

# ROBLOX Education

Designing Educational Experiences



# Sections

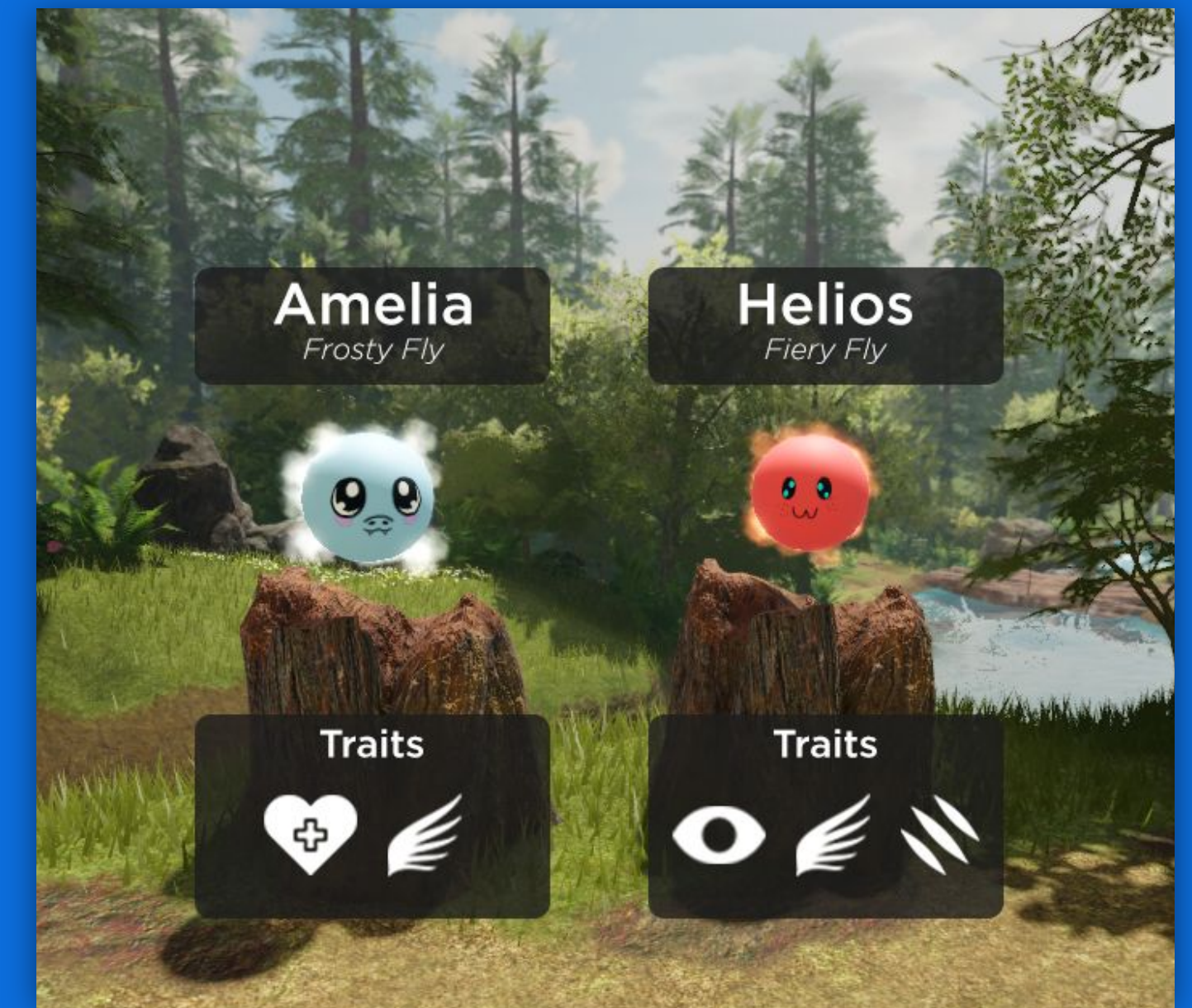
## What is Roblox Education?



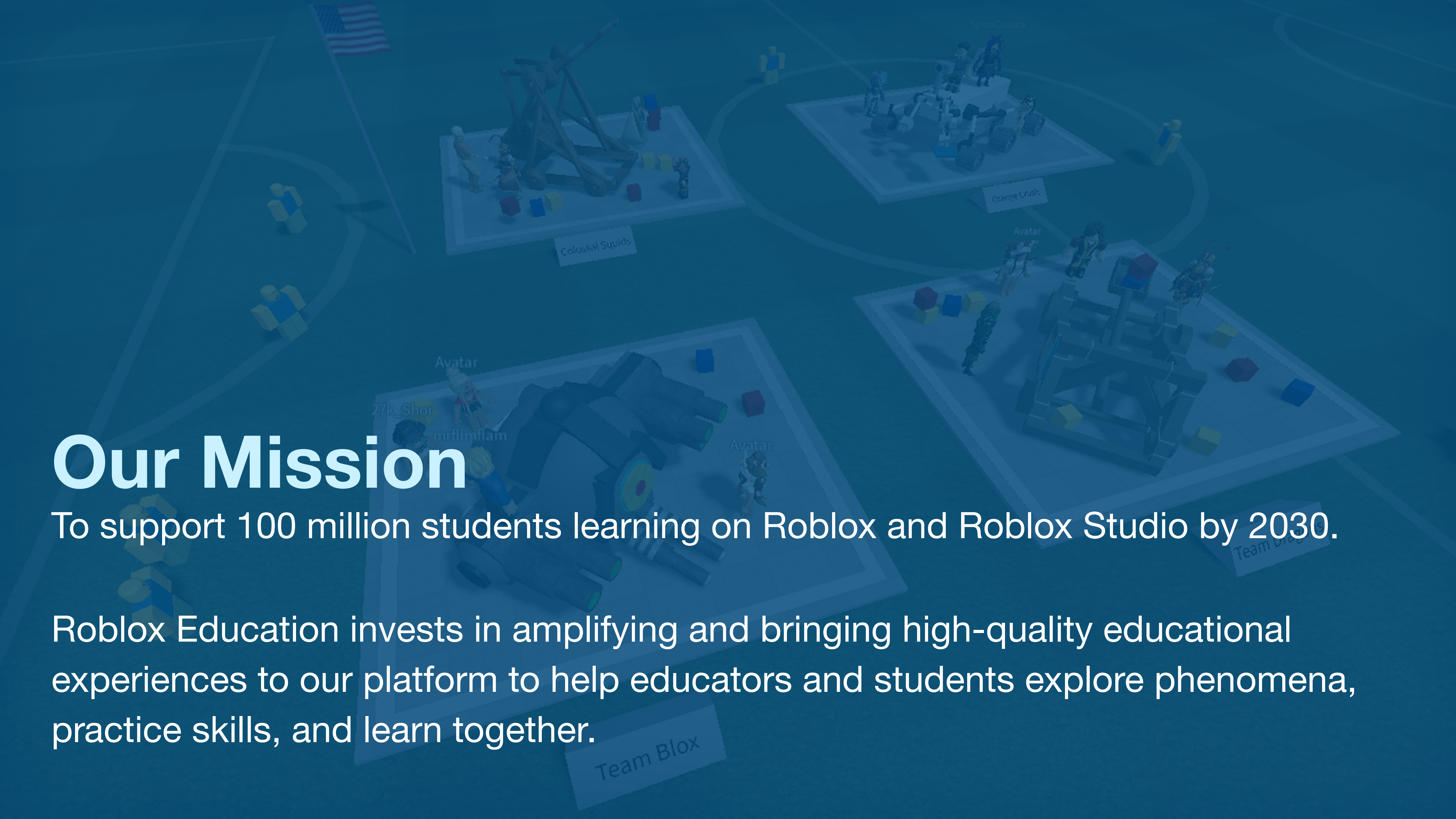
## Designing with Learning in Mind



## Developing an Experience



# **What is Roblox Education?**

The background image is a blue-tinted screenshot of a Roblox virtual world. It features several distinct builds on a flat ground. In the top left, there's a tall, thin structure resembling a crane or a tower, with a small American flag on top. Below it, a large, multi-jointed robotic arm is visible. To the right, there's a circular platform with a complex mechanical build. In the bottom right, a large, multi-tiered structure with many small figures on top is visible. Various avatars are scattered throughout the scene, some standing near the builds. The overall theme is educational and creative building.

# Our Mission

To support 100 million students learning on Roblox and Roblox Studio by 2030.

Roblox Education invests in amplifying and bringing high-quality educational experiences to our platform to help educators and students explore phenomena, practice skills, and learn together.

Our Partners

# Project Lead the Way

Working to reach 250,000 students with computer science, engineering, and biomedical science content on Roblox.



Our Partners

# FIRST & Filament Games

**FIRST Robotics**, an international organization with over one million participants, and **Filament Games** are bringing complex, rich, robotics-building experiences to Roblox.



Our Partners

# Learn and Explore Sort

Educational experiences designed and developed by the Roblox community.

Left to right:

Knossos Palace by FracturedOreo

Fushimi Castle by Hiuh29

Untamed Planet by Untamed Planet

Lua Learning by BoatBomber



## Print Statements

There are quite a few ways to format a print statement in Lua. This is because of Lua's syntax for creating strings, and for calling print.

```
"string"  
'string'  
[[string]]
```

While double-quotes (") and single-quotes (') are both acceptable ways to define a string, a string needs to be opened and closed by the same type of quote mark. You can't do "string'. Calling print can use parentheses, so that allows you to print even more items.

```
print("Hello", "World!")  
print("Hello".. " World!")  
print("Hello World!")
```

## Instructions:

1. Use multiple print statements. Try out multiple syntaxes!

+ Hint

# Roblox developers have the potential to transform learning.

## Access

Roblox aims to support 100 million students learning on our platform by 2030 through high-quality educational content.

## Platform

Roblox as a platform is uniquely suited for engaging, multiplayer educational content.

## Support

Roblox Education is dedicated to supporting developers as they produce content.

## Have Impact

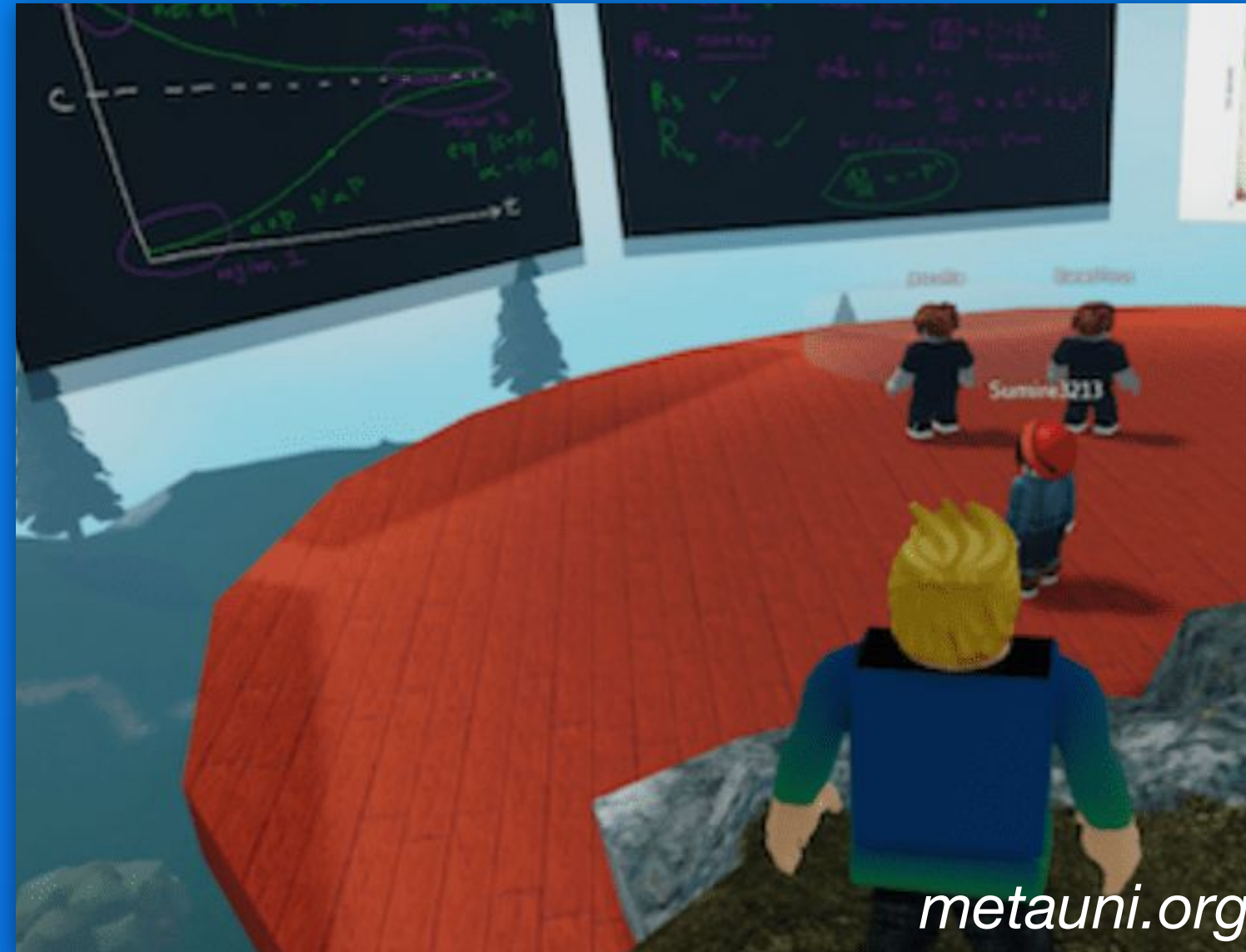
Use game development as a way to unlock immersive learning experiences for educators and students.

# Opportunities in Education



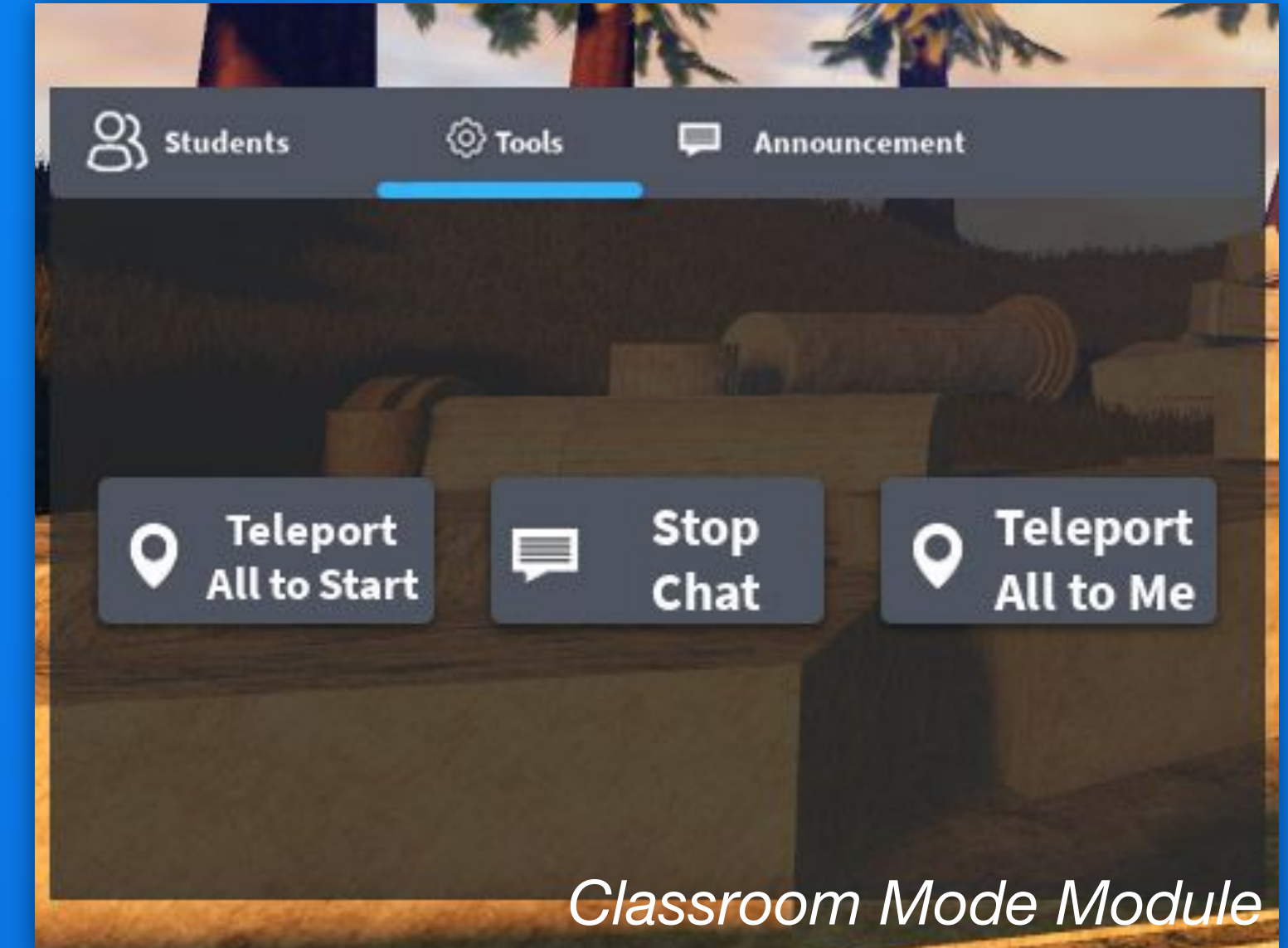
## Educational Experiences

*Designing an experience or game to teach a specific subject, such as physics or history.*



## Training and Serious Games

*Using Roblox as a learning space, such as hosting lectures, 1:1 tutoring, or social spaces.*



## Plugins and Tools

*Developing and selling tools to developers working in education.*

# Designing with Learning in Mind

# Educational Experience

A playful, interactive, digital experience with one or more expressed learning objectives.



A Roblox scene featuring a complex mechanical structure with a yellow and red humanoid robot on the left, a black and white mechanical arm in the center, and a white and black mechanical arm on the right. A small black robot is perched on top of the central structure. The background shows a hazy, mountainous landscape.

# Anyone Can Build

You can build educational experiences on Roblox and help students everywhere learn, explore, and practice skills ranging from critical thinking, collaborative problem solving, and creativity. Roblox Education wants to help you get started.

# What Can You Develop?

Time travel to roleplay a historical event

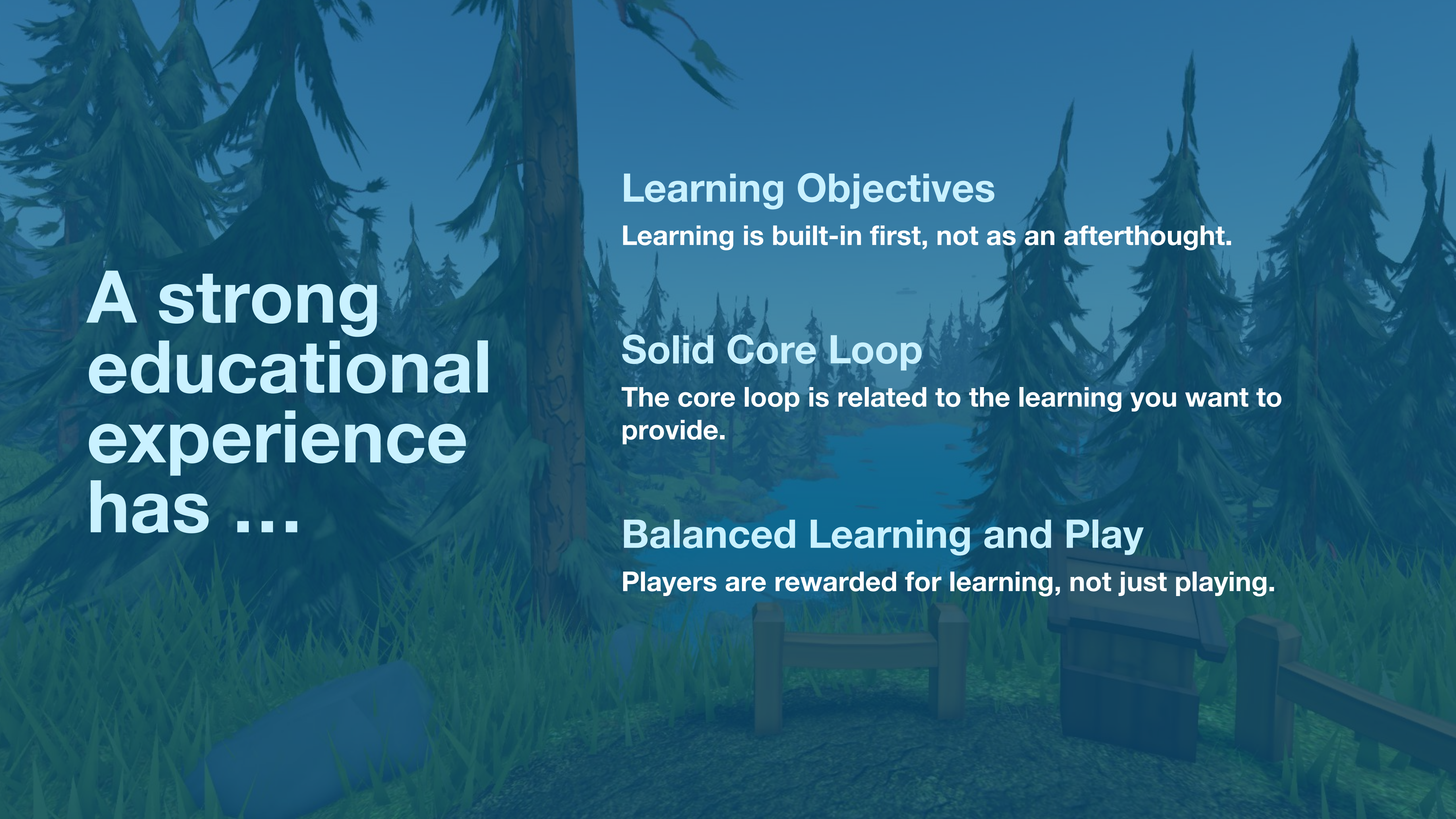
Experiment with physics on a different planet

Practice inventing new materials in a chemistry lab

Teach engineering skills by building bridges

Create connections with a different cultural group

Explore strategies for improving mindfulness



# A strong educational experience has ...

## Learning Objectives

Learning is built-in first, not as an afterthought.

## Solid Core Loop

The core loop is related to the learning you want to provide.

## Balanced Learning and Play

Players are rewarded for learning, not just playing.

Off Platform Example

# Balancing Learning and Fun

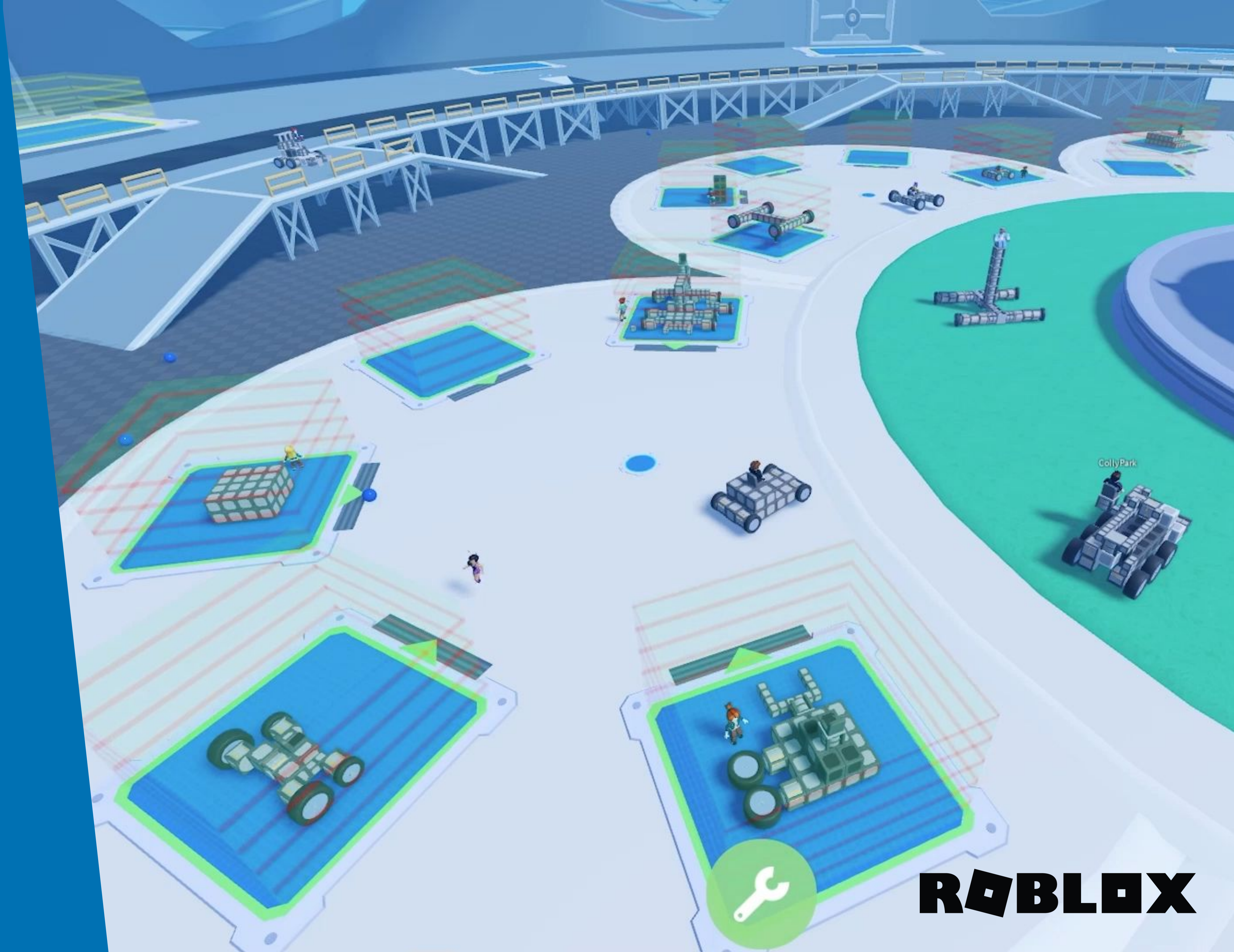
**Mars Horizon**, designed in collaboration with the European Space Agency, is a simulation game where you run and manage a space agency.



Roblox Example

# Balancing Learning and Fun

**RoboCo Sports League**, by Filament Games, teaches the engineering design process by allowing players to build robots for collaboration and competition.



Off Platform Example

# Balancing Learning and Fun

**HoloLAB Champions**, by Schell Games, is what happens when you mix chemistry class with a stressful game show.

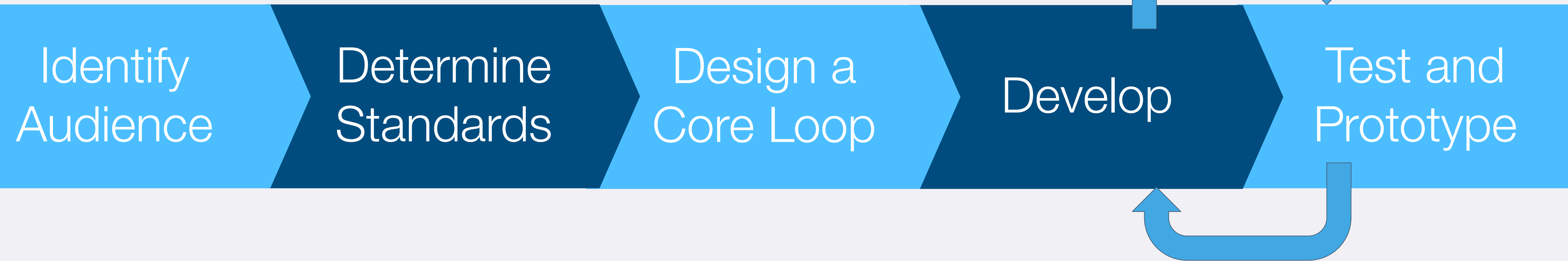


# Developing an Experience

# Development Process

Who is the experience for? A school classroom? At-home students? The workplace?

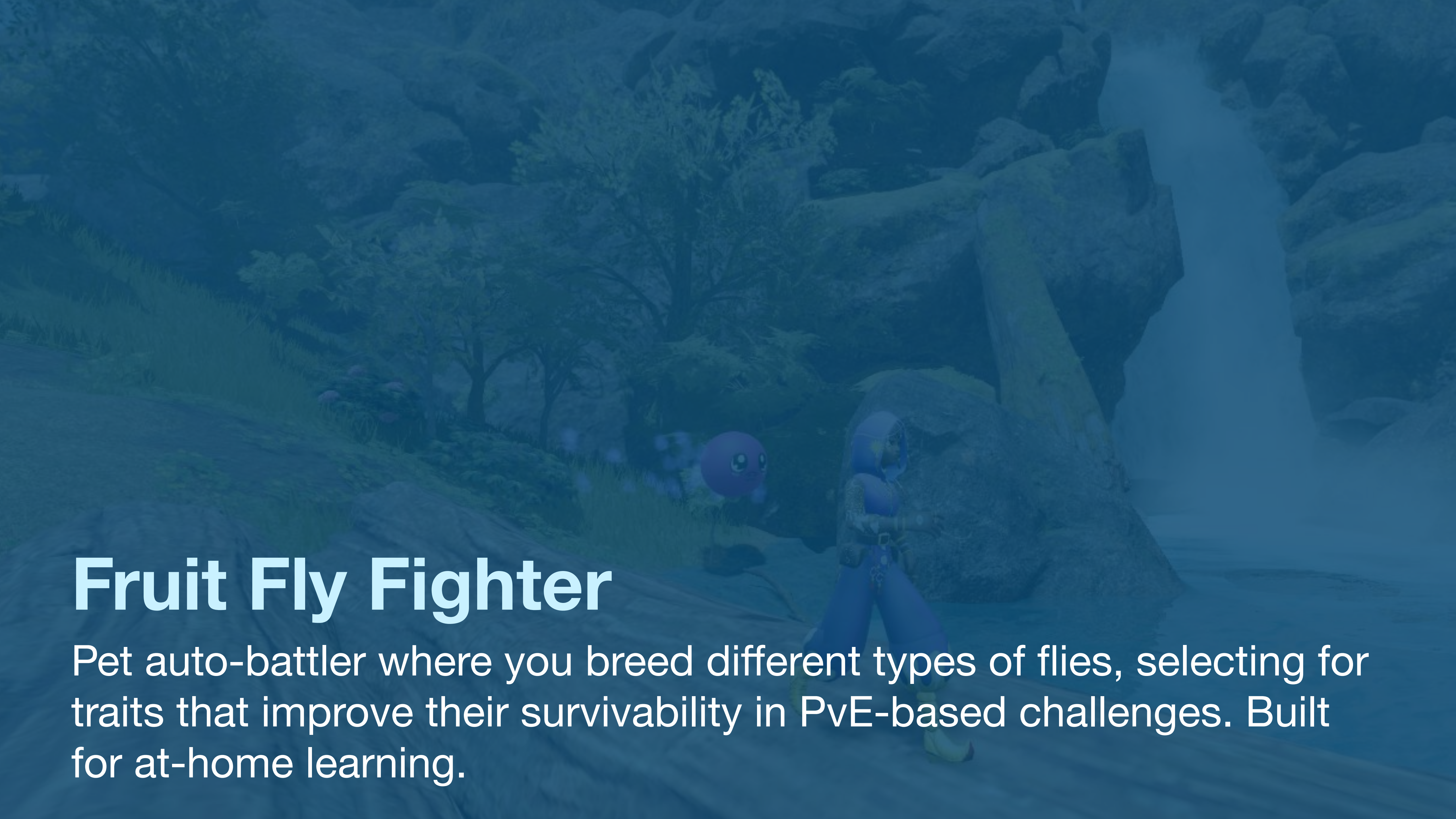
How can gameplay be integrated in the core loop? Is it fun? Are you learning?



What will you teach? How is that taught? How do you know they're learning? What topics lend themselves well to game-based learning?

How can you adapt your process to meet the needs of your audience and learning standards? Who can help you test and get feedback?

**Our example  
experience ...**

The background image is a blue-tinted screenshot from a video game. It depicts a character wearing a blue hooded robe and a small, purple, fly-like creature with large eyes. They are standing on a rocky path in a landscape with large, jagged rock formations and some green foliage. The overall scene is dimly lit, with a blue color grade.

# Fruit Fly Fighter

Pet auto-battler where you breed different types of flies, selecting for traits that improve their survivability in PvE-based challenges. Built for at-home learning.

# 1. Identify the Audience



Classrooms



At-Home  
Learning



Workplace  
Training

# 1. Identify the Audience

## Classrooms

- Gameplay sessions are often 30 minutes for a class.
- Dedicated audience, with lower focus on retention.
- Strong need for alignment to educational standards.
- Unique opportunities to plan for class integration (EX: micropayments for lesson plans or subscriptions).

## At-Home Learning

- Traditional Roblox gameplay session times and needs, such as player retention.
- Looser requirements for educational standards.
- Competing with other entertainment options, but parents value education.

## Workplace Training

- Often in niche topics.
- Work may be for an organization.
- Requirements will be unique based on the needs of a contracting organization.

# Different user age ...

# Different design needs

## Under 10

Stronger need for FTUE. Gameplay focus on experimentation and free-form play. Low motor skill abilities.

## Middle to High School

Enjoys goal-oriented gameplay and forms of healthy competition. Can handle more complex topics and greater motor complexity.

## College and Young Adult

Can interact with and enjoy complex topics and systems.

## Adult and Professional

Can't assume game literacy is common. May need stronger FTUE and guidance.

[Read More: Design for Kids](#)

# 1. Age Differences (In-Depth)

## Ages 10 - 12

**Cognitive:** Develop the ability to think abstractly in "what if" thinking. Morality can be more complex and goes past laws and rules.

**Social Development:** Often become preoccupied with appearance, have strong likes and dislikes, and interested in roles. Concerned that others will exclude them.

## Age 13 - 15

**Cognitive:** Stronger ability to grasp abstract and hypothetical concepts.

**Social Development:** Increasingly aware of their own feelings, and may be self-conscious of themselves, appearance, and relationship with their self and society.

## Ages 15 - 18

**Cognitive:** Can have deep philosophical arguments and fuse information from multiple disciplines.

**Social Development:** Strong desire for independence and beginning to think about future and careers.

[Read More: Common Sense Media](#)

*Common Sense has a rating system for different ages. For each age group, you can see key differences, and recommendations per age for development.*

# Fruit Fly Fighter: Audience

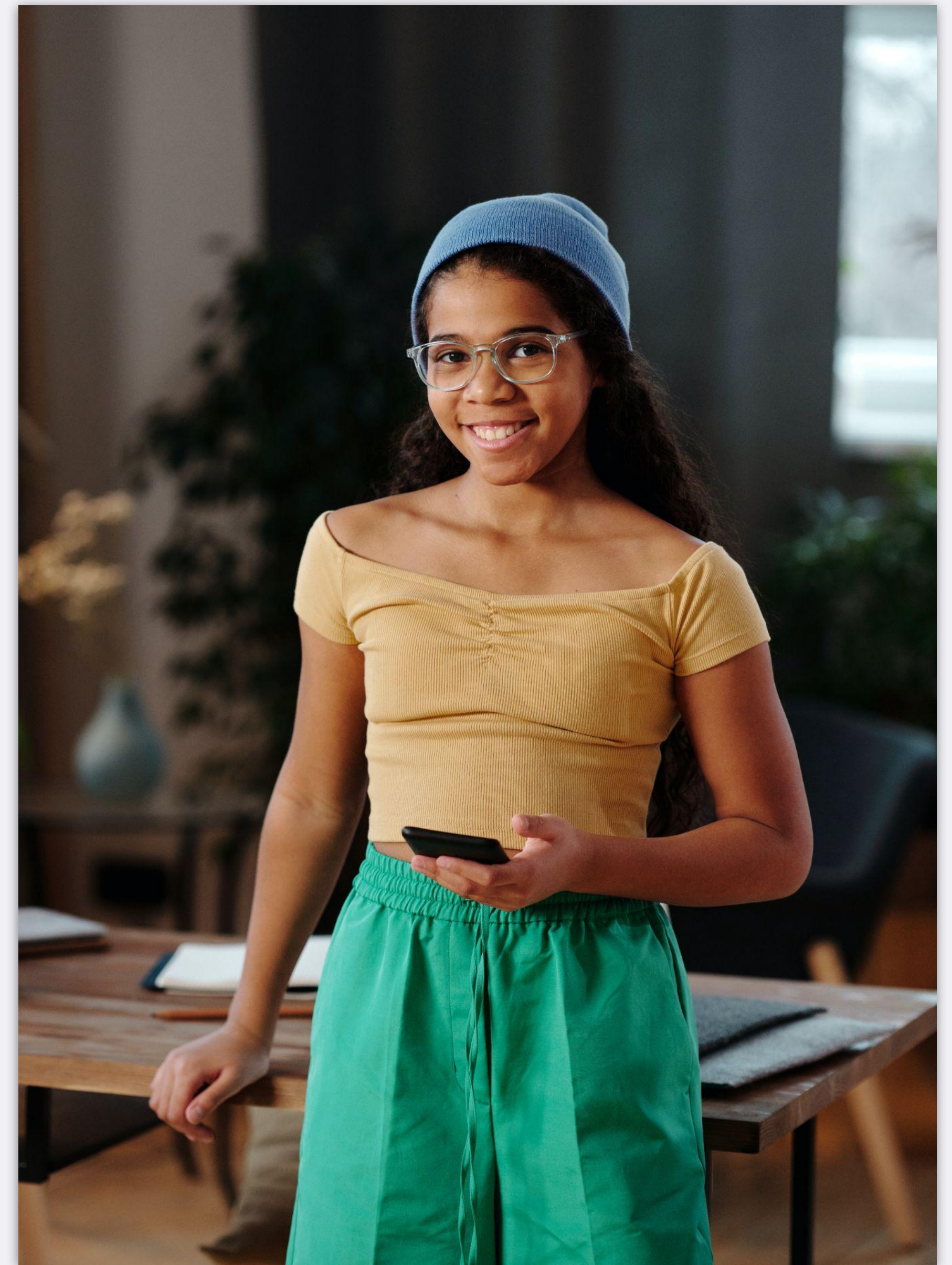
## At-Home Users

Middle to High School Aged

Highly social; wants to experience content with friends

Enjoys exploration and experimentation

Competing with other entertainment, but valued by parents.

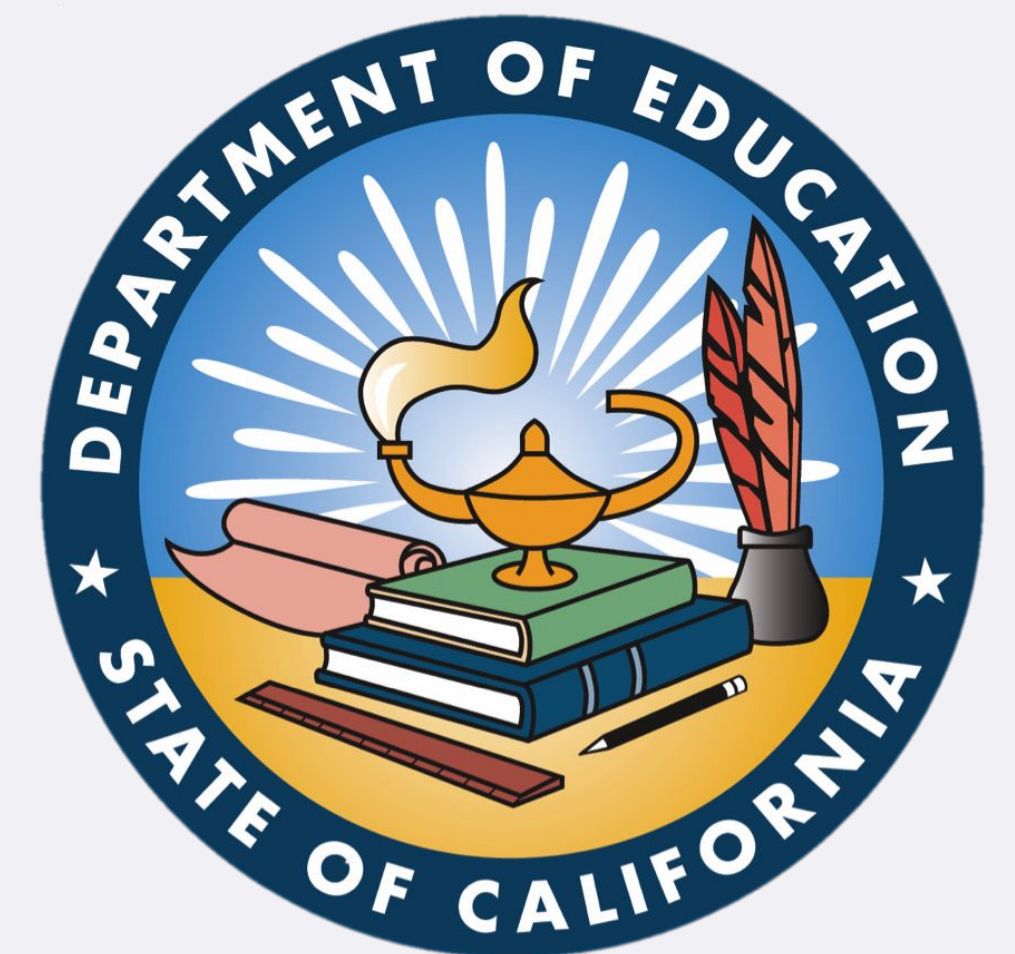


# 1. Identify a Learning Standard

## What is a Learning Standard?

*A concise description of what a student is expected to know or be able to do.*

Often created by formal education institutions and provided directly to educators. It's trusted and approved.



# 1. Identify a Learning Standard



## MS-PS2-1 Motion and Stability: Forces and Interactions

Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.



## California 7.11: Students analyze political and economic change in the Age of Exploration

Discuss the exchanges of plants, animals, technology, culture, and ideas among Europe, Africa, Asia, and the Americas and major economic and social effects on each continent.

# 1. Identify a Learning Standard

## MS-LS3-2 Heredity: Inheritance and Variation of Traits

Develop and use a model to describe why ... and **sexual reproduction results in offspring with genetic variation.**

| The performance expectation above was developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i> :                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><b>Science and Engineering Practices</b></div> <div><b>Developing and Using Models</b><br/>Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.<ul style="list-style-type: none"><li>Develop and use a model to describe phenomena.</li></ul></div> | <div><b>Disciplinary Core Ideas</b></div> <div><b>LS1.B: Growth and Development of Organisms</b><ul style="list-style-type: none"><li>Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. <i>(secondary)</i></li></ul><b>LS3.A: Inheritance of Traits</b><ul style="list-style-type: none"><li>Variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited.</li></ul><b>LS3.B: Variation of Traits</b><ul style="list-style-type: none"><li>In sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring. Individuals have two of each chromosome and hence two alleles of each gene, one acquired from each parent. These versions may be identical or may differ from each other.</li></ul></div> | <div><b>Crosscutting Concepts</b></div> <div><b>Cause and Effect</b><ul style="list-style-type: none"><li>Cause and effect relationships may be used to predict phenomena in natural systems.</li></ul></div> |

# Fruit Fly Fighter: Learning Standard

## MS-LS3-2 Heredity: Inheritance and Variation of Traits

Develop and use a model to describe why ... and **sexual reproduction results in offspring with genetic variation.**

### **Sample Standards to Teach:**

- Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring.
- In sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring.

# Build a Foundation for Your Experience

## Subject Matter Experts

They understand your topic in-depth. You may have someone on your team, or you may be able to contract an educator to assist.

## Investigate Resources

Learning standards often map to curricular and instructional materials that demonstrate how existing instruction teaches to those standards.

## Connect with Roblox Education

We can provide resources for finding a subject matter expert or guidance on quality materials to reference.

# Fruit Fly Fighter: Curriculum Examples



[About OpenSciEd](#)[Instructional Materials](#)[Professional Learning](#)[OpenSciEd Approach](#)

Unit Overview

8.5 Genetics

## Why are living things different from one another?

### Unit Summary

This unit on genetics starts out with students noticing and wondering about photos of two cattle, one of whom has significantly more muscle than the other. The students then observe photos of other animals with similar differences in musculature: dogs, fish, rabbits, and mice. After developing initial models for the possible causes of these differences in musculature, students explore a collection of photos showing a range of visible differences.

In the first lesson set, students use videos, photos, data sets, and readings to investigate what causes an animal to get extra-big muscles. Students figure out how muscles typically develop as



Download Unit

Unit Storyline

[OpenSci Ed](#)

GRADE 6 UNITS

GRADE 7 UNITS

GRADE 8 UNITS

COVID-19 L



6.1 Light & Matter

Why do we sometimes see different things when looking at the same object?

Released



6.2 Thermal Energy

How can containers keep stuff from warming up or cooling down?

Released



6.4 Plate Tectonics & Rock Cycling

What causes Earth's surface to change?



6.5 Natural Hazards

Where do natural hazards happen and how do we prepare for them?

# Teaching Genetics in Classrooms

Punnett Square Game

a quiz by Lebag • 26,764 plays • More

★★★★★

4.70 (you: not rated)

Remaining

3

Correct

0

Wrong

0

Heterozygous

0%

0:05.6

Quit

H

h

H

h

H

h

H

h

H

h

[Punnett Square Game](#)

Name: \_\_\_\_\_ Row: \_\_\_\_\_

Date: \_\_\_\_\_ Period: \_\_\_\_\_

Punnett Squares - Pea Plants WS

1) Yellow seeds are dominant over green seeds in pea plants. Fill in the Punnett square and determine the expected genotypes and phenotypes along with the probabilities from crossing homozygous recessive and homozygous dominant parents.

F<sub>1</sub> generation

Possible genotypes of offspring: \_\_\_\_\_

Possible phenotypes of offspring: \_\_\_\_\_

Percentage of offspring that are yellow: \_\_\_\_\_% green: \_\_\_\_\_%

% of offspring that are homozygous dominant: \_\_\_\_\_%

heterozygous: \_\_\_\_\_% homozygous recessive: \_\_\_\_\_%

If there were 100 seeds collected, predict how many would be yellow? \_\_\_\_\_, green? \_\_\_\_\_

Predict how many seeds would be homozygous dominant? \_\_\_\_\_, heterozygous? \_\_\_\_\_, homozygous recessive: \_\_\_\_\_

[NGSS Life Sciences](#)

PUNNETT SQUARES:

A HOW TO GUIDE FOR STUDENTS

A

a

AA

Aa

Aa

aa

19:43

Punnett Squares: A Student How to Guide

16K views • 1 year ago

Cook In The Classroom

In this video, I am introducing heredity and how to work throu...

PHENOTYPE | DOMINANT...

8 moments

two purple alleles

1 purple

1 white

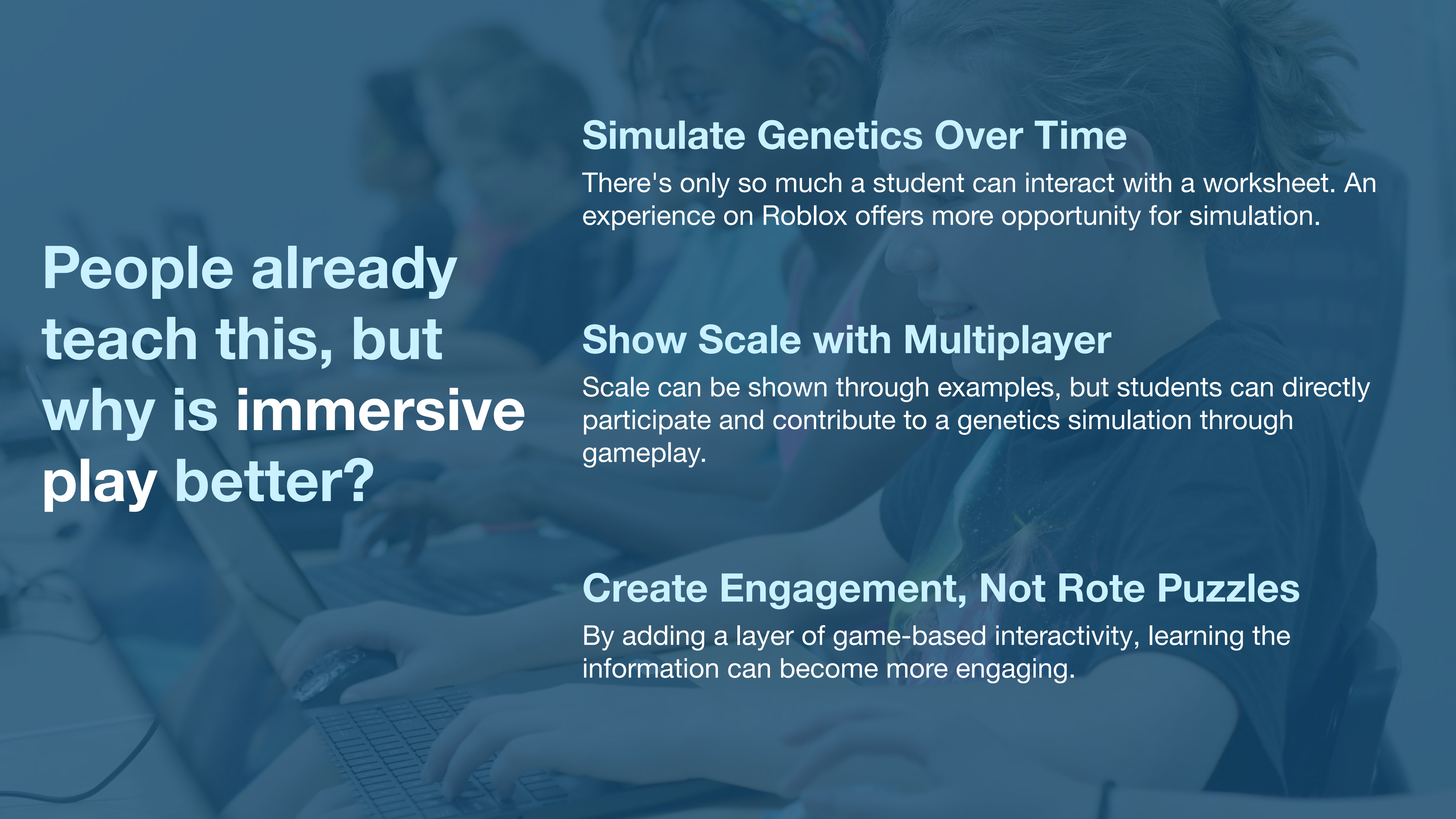
two white alleles

F<sub>1</sub> generation

these all have one purple and one white allele

F<sub>2</sub> generation

purple : white 3:1



# People already teach this, but why is **immersive** play better?

## **Simulate Genetics Over Time**

There's only so much a student can interact with a worksheet. An experience on Roblox offers more opportunity for simulation.

## **Show Scale with Multiplayer**

Scale can be shown through examples, but students can directly participate and contribute to a genetics simulation through gameplay.

## **Create Engagement, Not Rote Puzzles**

By adding a layer of game-based interactivity, learning the information can become more engaging.

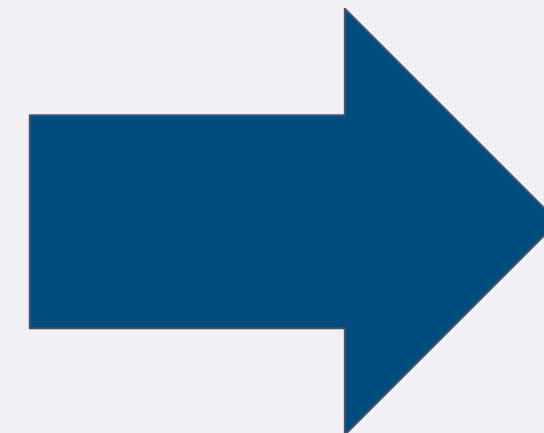
### 3. Designing the Core Loop

#### Concepts Pulled From Curriculum Samples

Punnett Squares

Chromosome Pairs

Genetic Variation



#### Gameplay Mechanics

Identify and Sort

Collect and Gather

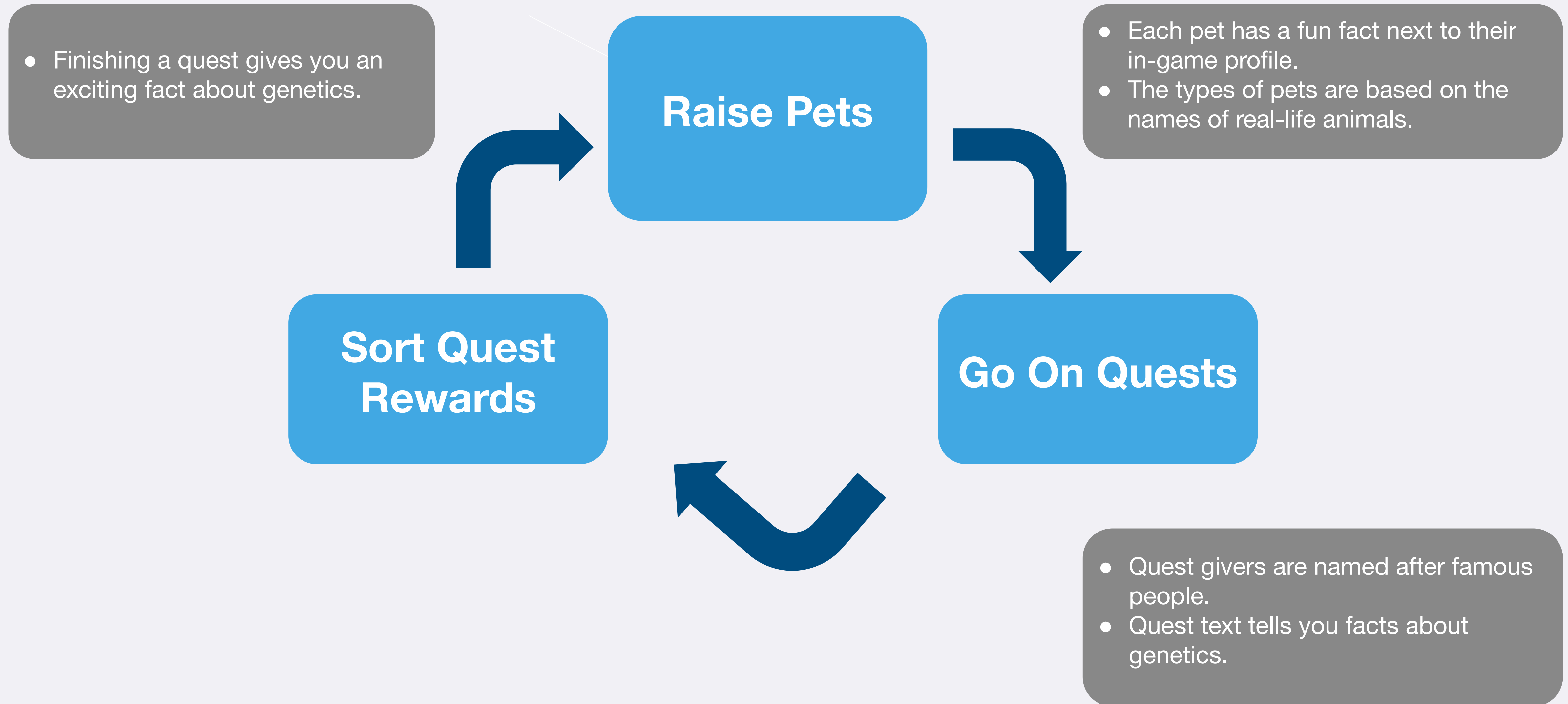
#### User Situations

Raising Pets

Work with Fruit Flies

# Fruit Fly Fighter: Bad Core Loop

*Learning and gameplay is disconnected*



# Fruit Fly Fighter: Better Core Loop

*Learning and gameplay is connected*

- Pets are found during quests. Users determine which pets to keep to raise for future generations.

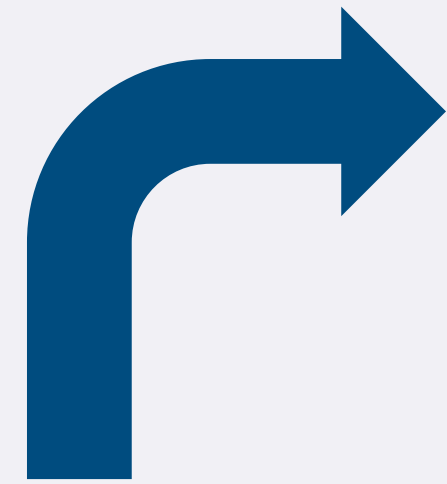
**Raise Pets**

- Pets have inheritable traits that are transferred to offspring.
- Traits are dominant or recessive and have an element of choice and surprise.

**Sort Quest Rewards**

**Go On Quests**

- Quests have players finding pets with specific traits they'll need to factor into their raising process.



Core Loop

# Raise Pets

- Identify and sort for desirable traits.
- Select breedings that are desirable for an objective.



Core Loop

# Go On Quests

- See how pets perform for objectives.
- Gather pets with desirable traits.



Core Loop

# Sort Quest Rewards

- Identify desirable traits
- Upgrade facilities



# Fruit Fly Fighter Recap

## Target Audience

- At-home students of middle to high school age.
- Students have expectations of common Roblox elements (such as quests), while parents and educators want standards.

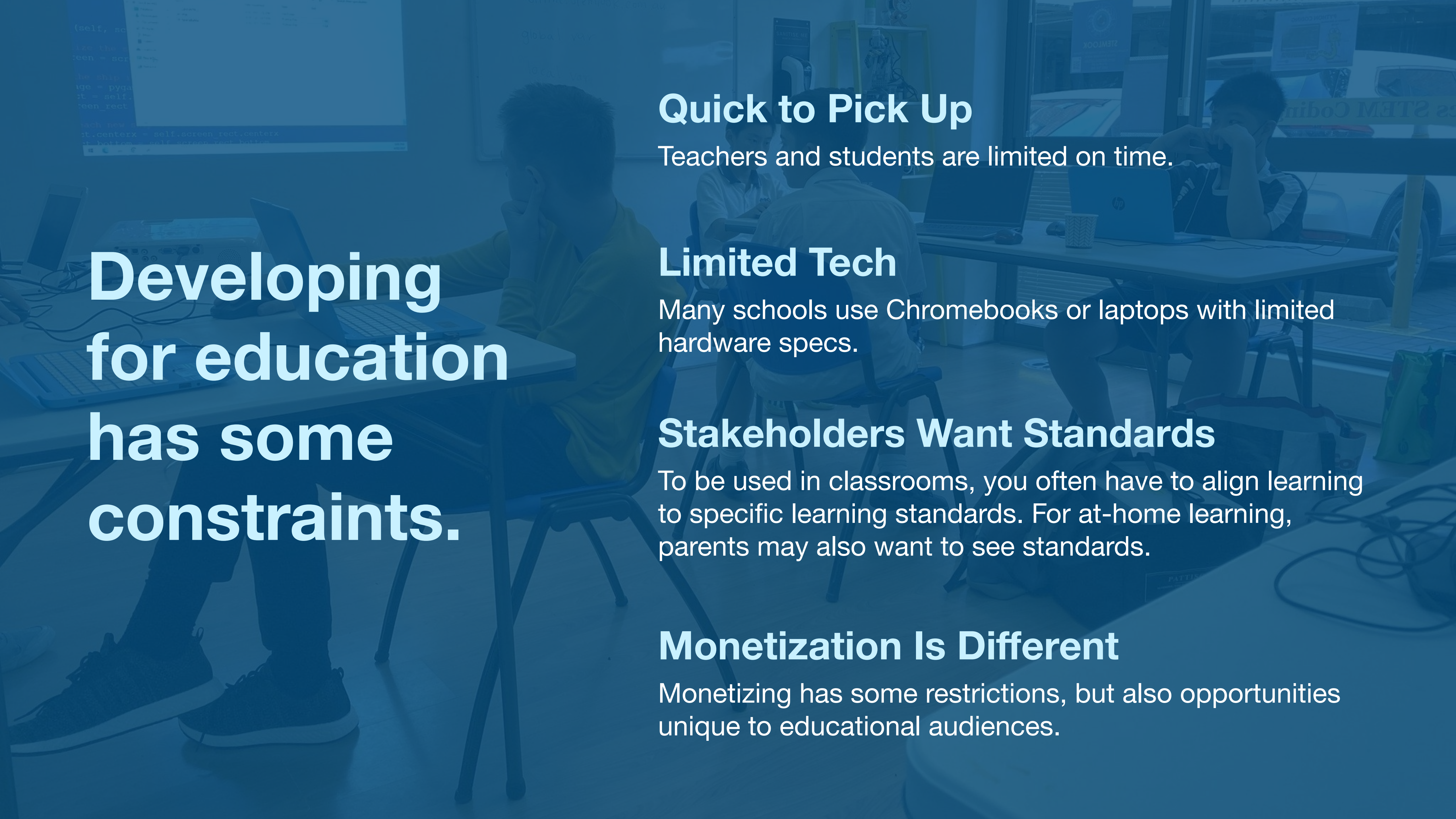
## Learning Standards

- Using Next Generation Science Learning Standards.
- Standards focus on teaching the topics of genetics and transmission of traits through reproduction.

## Gameplay Loop

- Users raise pets by identifying desirable traits, combining them in new offspring, and observing how those pets meet challenges to make changes for a future generation.
- Gameplay and learning are intermixed and balanced, not separate.

# Developing For Education

A blue-tinted photograph of a classroom. Several students are seated at desks, working on laptops. In the background, a whiteboard displays Python code. The overall scene is educational and tech-focused.

# Developing for education has some constraints.

## Quick to Pick Up

Teachers and students are limited on time.

## Limited Tech

Many schools use Chromebooks or laptops with limited hardware specs.

## Stakeholders Want Standards

To be used in classrooms, you often have to align learning to specific learning standards. For at-home learning, parents may also want to see standards.

## Monetization Is Different

Monetizing has some restrictions, but also opportunities unique to educational audiences.

# Fruit Fly Fighter Development Notes

## Quick to Pick Up

- Users will get a strong first-time user experience, teaching them how to play within minutes with a guided, active tutorial.
- Gameplay sessions can average 5-10 minutes.

## Limited Tech

- Stylized low-poly graphics lower technical requirements.
- Strong emphasis on mobile optimization and play.

## Stakeholders Want Standards

- Documentation on our website communicates information to parents and educators about the educational impact.
- In-game information provides additional context for users.



# Designing Monetization For Education

## Avoid Aggressive Monetization

Keep monetization subtle;  
avoid forceful pop-ups.

## Keep the Core Loop Free

Users should be able to  
experience the whole loop  
without payment.

## Investigate Alternatives

Lesson plans, direct support  
to teachers, subscriptions.

## Find Partners, Funding, or Grants

Different groups can assist in  
funding your experience  
development costs.

# Fruit Fly Fighter Monetization Plan

## In-Game Purchases

- In-game avatar items and cosmetics.
- No ability to purchase game passes that "speed" up the loop.

## Investigate Alternatives

- Paid lesson plans for educators interested in classroom usage.
- 1:1 paid video support and training for teachers to answer questions about the experience.

## Funding

- Apply for grant funding (both via the Roblox Community Fund and other organizations).
- Investigate partnership options with an educational institution for funding and building outreach.

# Prototype and Test with Outside Support

Subject matter experts, classroom teachers, and even students can support your success. **They can...**

Playtest and offer feedback

Help brainstorm ideas

Confirm your content meets learning objectives

Talk about what works in the classroom

Offer guidance on a subject or specific topic

Describe technology used in the classroom

# Next Steps

# A brief summary

## TL;DR

### **1. Identify the Audience**

Classroom? At-home student? Workplace training?

### **2. Determine a Learning Standard**

What are you teaching? How is that subject currently covered in curricular and instructional materials?

### **3. Design a Core Loop**

How does the game loop reinforce your core learning objectives? How can you balance learning and fun?

### **4 & 5. Develop, Prototype, and Test**

Make modifications to the development process to ensure your project's educational success. Find partners and talk to educators and students as you test to ensure the game is fun and learning is meaningful.

**We're Here to Support**

**ROBLOX Education**

**[education@roblox.com](mailto:education@roblox.com)**

**education.roblox.com**

Documentation

Open Office Hours

Community Fund Support

Networking with Educators

Learn and Explore Sort

# Opportunities to Connect

## Games for Change Conference

Includes educational games and games for social impact. Great networking opportunity with wide and diverse audiences (commercial devs, schools, and more)

## Serious Play Conference

Academic focused conference. Great for workplace and classroom focused audiences.

## Play, Make, Learn + GEE! Awards

Mix of academics and developers. Hosts an annual contest for best learning games.

## Roblox Developer Forum (Education Support)

Place to communicate with other Roblox developers interested in education.

## International Game Developers Association

Has a serious games special interest group. Opportunity to connect with others through Discord and share resources and get feedback.

# Education Resources

## Learning Standards

[Next Generation Science Standards](#) - Respected and common standards for science.

[AP College Board](#) - Series of exams with standards for high school to college coursework.

*Note: Many states and nations have their own unique standards. Search their Department of Education website.*

## Free Trusted Curriculum

[OpenSci Ed](#) - Free courses for science in K-12 subjects.

[EdReports](#) - Database of trusted textbooks and curriculum for math, science, and English language arts.

[Khan Academy](#) - Variety of resources for K-12 subjects.

# Games for Inspiration

## Experiences on Roblox

- [Plane Crazy](#)
- [StockRise](#)
- [1867 Historical Roleplay](#)
- [Bird Simulator](#)
- [Lua Learning](#)
- [Alo Sanctuary](#)

## Other Games

- [Code Combat](#)
- [while True: learn\(\)](#)
- [DragonBox Algebra](#)
- [The Counting Kingdom](#)
- [Human Resource Machine](#)
- [Anything from Filament Games](#)
- [Never Alone](#)
- [Poly Bridge](#)
- [Kerbal Space Program](#)

# Thanks from the Education Team!



## **Let's Stay in Touch!**

*Get advice on development, learn about Roblox funding, or ask about programs like Learn and Explore Sort.*

[education@roblox.com](mailto:education@roblox.com)