Planeteers
A STEAM CRAFT ADVENTURE
SERIOUS GAMING IN THE CLASSROOM
About Us

The creators of Planeteers, STEAM Craft Edu specialize in education technology to improve learning outcomes. Our focus is teaching STEAM skills using “serious” games.

Our Mission

- To make an impact on global education, with equal focus on financial return and social benefits.
- To leverage children’s engagement with games and mobile devices to maximize reach, and enable the opportunity to learn no matter where they are.
- To support less fortunate schools and communities through technology grants and teacher training programs.
STEAM Education Benefits

STEAM is a mix of teaching strategies that immerses students in hands-on problem-based learning using real-world scenarios.

STEAM skills are best taught using a project based learning approach. STEAM connects core subjects and also teaches students creative problem solving, engineering and design thinking skills.

STEAM combined with games improves learning outcomes.
Importance of STEAM

STEAM also teaches “enterprise skills” otherwise known as 21st Century or transferable skills, a powerful predictor of career success.

Teamwork
Adaptability & Persistence
Digital Literacy
Critical Thinking
Communication Skills
Creativity
Problem Solving
STEAM Literacy

STEAM teaching places enterprise skills at the heart of learning!
STEAM Adoption in Elementary Schools

In the United States

Even though academic standards reform across the United States promotes the importance of enterprise skills, and integration of math, science and technology subjects... implementation is still a work in progress.

Beyond common core standards, awareness about the importance of STEAM/STEM is high, but adoption often difficult due to a lack of resources, qualified teachers, and clear pathways to curriculum integration.
Planeteers: A STEAM CRAFT ADVENTURE

SERIOUS GAMING IN THE CLASSROOM

GEDS EDUCATION AWARDS
WINNER 2017

W3 AWARDS
2017 SILVER WINNER
INTRODUCING PLANETEERS

Planeteers is an intergalactic sandbox adventure, where anything is possible.

Designed for kids 7 to 12 years, Planeteers inspires adventure, creativity, and learning, as players and their robot companion, Socket, explore a newfound planet for answers to help restore their depleted home world.
Serious Games Maximize Engagement

Set in a fictional solar system similar to Earth’s, Planeteers is underpinned by a powerful educational sandbox that delivers core STEAM concepts mapped to a laddered learning continuum.

Learners also develop 21st Century skills like problem solving, design, robotics and coding, all tightly coupled to the gameplay and game narrative.
Explore, Play, Learn!

New challenges and experiences abound as players explore different continents, each with distinct climates, ecosystems, flora and fauna. The Planeteers simulated 3D world includes real world physics, weather and day/night cycles.
Resource Management

Students are tasked with finding and gathering important resources for their planet base. Students use these elements and resources to craft components for building habitats, creating farms, designing machines, robots and vehicles!
Imagine, Design, Create

Planeteers building tools empower kids to tinker, experiment and create, inspiring future makers!
Develop Super Powers!

Planeteers teaches coding, system design and robotics skills as players build and program robots, drones and other interplanetary mission helpers.
Mission Computer, Journal and Camera

The Mission Computer provides students with tools to report their game progress to Mission Control aka their teachers! The player journal and camera allow students to create photo essays.

MISSION LOG

Polar bears live in the arctic region and are very good at surviving in the sub zero temperatures. They have transparent fur, which allows the sun to warm their black skin, its color especially good at absorbing energy. Then below their skin they have a thick layer of fat, which absorbs the heat and helps keep them warm. I took some pictures of Polar bears in STEAM Craft. Polar bears are specially good hunters and eat fish and even seals!
Data and Trend Analysis

The Planeteer’s mission computer collects critical data about weather patterns, farming, element collection, and crafting; building data analysis skills learners can apply to improve resource management and mission outcomes.
Gamified Quizzes!

Planeteers has a fun and engaging quiz system to test learners' mastery of key concepts and knowledge. Players must beat the clock to answer Mission Control's questions before their data link terminates! Successful quiz scores earn XP for Socket AI upgrades and gears.

**QUIZ: Earth & Space Science**

1. Day and night occur because the planet is turning
	- TRUE
# Quests and Badges to Measure Skill Building

Planeteers quests, activities and quizzes are mapped to a comprehensive STEAM curriculum organised by learning objectives and concepts.

<table>
<thead>
<tr>
<th>Science</th>
<th>Technology</th>
<th>Engineering</th>
<th>Arts</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth and Space Sciences</td>
<td>Coding</td>
<td>Design Process for Innovation</td>
<td>Color and Style</td>
<td>Calculating</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>Robotics</td>
<td>Simple and Complex Machines</td>
<td>Music and Sound FX</td>
<td>Data</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>Systems Analysis</td>
<td>Food Production</td>
<td>Photography</td>
<td>Shapes and Representation</td>
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<tr>
<td></td>
<td>Power and Energy</td>
<td></td>
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<td></td>
<td>Making</td>
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</table>
Teachers Dashboard & Analytics

Planeteers includes a powerful Teachers Dashboard that collects student & class data, tracks progress & achievements, and allows teachers to assign quests, quizzes and activities.
SERIOUS GAMING IN THE CLASSROOM

LEARNING OPPORTUNITIES
“Imagine if kids poured their time and passion into a video game that taught them math concepts while they barely noticed, because it was so enjoyable.”

- Bill Gates

“Video games have the power of visualizing things, of creating open-ended environments for people to explore things, of engaging and motivating learners. What you have is a strong learning approach that should be added to the educator’s toolbox.”

- Jan Plass, Co-Director, Games for Learning Institute, New York University

“Game players regularly exhibit persistence, risk taking, attention to detail, and problem solving, and all behaviors that ideally would be regularly demonstrated in school.”

- MIT, Education Arcade
Award Winning Educational Design

The Planeteers game is mapped to a comprehensive STEAM curriculum, lesson guides and measurement tools.

STEAM Continuum & Lesson Guides
Determine progressive learning objectives

Educational Gaming for Maximum Engagement
Map class lessons to game activities

Teacher's Dashboard Training & Support
View student and class results and analytics
Learning Opportunities
Planeteers supports autonomous and teacher-led project-based learning.

Guided learning supported by game quest & activities
Autonomous, learner-led skill development using a laddered quest system. Develops STEAM skills & soft skills like critical thinking & problem solving.

Personalized STEAM learning using the sandbox mode
Teachers design learning that is personalized to the school syllabus & students giving free-form challenges that use sandbox mode.

Teacher designed off-screen activities that augment game
Unplugged activities that reinforce learning objectives & game activities/projects e.g., writing, storytelling, design challenges, maker, activities etc.
The STEAM Learning Continuum provides a summary of skills mapped to STEAM Pillars and concepts, that are scaffolded across four levels of increasing complexity. The skills and related STEAM integrations are mapped the game quests, activities and quizzes.

### Key Concepts mapped to the STEAM Pillar

**Coding**

<table>
<thead>
<tr>
<th>Key Concepts</th>
<th>Level 1</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Players learn about:</td>
<td>computational thinking (every movement must be directed)</td>
<td>algorithms, computing practices, programming and abstraction</td>
</tr>
<tr>
<td>Players learn to:</td>
<td>implement code in the blockly user interface</td>
<td>identify and create generalized/abstract code to solve multiple similar problems</td>
</tr>
<tr>
<td>Players learn to:</td>
<td>create a simple coding sequence of two or more steps</td>
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</tbody>
</table>

**Robotics**

<table>
<thead>
<tr>
<th>Key Concepts</th>
<th>Level 1</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Players learn about:</td>
<td>robots need detailed instructions</td>
<td>different categories of robots</td>
</tr>
<tr>
<td>Players learn to:</td>
<td>writing instructions for robots is known as programming</td>
<td>different purposes of robots</td>
</tr>
<tr>
<td>Players learn to:</td>
<td>interact with a robot for a specific purpose</td>
<td></td>
</tr>
<tr>
<td>Players learn to:</td>
<td>give a robot a single instruction</td>
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</table>

**Systems analysis**

<table>
<thead>
<tr>
<th>Key Concepts</th>
<th>Level 1</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Players learn about:</td>
<td>what makes a system and why systems are important</td>
<td>the different designs and solutions that are needed to meet specific social or environmental needs of users, as an energy-efficient building or road system, a healthy functioning farming system, a secure inventory</td>
</tr>
<tr>
<td>Players learn to:</td>
<td>differentiate between natural system, built systems, and information or communication system</td>
<td>identify the needs of different groups (people, animals, plants,) and</td>
</tr>
<tr>
<td>Players learn to:</td>
<td>identify essential elements of each system</td>
<td>connect relevant and appropriate system elements to them</td>
</tr>
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</table>

**Summary of core learning objectives for the STEAM Pillar**

Core Objectives: Players demonstrate knowledge of the role technology plays in a changing world and develop skills in computational thinking, systems thinking and coding. This is becoming an increasingly important contemporary literacy. Players learn to use coding to debug problems, to program different types of robots for different purposes, and to solve problems.

**Difficulty levels 1 to 4, loosely aligned with grades 3 to 6.**

**Learning Objectives mapped to concept and level**

**Learning Outcomes and skill objectives**
STEAM Learning Continuum & Quest Guide

All game activities, quests and quizzes are mapped to a comprehensive STEAM Learning Continuum of scaffolded learning objectives and skills organized by concept, under each major STEAM pillar.

<table>
<thead>
<tr>
<th>STEAM Concept</th>
<th>Learning Objectives</th>
<th>STEAM Integrations</th>
<th>Quest Summary</th>
<th>Example Quest Fun Fact</th>
<th>Badge Achievement</th>
<th>% XP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coding</td>
<td>Basics of coding &amp; Block Code</td>
<td>Technology (Making)</td>
<td>Create a Code Sequence</td>
<td>Sometimes a bot can go haywire, kind of like if bugs got into its wiring. Most “bugs” are just problems with its code which are found and fixed by “DE-BUGGING” which is when you try to fix the code.</td>
<td>Debugger</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>Identify parts of the coding UI: commands, scripts area, stage</td>
<td>Engineering (Simple and Complex Machines)</td>
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<tr>
<td></td>
<td>Creates sequence of steps (an algorithm) for a bot to follow.</td>
<td>Engineering (Design Process for Innovation)</td>
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</tr>
<tr>
<td>Coding</td>
<td>Connect/Fix Block Codes</td>
<td>Technology (Making)</td>
<td>Debug the code to fix the robot</td>
<td>If you have a bug, no problem! A simple way to debug in Blockly is to use the PLAY button so the code RUNS while observing your robot. Look for broken code as the program runs or for problems with the robot trying to complete its task. Compare the two to check if the sequence is correct or where it needs fixing.</td>
<td>Debugger</td>
<td>25%</td>
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<tr>
<td></td>
<td>Explain and validate the importance of sequencing codes to create algorithms.</td>
<td>Engineering (Simple and Complex Machines)</td>
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<tr>
<td></td>
<td>Introduce and emphasize the concept of debugging.</td>
<td>Engineering (Design Process for Innovation)</td>
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</tr>
<tr>
<td>Coding</td>
<td>Simple Events &amp; Triggers</td>
<td>Technology (Making)</td>
<td>Add sound FX to your robot!</td>
<td>To trigger sound effects when the bot is active, use the ONACTIVE event code with sound code scripts. You can use the INSTRUMENT block code to play different notes, or cheat and use the play sound effect code!</td>
<td>Blockly Code 101</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>Program a bot to respond to external or internal changes (triggers), using OnClick and OnActive.</td>
<td>Engineering (Simple and Complex Machines)</td>
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<td></td>
<td>Science (Biological Sciences)</td>
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Teachers Dashboard & Analytics

Planeteers includes a powerful Teachers Dashboard that collects student & class data, tracks progress & achievements, and allows teachers to assign quests, quizzes and activities.
Expert Testimonials

“Planeteers presents educators with a powerful, innovative platform to facilitate the development of STEAM concepts and skills in children. Learning can be personalised, providing children with the opportunity to design simple solutions to basic problems through to complex solutions to complex problems. The possibilities are unlimited.”
- Cathie Howe, M.Ed, BA, Dip.Ed
  Manager, NSW Dept. Edu. & Macquarie University ICT Innovations Centre

“Innovative “first mover”... Planeteers enables a highly immersive learning experience with the best principles of constructivist and constructionist forms of learning... the platform is highly adaptive and open-ended, prompting learners to engage in free inquiry that draws on all the STEAM elements in an engaging and authentic way.”
- Michael Stevenson, PhD, BA, Dip.Ed
  Developer, Facilitator and Researcher, Macquarie ICT Innovation Centre

“Planeteers is an inspiring initiative designed to enthuse and engage young students in STEAM... the game quests are inquiry-based and encourage computational thinking, design thinking, creative thinking, and perseverance (resilience). A breath of fresh air in the primary classroom, Planeteers is well scaffolded to provide any student (and teacher) with a successful, enjoyable 21st Century learning experience.”
- Khyiah Angel, PhD, BA, Dip.Ed
  Developer, Facilitator and Researcher, Macquarie ICT Innovation Centre
Teacher Testimonials

“Planeteers bridges the gap to reach our 21st century learner where gaming can lead into learning, and boosts the morale of our teachers in integrating technology in teaching STEAM.”

-Mark Bagsic, ICT Coordinator/Teacher, Andres Bonifacio Elementary, Pasay, Philippines

“The learning that results from crafting, building and coding is made more memorable because the learning outcomes are trialed, tested, and then brought to life.”

-Hailey Smith, Science Teacher, Vickery Creek School, US

“Authentic and real world problems are simulated and importantly, develop resilience by letting the student fail, re-evaluate then change their design, and try again.”

-Evan Bonser, ICT Integrator, TARA Anglican School for Girls, Sydney, Australia

“Planeteer’s blockly coding quests have been so much fun for the students... they are learning to code in 3D. It has certainly alleviated any hesitation when I hear the terms coding, algorithm, and computational thinking!!”

-Harper Andrew, ICT Teacher, Everett Public School, US

“Planeteers provides a fun, collaborative and engaging way for kids to explore and learn important fundamentals in STEAM. Students are highly engaged and the curriculum mapping and support materials are excellent.”

-Karen Parkinson, K-6 Teacher, Toronto, Canada
Learner Testimonials

“Makes learning fun!”

“I like it better than minecraft!”

“The block code is super cool!”

“I’m making robots!”

“Building stuff is my favorite!”

“I love earning the badges!”

“Awesome!”
Educational Benefits Summary

Planeteers delivers the following educational benefits:

Key Benefits:

- Highly engaging inquiry based quests and activities mapped to a comprehensive STEAM Learning Continuum.
- Teaches students open ended STEAM concepts and activities in a project based learning environment.
- Teaches design, innovation, problem solving, robotics and coding skills.
- Provides simulated 3D environments to explore real world phenomenon.
- Provides the opportunity to tinker, explore, and experiment.
- Engages students through positive play and educational gaming to enhance learning outcomes.
- Delivers important insights on learner activity, engagement and achievements via the Teachers Dashboard.