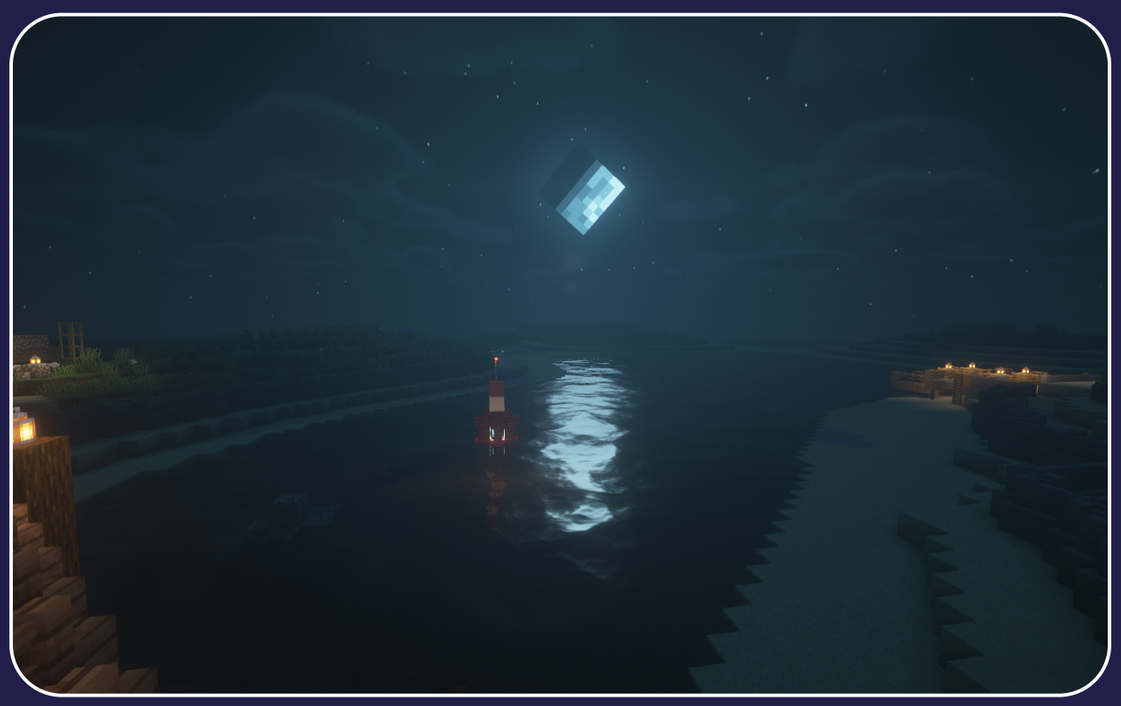
View the FULL TEACHER'S GUIDE for MYNOA here

6 EARTH WITH TWO MOONS

In the Earth with two Moons , players can observe the effect of two moons on the **tides, light at nighttime, and the rotational speed of Earth**. Additionally, students can learn about **how coastal towns manage water level changes and erosion caused by tides.**

High Tide

Low Tide



6 EARTH WITH TWO MOONS

MISSIONS

QUEST	PURPOSE
*Lunar Loop	Visit the museum during both tide times as well as see Lluna.
*Seeing double	Notice the effect of two moons on tides.
*What's the time?	Observe how two moons affect the length of a day.

*Secondary quest or "Side-quest", not required to progress to the next

6 EARTH WITH TWO MOONS MAPS

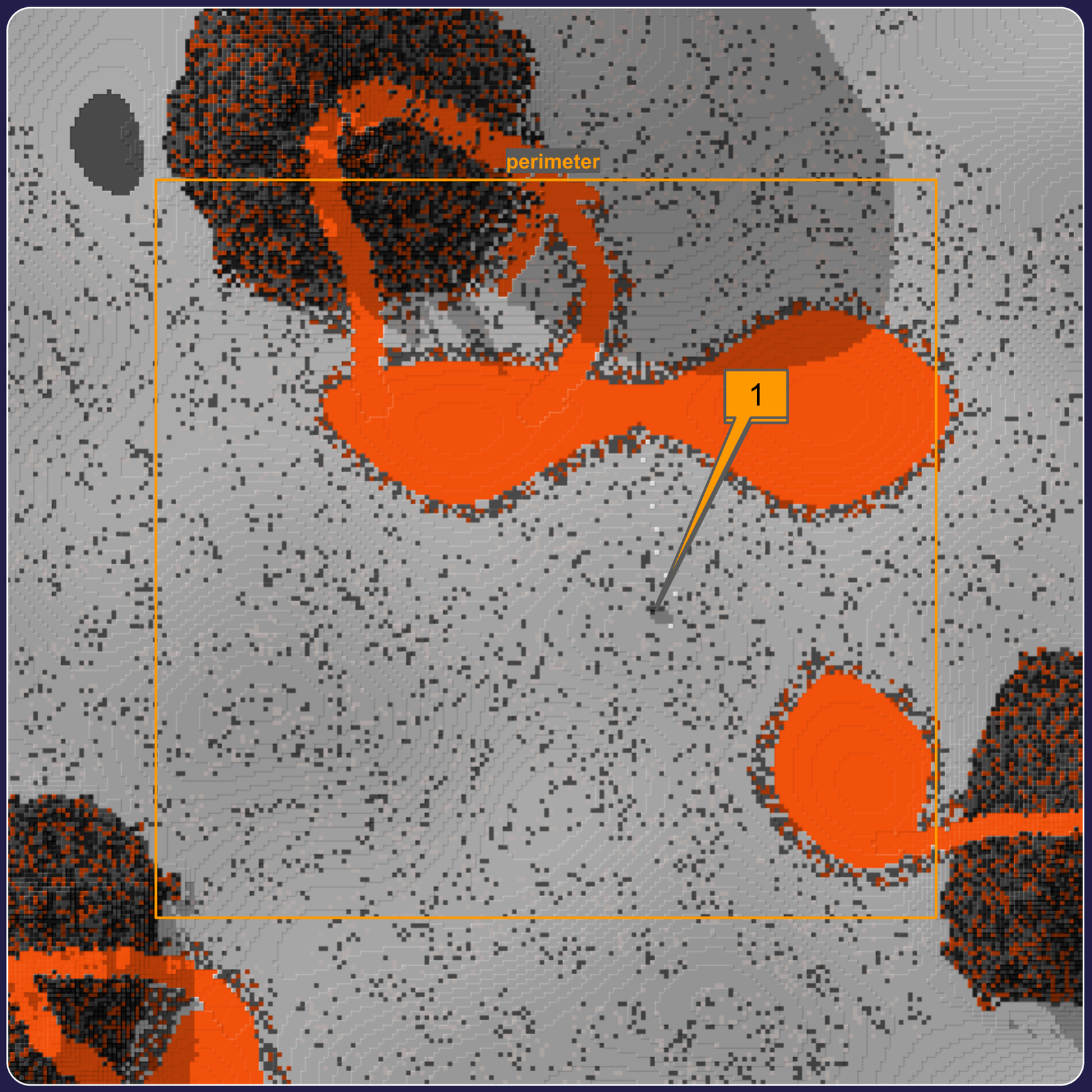
High Tide

1. Spawn/Portal
2. Kristina
3. Tobias
4. Joel
5. Portal to Lluna
6. Portal to Low

6 EARTH WITH TWO MOONS MAPS

Lluna

1. Spawn



6 EARTH WITH TWO MOONS MAPS

Low Tide

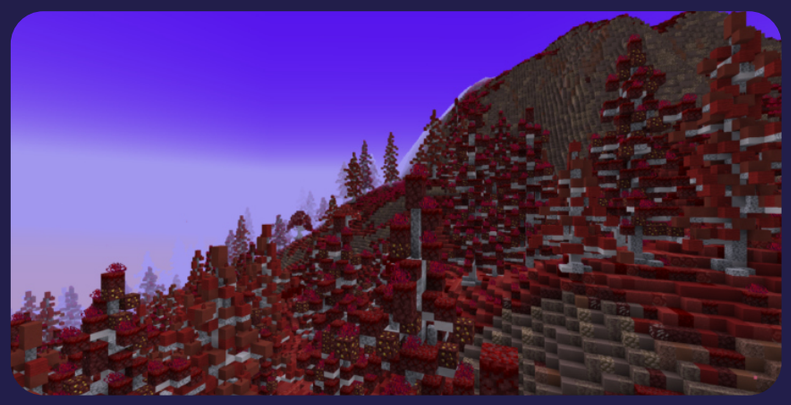
1. Spawn
2. Kristina
3. Portal to Start

View the FULL TEACHER'S GUIDE for EARTH WITH TWO MOONS here

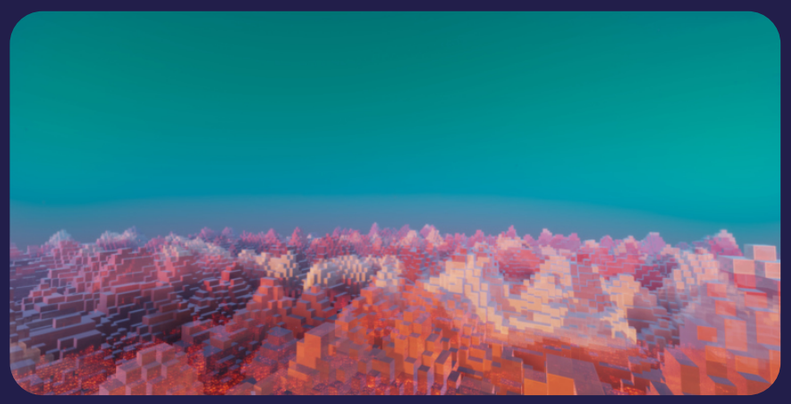
THE WHIMC WORLDS

EXOPLANETS

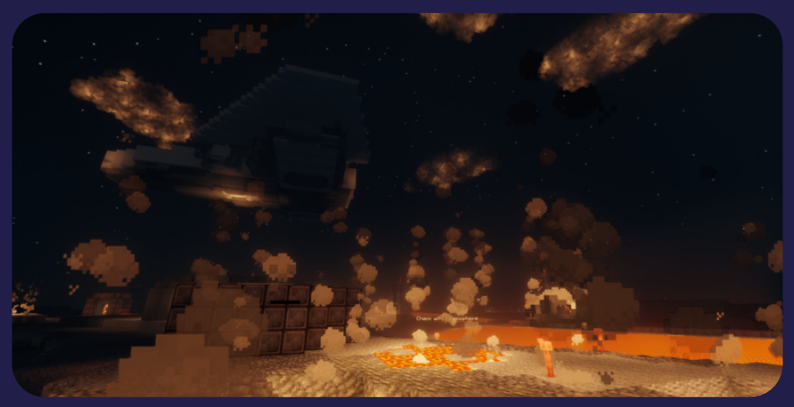
The exoplanets are **simulations of worlds we may never see, but know enough about to study**. Here, students can explore the idea of life on other planets and consider the many variables that make a planet habitable or uninhabitable.



KEPLER

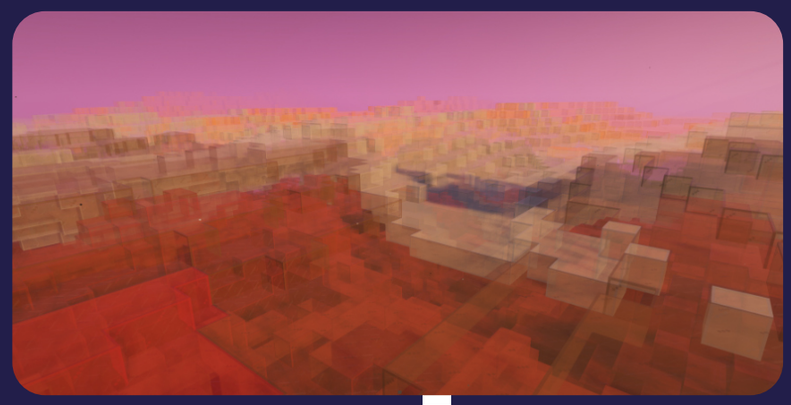


GLIESE



CANCRI

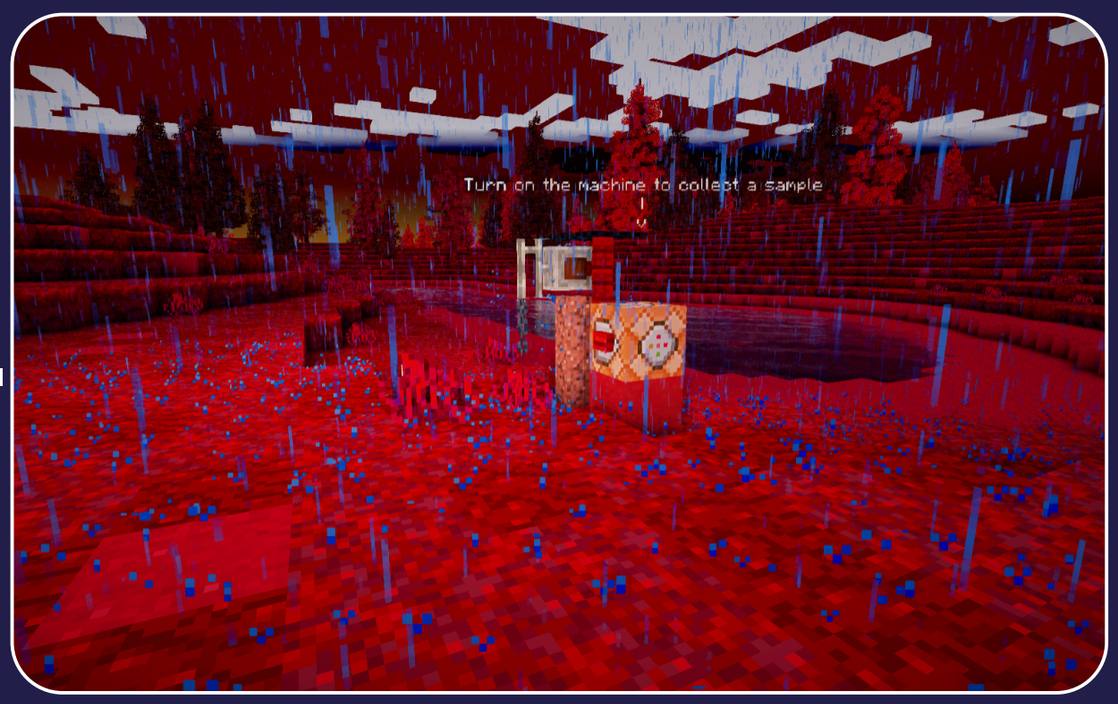
TRAPPIST

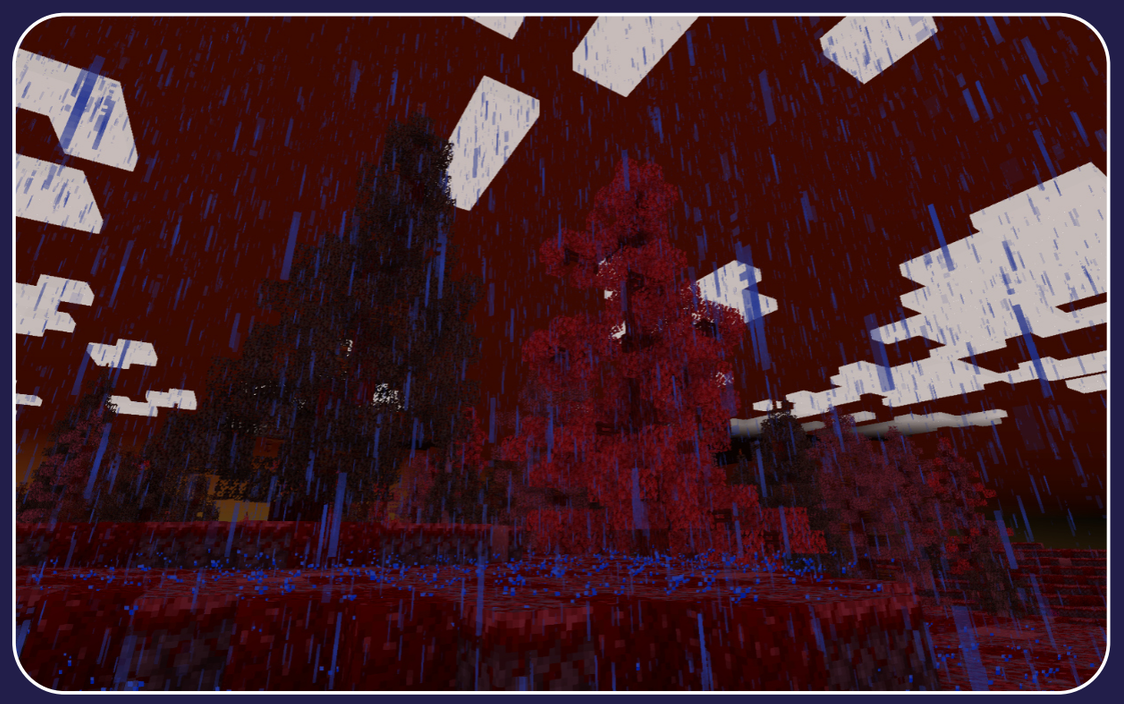


BROWN DWARF

7 KEPLER 186f

Kepler 186f is an exoplanet orbiting an **M-type star** within its habitable zone. Students can observe **“alien” life through plant-life**, encouraging them to inquire about the **differences that atmospheres and star colors can have on light and the life it touches**. Students can also **compare and contrast regular Earth from Kepler 186f**, allowing them to ask open-ended questions and engage their curiosity.



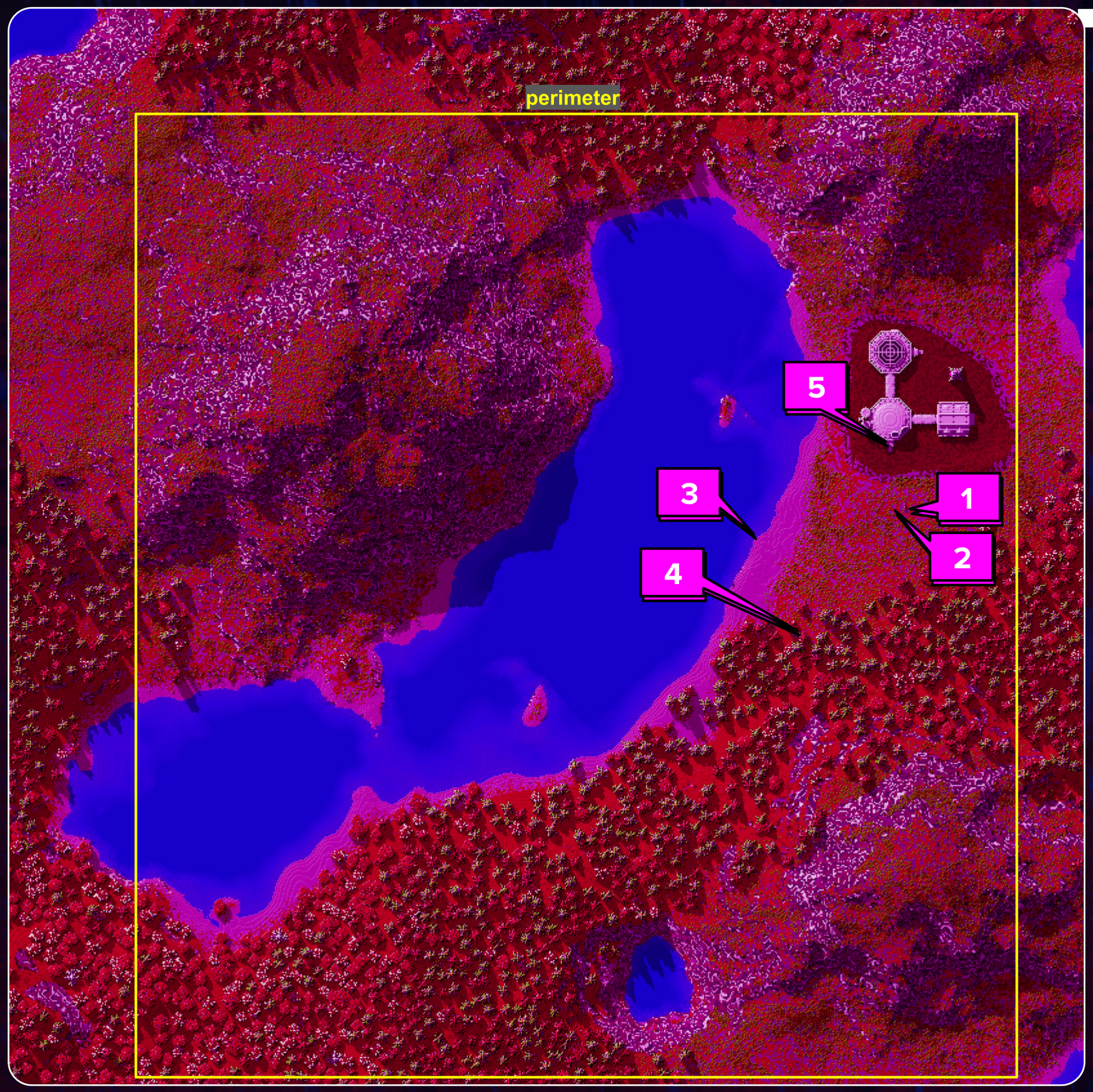


MISSION

QUEST	PURPOSE
Collect a sample	Study the plant life to see how different wavelengths of light have changed its composition.

EXOPLANETS

7 KEPLER 186£ MAP



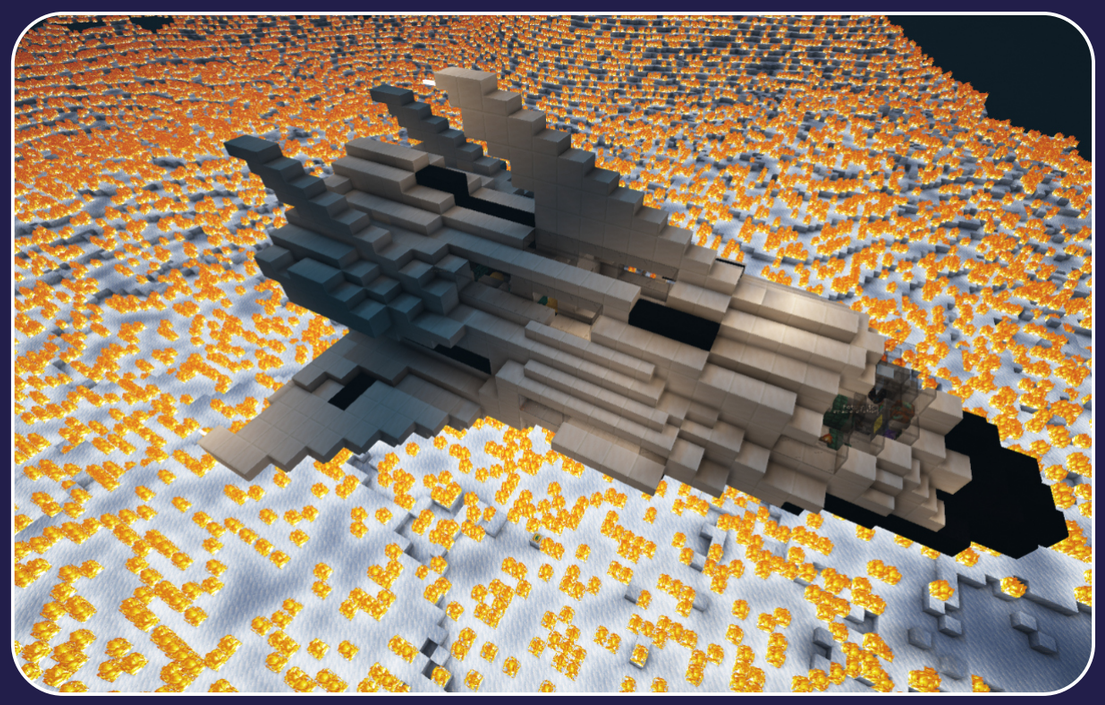
1. Spawn/Portal
2. Exonaut Explorer
3. Astrozoologist
4. Robot
5. Xenobotanist

View the FULL TEACHER'S GUIDE for KEPLER 186F here

EXOPLANETS

8 GLIESE 436b

Exoplanet Gliese 436b is a **gas giant undergoing massive and constant exothermic activity** where **ice sublimates into gas and fire**. The Gliese 436b map is unique because players get the chance to **fly around the planet and make observations from any height, like a probe.** Students are encouraged to observe and explore the **contours, hills, valleys, and layers of the surface, as well as inquire on what made them so in this unique environment.**

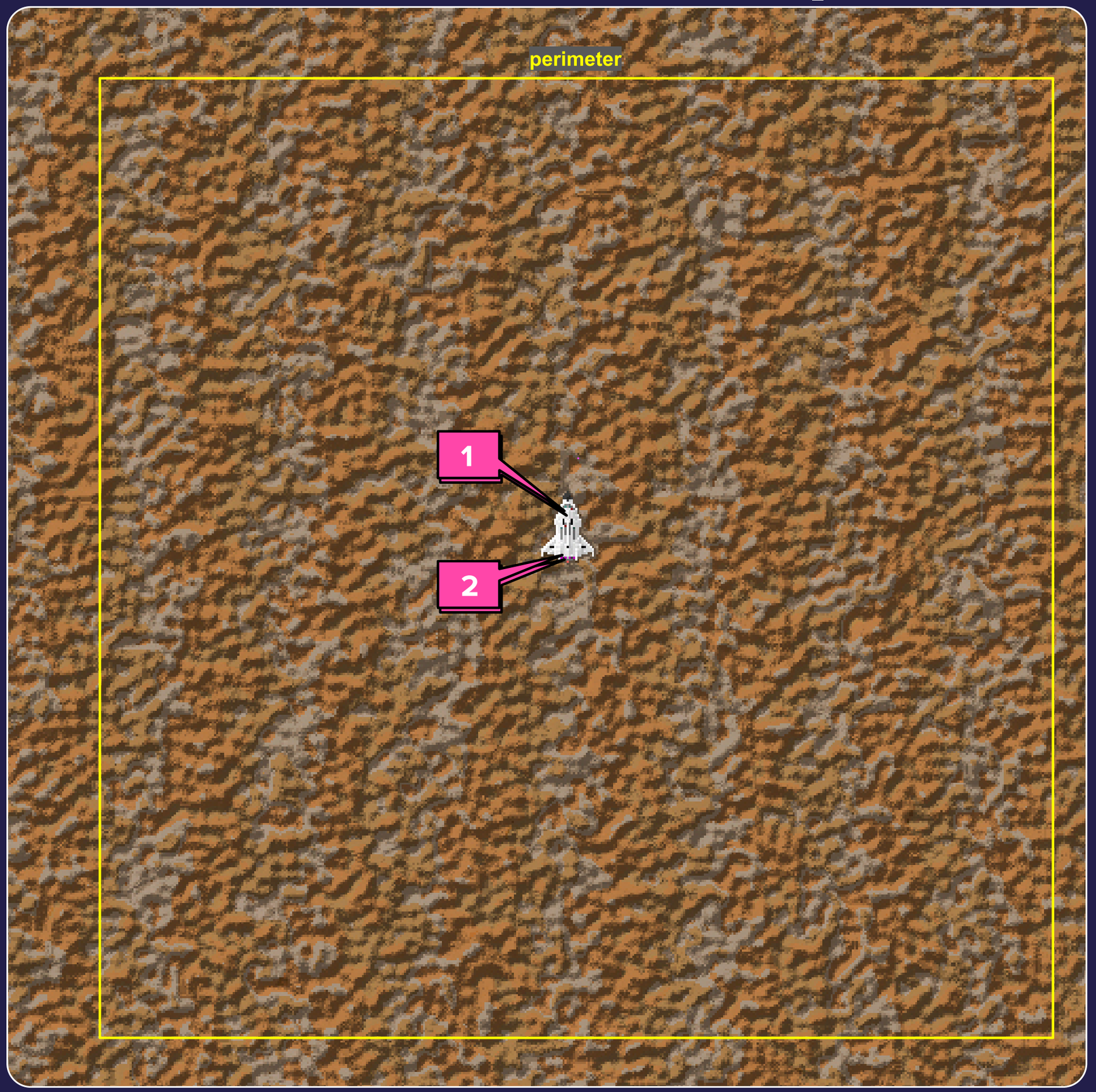


MISSION

QUEST	PURPOSE
Ice on fire	Set an IR sensor probe's orbital distance by doing an `/altitude` measure above Gliese.

8 GLIESE 436b MAP

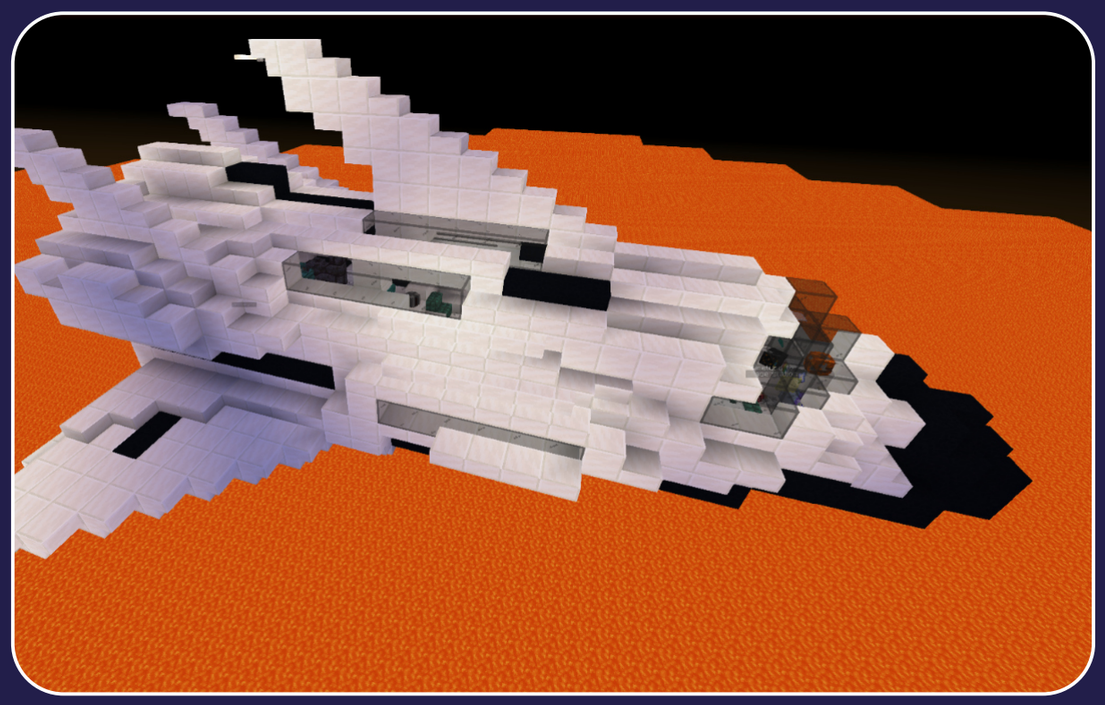
1. Spawn/Portal
2. Prospector



View the FULL TEACHER'S GUIDE for GLIESE 436b here

9 CANCRI 55e

Exoplanet Cancri 55e orbiting an **ultra-cool dwarf star,** with **one side always facing the star**, students can observe what happens to a planet that's **tidally locked**. Students are also encouraged to explore and make observations on the **differences between the two sides of Cancri 55e**.



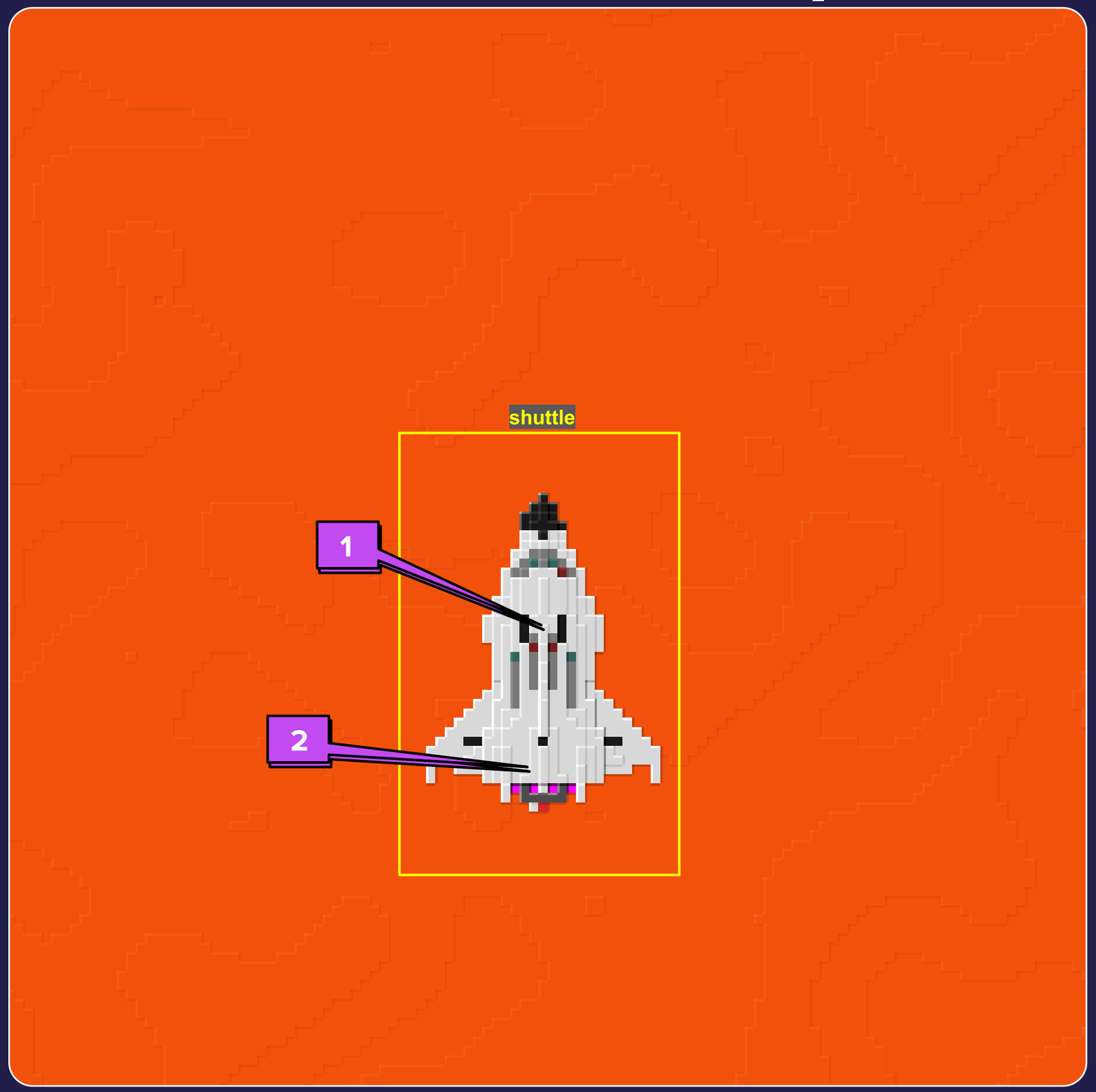
MISSION

QUEST	PURPOSE
Seas of lava?	Determine just how dangerous **/radiation** levels are above the molten exoplanet of Cancri.

9 CANCRI 55e MAP

Hot side

1. Spawn/Portal
2. Surveyor

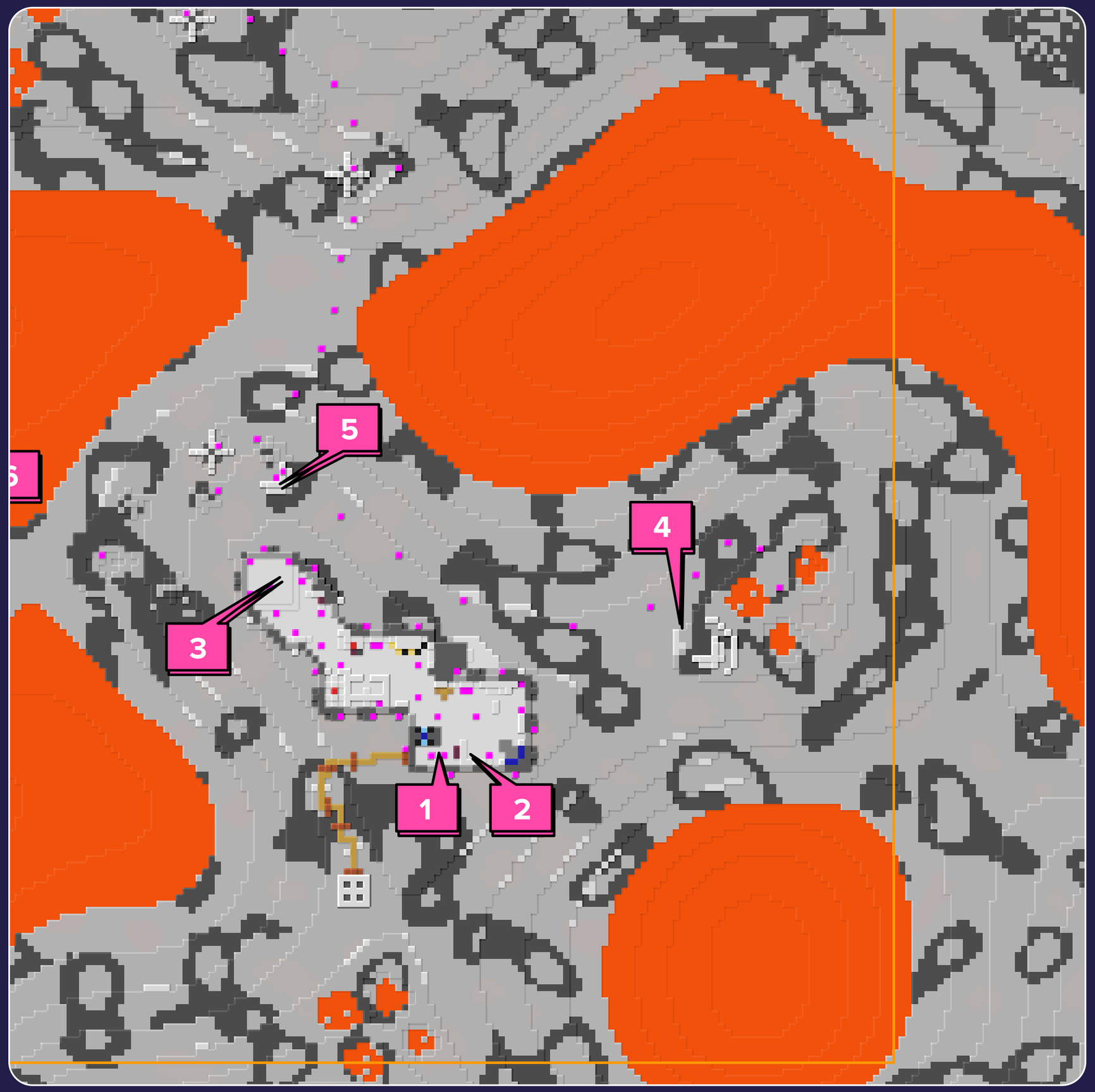


EXOPLANETS

9 CANCRI 55e MAP

Cold side

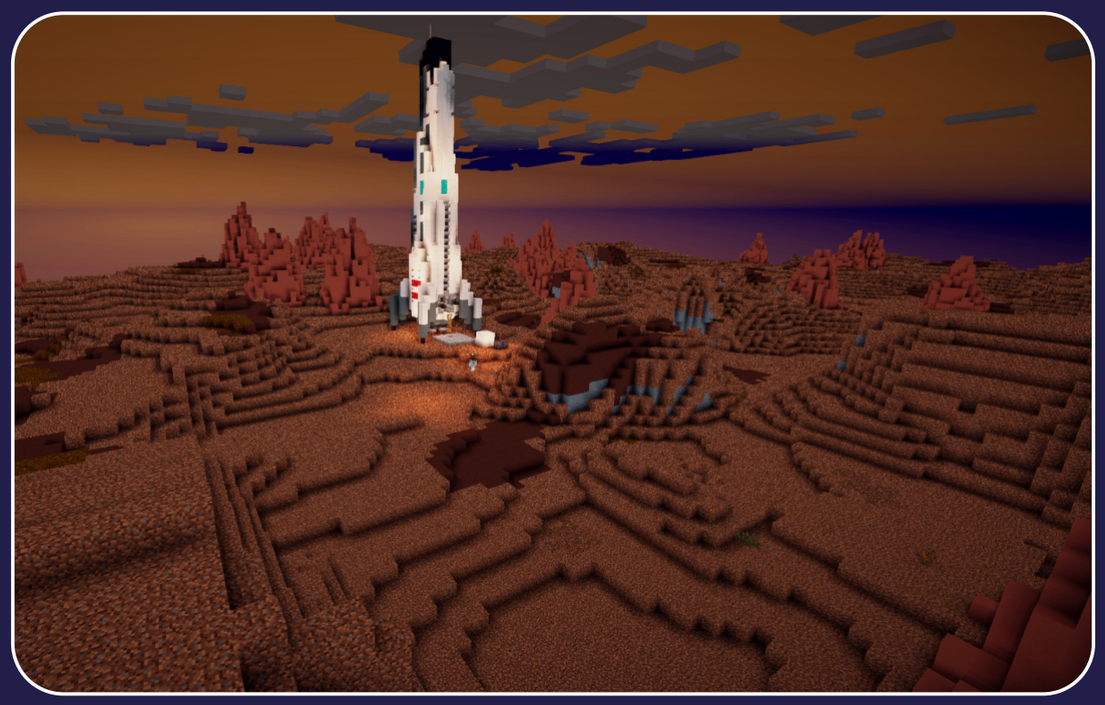
1. Spawn/Portal
2. Engineer Saige
3. Researcher Nate
4. Scientist Kobey
5. Geologist Gavin
6. Portal



View the FULL TEACHER'S GUIDE for CANCRI 55e here

10 TRAPPIST 1e

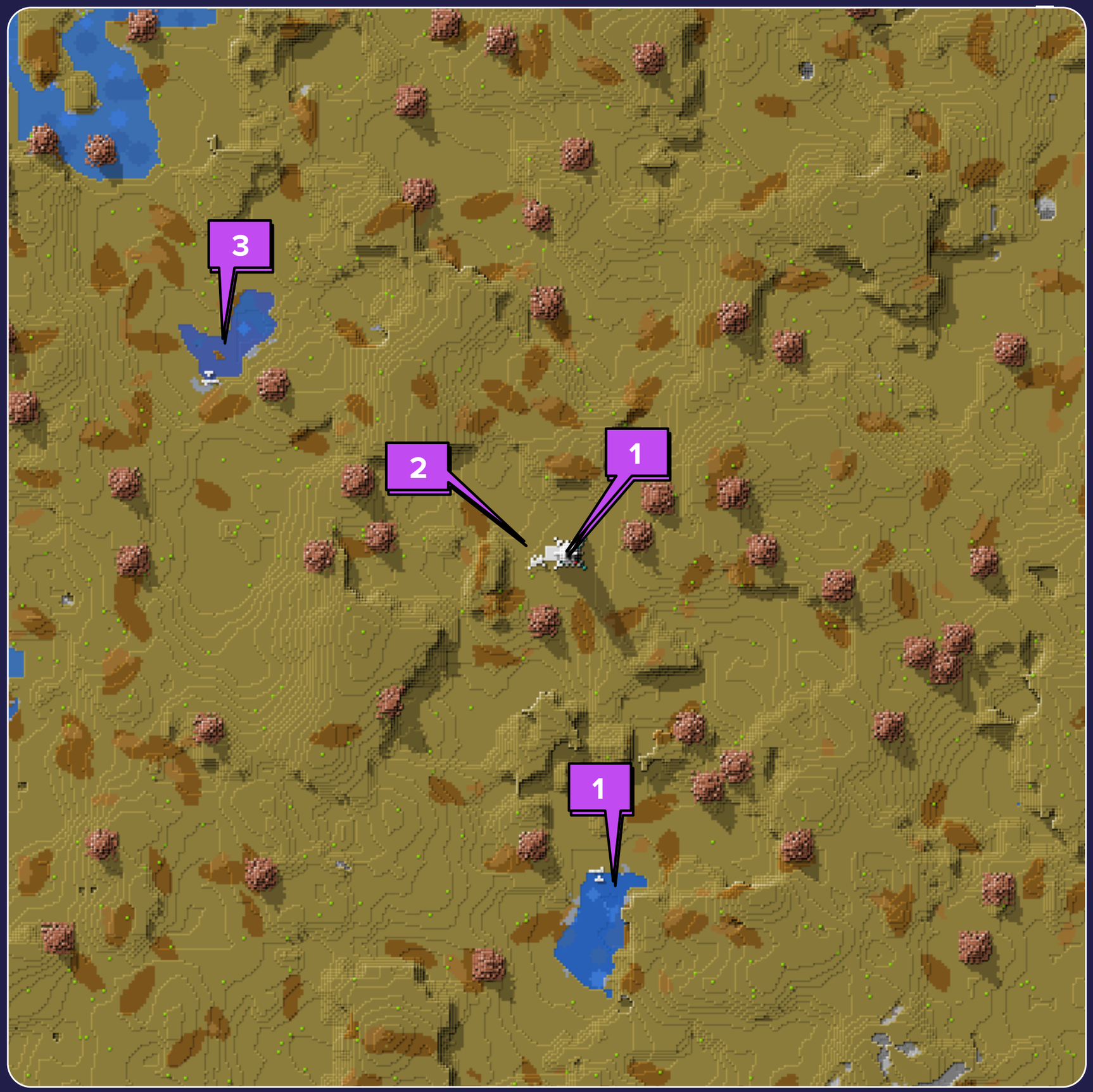
Exoplanet Cancri 55e orbiting an **ultra-cool dwarf star,** with **one side always facing the star**, students can observe what happens to a planet that's **tidally locked**. Students are also encouraged to explore and make observations on the **differences between the two sides of Cancri 55e**.



MISSION

QUEST	PURPOSE
Pond `trap`	Use **`/atmosphere`** to investigate the composition of caldera liquids found on the surface of the semi-habitable world of Trappist.

10 TRAPPIST 1e MAP

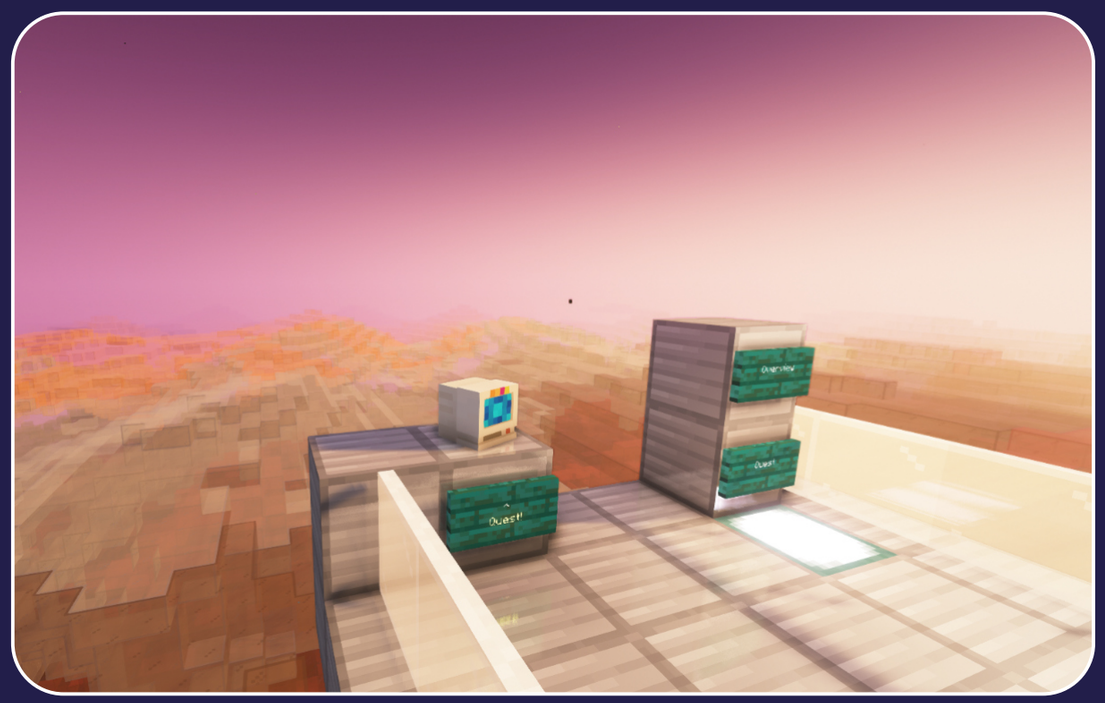


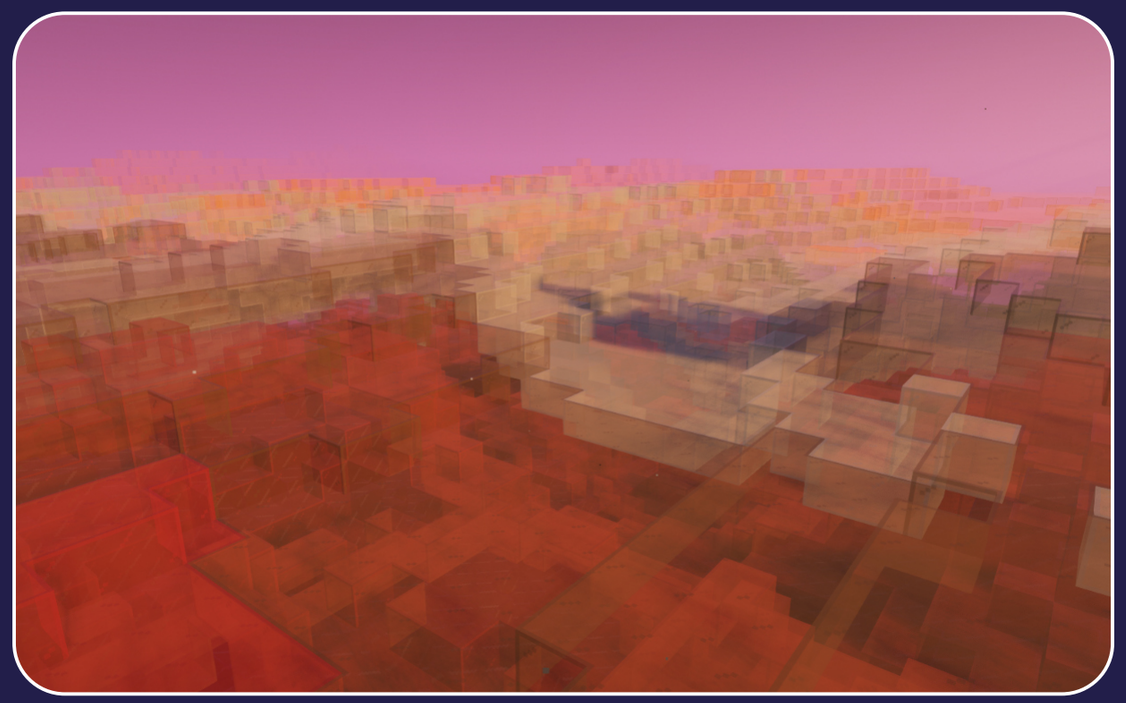
1. Spawn/Portal
2. David Berardo
3. Pool 1
4. Pool 2

View the FULL TEACHER'S GUIDE for TRAPPIST 1e here

11 BROWN DWARF

CWW 89Ab is an astronomical body believed to be a **brown dwarf, also known as “failed stars”**. Students can pilot a probe to measure and make observations on the **composition of the atmosphere** to determine if CWW 89Ab is a brown dwarf or a gas giant.



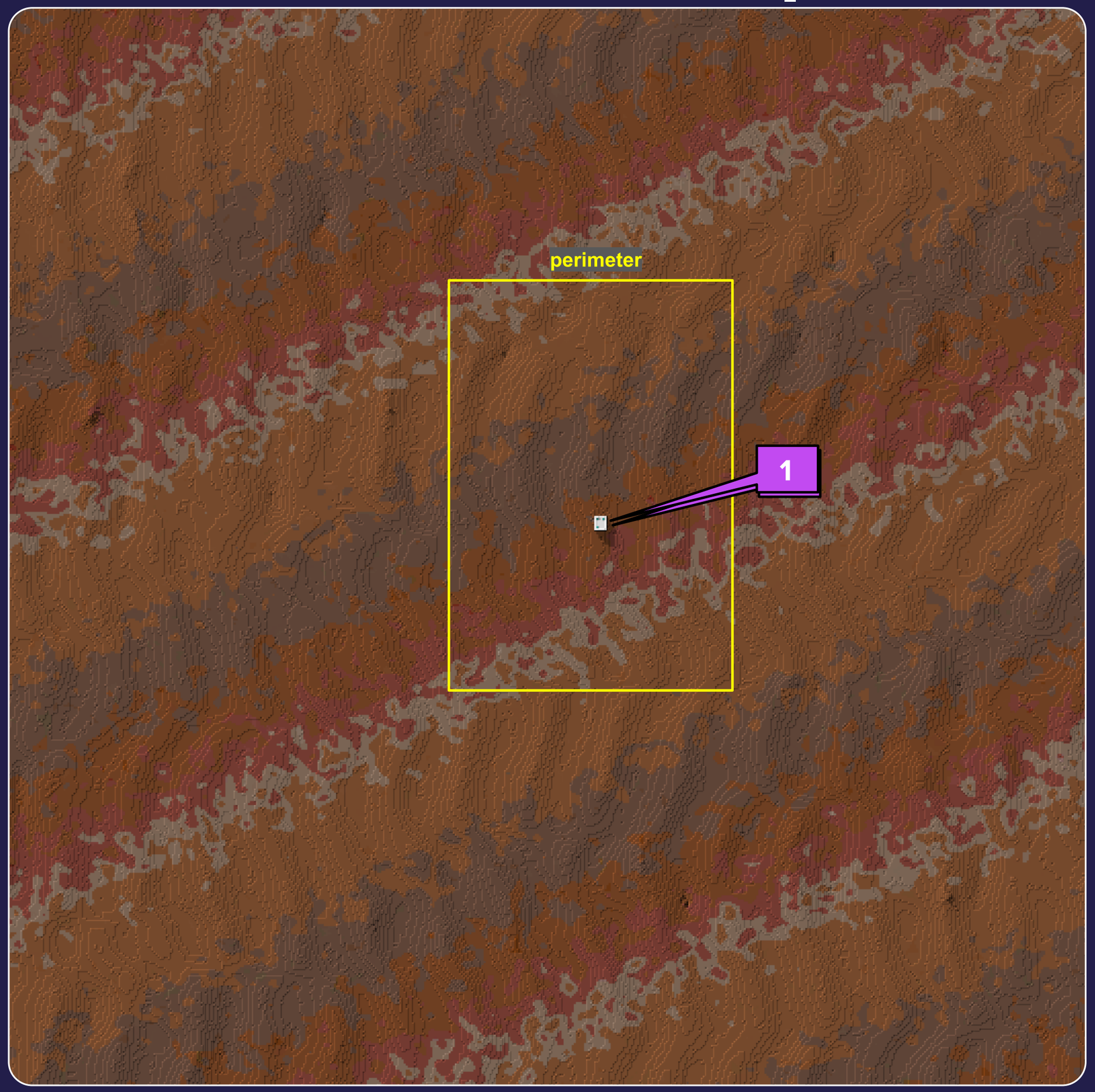


MISSION

QUEST	PURPOSE
Brown Dwarf or Planet	Pilot a probe to measure the composition of the **/atmosphere** to better understand the colossal planetary body known as CWW 89Ab.

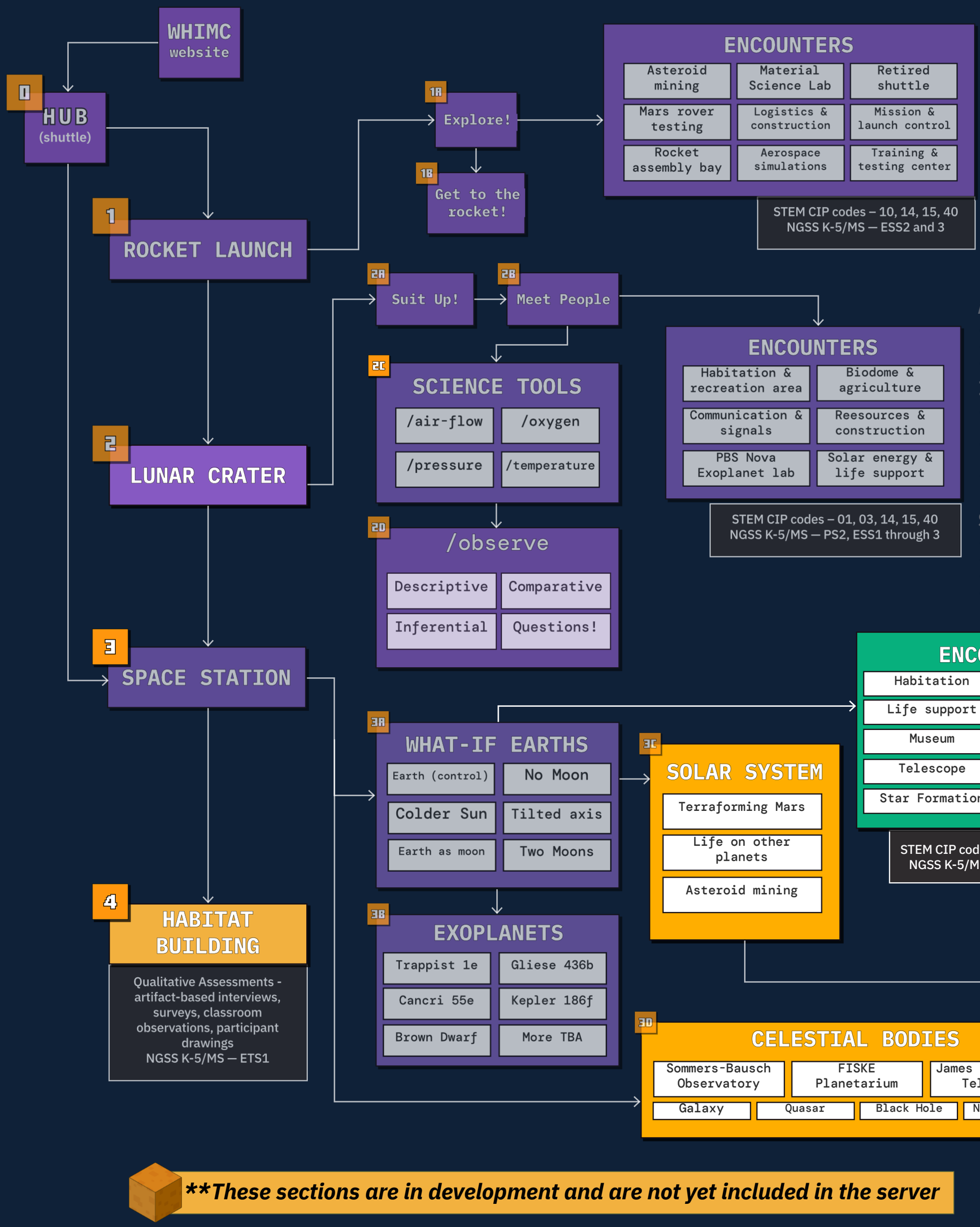
11 BROWN DWARF MAP

1. Spawn/Portal



View the FULL TEACHER'S GUIDE for BROWN DWARF here

LEARNER PATHWAYS THROUGH THE SERVER



Automated Data Collection

- Encounter interactions (side quests)
- Path through building, time spent in each area

Interest Triggers

- Inspiring awe (affect) - *Whoa, Minecraft can do this??*
- Connecting to new knwoledge - *I didn't know NASA did that!*
- Personal relevance - *Building habitats on other planets*

Skills / Knowledge

- Practice navigating and interacting with the game
- You can talk to and interact with characters
- Encounter different kinds of applied STEM at NASA

Automated Data Collection

- Encounter interactions (side quests)
- Path through base, time spent in each area
- Science tools and observations input during tutorial quest

Interest Triggers

- Inspiring awe (affect) - *I can jump high on the moon! Look I can see the earth in the sky like a moon!*
- Connecting to new knwoledge - *I didn't know air had pressure and that buildings have to keep the air inside, it's so cold in a vacuum!*
- Accomplishment (challenges)- *I can learn about my environment to help others*

Skills / Knowledge

- Accepting and completing quests
- Encounter different kinds of applied STEM in a lunar setting
- Make scientific observations
- Understand what habitats on the moon require

Automated Data Collection

- Encounter interactions (side quests)
- Path through worlds
- Time spent in areas of significance
- Observations recorded
- Science tools employed
- Interactions with learner support AI

Interest Triggers

- Inspiring awe (affect) - *This "what-if" earth is CRAZY!*
- Connecting to new knwoledge - *I learned about new research in OUTER SPACE!*
- Novelty - *I had never thought about the BIG picture*
- Accomplishment (challenges) - *I applied knowledge to understand something and solve a puzzle*
- Personal relevance - *Look at all this cool stuff these sceinetists do - I want to do that some day too!*

Skills / Knowledge

- Apply STEM knowledge in hypothetical and unique settings
- Learn properties of exoplanets, moons, and asteroids
- understand how planetary conditions impact habitability
- Assess the suitability of worlds for supporting life
- Apply engineering principles to constuct habitats

***These sections are in development and are not yet included in the server**

You can watch a walkthrough of
WHIMC for Educators

HERE

or you may also copy this link and
paste it into your browser:

https://youtu.be/fyUoMiIEriM

SECTION

FREQUENTLY ASKED QUESTIONS

FAQs

As you explore and guide your students through the WHIMC worlds, you may encounter some challenges. The following section details common questions and concerns others have had, including the solutions to each.

WHAT CAN I DO IF A STUDENT GETS STUCK AS THEY EXPLORE?

If a student reports that got stuck somewhere in the WHIMC world, or they're lost and can't seem to navigate their way through, you can remind them of the command `"/mvspawn"` that students can type into chat to bring them back to the starting point.

If needed, you can also teleport them by using the command `"/tp [student's username] [teacher's username]"` to teleport the student to where you currently are.

WHAT IF A MINECRAFT COMMAND DOESN'T WORK AS INTENDED?

`"Unknown command/Incorrect argument for command."`

If a command doesn't work, it's possible that one or more of the required plug-ins are not working properly. Should this happen, send an e-mail to ALLS at `alls.sose@ateneo.edu.`

FAQs

WHAT IF A STUDENT CAN'T ENTER ANOTHER WHIMC PORTAL OR WORLD?

"You do not have the required permissions/
You do not have permission to use this portal."

If a student can't enter a portal or move to the next world, it's likely that the student **has unfinished quests** in the current WHIMC world. Check with the student to know which quests the student has yet to accomplish, and guide them through the process if they find it confusing.

If needed, you can also **request for the WHIMC worlds to be opened or closed** for students regardless of their quest progress. You may request this through sending an e-mail to ALLS at `alls.sose@ateneo.edu`.

E-mail ALLS at **alls.sose@ateneo.edu** if you encounter any problem that isn't already addressed yet in the FAQs section.

SPECIAL THANKS TO

MIRIAM COLLEGE

ATENEO

Xavier University
ATENEO DE CAGAYAN

UNIVERSITY OF ILLINOIS
URBANA-CHAMPAIGN

ATENEO LABORATORY
FOR THE LEARNING SCIENCES

PROJECT TEAM AND STUDENT ASSISTANTS