



PLANETEERS
A STEAM CRAFT ADVENTURE

SERIOUS GAMING IN THE CLASSROOM



STEAM Learning Continuum
Teachers Guide



PLANETEERS - STEAM LEARNING CONTINUUM

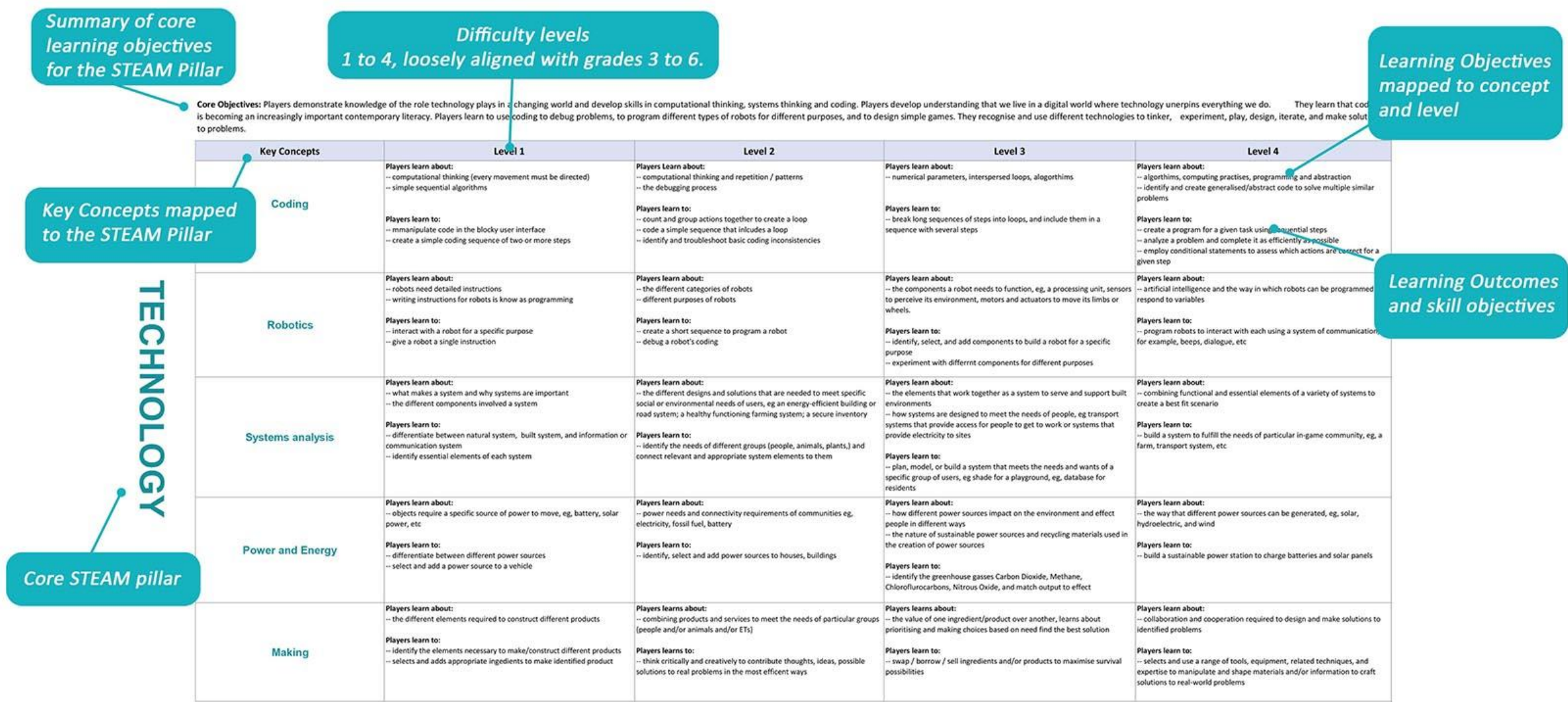
About.

Designed in collaboration with leading educators, the STEAM learning continuum is a sequence of skills that build in complexity from one level to the next. Initial skills provide the foundation of background knowledge necessary in order to begin learning skills at the next level. The learning skills are cumulative.

While engaging in planetegers, learners can work on educational quests and projects and build STEAM knowledge, skills and understanding, while collaborating with others. This is facilitated through the affordances of the game via quests and activities, factoids, quizzes, and self-directed learning.

How to read the continuum.

The infographic below illustrates how the learning continuum is organized, beginning with the STEAM pillar e.g. Technology, the core learning objectives, and then key concepts under this pillar. Each Key concept, for example Coding, is divided into 4 levels of complexity, loosely aligned with grades 3 to 6 with learning objectives and outcomes mapped to the concept level. These are in turn mapped to game quests and activities.



There is opportunity for players to develop 21st century skills through:

exploring | generating ideas | tinkering | experimenting | designing | constructing | prototyping | critical thinking | collaboration | communication | creativity.

PLANETEERS - STEAM LEARNING CONTINUUM

SCIENCE

Core Objectives: Players develop knowledge of natural and man made environment and skills in thinking and working scientifically, and by doing so develop an interest in science as a means of expanding their curiosity and willingness to investigate (explore), query (ask questions) and hypothesise (predict/speculate). Players explore changes in the world around them, including changes that impact on them, e.g. weather, and changes they can effect, e.g. making things move or change shape. Players learn that seeking answers to questions they pose and making observations is a core part of science and they use their senses to gather different types of information. Players identify, create, test, evaluate and document a range of design solutions to solve simple and complex problems to meet a range of needs.

Key Concepts	Level 1	Level 2	Level 3	Level 4
Earth and Space Sciences	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the effect of changes to the environment -- how humans use resources from the world around them -- the impact of human activity on the world <p>Players learn to:</p> <ul style="list-style-type: none"> -- observe and describe objects and events they encounter in the world -- organise observations and identify patterns -- make predictions about natural environment based on human activity 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- materials and resources and their different uses -- the extent to which humans can manipulate the environment, and the consequences of this, both positive and negative <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify and collect useful resources and objects -- manipulate and redirect objects and resources in the world based on predictions 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the nature and predictability of naturally occurring cycles -- the way in which humans can harness naturally occurring cycles <p>Players learn to:</p> <ul style="list-style-type: none"> -- discover and identify different uses of resources and objects in the world based on their experiments -- form hypotheses 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the impact of using naturally occurring cycles and the short-term and long-term consequences of doing so -- the aspects and functions of living and non-living things <p>Players learn to:</p> <ul style="list-style-type: none"> -- collect, organise and interpret data and identify where improvements to methods could improve data -- identify and develop sustainable practises for interacting with natural environment
Biological Sciences	<p>Players learn about:</p> <ul style="list-style-type: none"> -- interdependence and interactions with ecosystems -- how people interact with their environment <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify and classify living and non-living things -- experiment by interacting with living and non-living things to provoke reactions 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- resources specific to the STEAM Craft world -- manipulation of living and non-living things for identified purposes <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify specific uses for specific objects, living and non-living -- predict potential outcomes 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the complexities of classifications (not always easy to classify living, non-living objects, resources). -- resources with multiple uses /affordances <p>Players learn to:</p> <ul style="list-style-type: none"> -- recognise and identify multiple uses of individual living/non-living things and prioritise to make decisions based on immediate need 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- classification and form (the nature or make-up of an aspect of an object or organism) and function (the use of that aspect) through an exploration of the properties of natural and processed materials. <p>Players learn to:</p> <ul style="list-style-type: none"> -- compare and classify different types of observable changes to materials. -- develop hypotheses about form, function, process, to predict outcomes -- observe and describe objects and events they encounter in the world -- organise observations and identify patterns -- make predictions about natural environment based on human activity
Physical Sciences	<p>Players learn about:</p> <ul style="list-style-type: none"> -- nature of forces and motion, and matter and energy -- behaviours and properties of everyday objects <p>Players learn to:</p> <ul style="list-style-type: none"> -- recognise that forces can effect the behaviour of objects -- recognise that energy can be transformed and transferred from one form to another 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the components of simple systems -- the relationship between force & motion, matter & energy, and the ways in which these can be harnessed for a specific outcome <p>Players learn to:</p> <ul style="list-style-type: none"> -- experiment with cause-and-effect -- select and manipulate objects that can interact with each other for a specific purpose 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- manipulation of the flow of energy through simple systems <p>Players learn to:</p> <ul style="list-style-type: none"> -- combine energy, flow, and components to achieve a specific purpose -- identify and pose relevant questions and predict the answers 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- converting energy from one form to another -- the relationship between energy sources and energy consumption. -- effectively recording scientific process <p>Players learn to:</p> <ul style="list-style-type: none"> -- design investigations into cause-and-effect relationships. -- create design solution to solve identified need -- design and construct multimodal text to communicate ideas, methods, findings. eg, photo journal

SCIENCE

PLANETEERS - STEAM LEARNING CONTINUUM

TECHNOLOGY

Core Objectives: Players demonstrate knowledge of the role technology plays in a changing world and develop skills in computational thinking, systems thinking and coding. Players develop understanding that we live in a digital world where technology underpins everything we do. They learn that coding 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 design simple games. They recognise and use different technologies to tinker, experiment, play, design, iterate, and make solutions to problems.

TECHNOLOGY

Key Concepts	Level 1	Level 2	Level 3	Level 4
Coding	<p>Players learn about:</p> <ul style="list-style-type: none"> -- computational thinking (every movement must be directed) -- simple sequential algorithms <p>Players learn to:</p> <ul style="list-style-type: none"> -- manipulate code in the blocky user interface -- create a simple coding sequence of two or more steps 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- computational thinking and repetition / patterns -- the debugging process <p>Players learn to:</p> <ul style="list-style-type: none"> -- count and group actions together to create a loop -- code a simple sequence that includes a loop -- identify and troubleshoot basic coding inconsistencies 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- numerical parameters, interspersed loops, algorithms <p>Players learn to:</p> <ul style="list-style-type: none"> -- break long sequences of steps into loops, and include them in a sequence with several steps 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- algorithms, computing practises, programming and abstraction -- identify and create generalised/abstract code to solve multiple similar problems <p>Players learn to:</p> <ul style="list-style-type: none"> -- create a program for a given task using sequential steps -- analyze a problem and complete it as efficiently as possible -- employ conditional statements to assess which actions are correct for a given step
Robotics	<p>Players learn about:</p> <ul style="list-style-type: none"> -- robots need detailed instructions -- writing instructions for robots is known as programming <p>Players learn to:</p> <ul style="list-style-type: none"> -- interact with a robot for a specific purpose -- give a robot a single instruction 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the different categories of robots -- different purposes of robots <p>Players learn to:</p> <ul style="list-style-type: none"> -- create a short sequence to program a robot -- debug a robot's coding 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the components a robot needs to function, eg, a processing unit, sensors to perceive its environment, motors and actuators to move its limbs or wheels. <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify, select, and add components to build a robot for a specific purpose -- experiment with different components for different purposes 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- artificial intelligence and the way in which robots can be programmed to respond to variables <p>Players learn to:</p> <ul style="list-style-type: none"> -- program robots to interact with each using a system of communication, for example, beeps, dialogue, etc
Systems analysis	<p>Players learn about:</p> <ul style="list-style-type: none"> -- what makes a system and why systems are important -- the different components involved in a system <p>Players learn to:</p> <ul style="list-style-type: none"> -- differentiate between natural system, built system, and information or communication system -- identify essential elements of each system 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the different designs and solutions that are needed to meet specific social or environmental needs of users, eg an energy-efficient building or road system; a healthy functioning farming system; a secure inventory <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify the needs of different groups (people, animals, plants,) and connect relevant and appropriate system elements to them 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the elements that work together as a system to serve and support built environments -- how systems are designed to meet the needs of people, eg transport systems that provide access for people to get to work or systems that provide electricity to sites <p>Players learn to:</p> <ul style="list-style-type: none"> -- plan, model, or build a system that meets the needs and wants of a specific group of users, eg shade for a playground, eg, database for residents 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- combining functional and essential elements of a variety of systems to create a best fit scenario <p>Players learn to:</p> <ul style="list-style-type: none"> -- build a system to fulfill the needs of particular in-game community, eg, a farm, transport system, etc
Power and Energy	<p>Players learn about:</p> <ul style="list-style-type: none"> -- objects require a specific source of power to move, eg, battery, solar power, etc <p>Players learn to:</p> <ul style="list-style-type: none"> -- differentiate between different power sources -- select and add a power source to a vehicle 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- power needs and connectivity requirements of communities eg, electricity, fossil fuel, battery <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify, select and add power sources to houses, buildings 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- how different power sources impact on the environment and effect people in different ways -- the nature of sustainable power sources and recycling materials used in the creation of power sources <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify the greenhouse gasses Carbon Dioxide, Methane, Chlorofluorocarbons, Nitrous Oxide, and match output to effect 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the way that different power sources can be generated, eg, solar, hydroelectric, and wind <p>Players learn to:</p> <ul style="list-style-type: none"> -- build a sustainable power station to charge batteries and solar panels
Making	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the different elements required to construct different products <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify the elements necessary to make/construct different products -- select and add appropriate ingredients to make identified product 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- combining products and services to meet the needs of particular groups (people and/or animals and/or ETs) <p>Players learn to:</p> <ul style="list-style-type: none"> -- think critically and creatively to contribute thoughts, ideas, possible solutions to real problems in the most efficient ways 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the value of one ingredient/product over another, learns about prioritising and making choices based on need find the best solution <p>Players learn to:</p> <ul style="list-style-type: none"> -- swap / borrow / sell ingredients and/or products to maximise survival possibilities 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- collaboration and cooperation required to design and make solutions to identified problems <p>Players learn to:</p> <ul style="list-style-type: none"> -- select and use a range of tools, equipment, related techniques, and expertise to manipulate and shape materials and/or information to craft solutions to real-world problems

PLANETEERS - STEAM LEARNING CONTINUUM

ENGINEERING

Core Objectives: Players demonstrate knowledge of process, design, and skills in constructing solutions to complex problems. Players develop design thinking skills to design and construct a solution to an identified problem - simple or complex. They identify and select a variety of materials and processes to experiment, test, prototype, iterate and construct, individually and collaboratively, a range of possible solutions.

Key Concepts	Level 1	Level 2	Level 3	Level 4
Design process for innovation	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the different steps involved in design <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify needs and wants -- selects appropriate materials to meet a design need -- follow a pre-made design solution e.g. building a helicopter/car/boat 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the process involved in design, eg. combining the steps to form a process <p>Players learn to:</p> <ul style="list-style-type: none"> -- follow a structured design process to solve a problem -- identify and correct a problem in a design. e.g. Too heavy = Change material -- document simple steps in their design process 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the non-linear nature of the design process <p>Players learn to:</p> <ul style="list-style-type: none"> -- design solutions from a combination of materials, machines and forces to achieve a design goal -- identify prototype iterations on the way to a solution -- identify criteria for success -- modify a design to solve new/related problems 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the need to prototype, test, and reiterate as an essential part of the design process <p>Players learn to:</p> <ul style="list-style-type: none"> -- evaluate, communicate and negotiate design ideas and criteria for success -- collaboratively design a solution to a complex problem
Simple and Complex Machines	<p>Players learn about:</p> <ul style="list-style-type: none"> -- basic machines are designed for specific tasks. <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify individual parts of machines -- craft basic machine parts -- use basic machines suitable to solve specific problems 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- combining two or more basic machines can create a complex machine to change functionality <p>Players learn to:</p> <ul style="list-style-type: none"> -- experiment and test combinations of basic machines to build complex machine 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- apply machines in different contexts? <p>Players learn to:</p> <ul style="list-style-type: none"> -- apply machines in different contexts (vehicles, robots, machinery, various automated equipment, etc) 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- re-designing and simplifying machines <p>Players learn to:</p> <ul style="list-style-type: none"> -- Identify the essential functions of a complex machine and remove design inefficiencies
Food Production	<p>Players learn about:</p> <ul style="list-style-type: none"> -- humans have basic needs that include food -- plants and animals can be used for food and fibre production <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify elements that could be used for food -- create basic food to suit immediate needs 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- modern food production -- elements involved in farming processes <p>Players learn to:</p> <ul style="list-style-type: none"> -- create a range of complex food -- creates a range of food options for future needs e.g. starts a basic farm to harvest and process wheat 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- plant management for food -- animal management, including containment, for food and clothing <p>Players learn to:</p> <ul style="list-style-type: none"> -- construct fences and paddocks -- identify tools for use in farming -- create simple farms to produce a range of food 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- sustainable plant and animal management for food <p>Players learn to:</p> <ul style="list-style-type: none"> -- create self-sustainable food production systems with no impact on the environment -- design design and develop systems to manage and protect farms eg. program bots to protect and/or harvest crops
Natural and Built Environments	<p>Players learn about:</p> <ul style="list-style-type: none"> -- simple cause and effect relationships/interactions in the environment -- humans can create products from the environment <p>Players learn to:</p> <ul style="list-style-type: none"> -- identify/describe/create/manage simple 'natural' relationships -- demonstrates how purpose can impact design -- design local environment to meet immediate needs 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- simple relationships within the environment -- environmental impacts of human-created systems <p>Players learn to:</p> <ul style="list-style-type: none"> -- design environmentally integrated solutions -- design solutions that reduce impact on the natural environment 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- interdependent natural systems -- interdependent man-made systems <p>Players learn to:</p> <ul style="list-style-type: none"> -- design sustainable solutions utilising natural environments -- design connected environments 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- environmental systems -- how built environments can be designed to benefit natural environments <p>Players learn to:</p> <ul style="list-style-type: none"> -- design solutions to environmental problems to create a preferred future -- design solutions to improve the local environment/ecosystem

ENGINEERING



PLANETEERS - STEAM LEARNING CONTINUUM

ARTS

Core Objectives: Players demonstrate knowledge of design aesthetics and skills in design thinking. Players experiment with colour, pattern, perspective, light, shadow, and placement for artistic purposes. They develop their natural creativity to use design presentation aesthetics to enhance their environment. They use all senses to create a melodious and sensorial experience for themselves and other participants in the world.

Key Concepts	Level 1	Level 2	Level 3	Level 4
Colour and Style	<p>Players learn about:</p> <ul style="list-style-type: none"> -- colour can be used to improve the appearance of things -- different colours can create different moods <p>Players learn to:</p> <ul style="list-style-type: none"> -- experiment with different colours to improve aesthetics of objects -- test different tools to determine different colour effects 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- positive and negative space -- combining different colours can create different effects <p>Players learn to:</p> <ul style="list-style-type: none"> -- use a combination of colours to create patterns -- different application tools create different colour textures 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- the different ways colour and patterns can be used to create different styles eg, Art house, cubist, graffiti, etc <p>Players learn to:</p> <ul style="list-style-type: none"> -- use colour and textures to design and create a range of objects in different styles for different processes 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- about different purposes for different styles of aesthetics eg, camouflage (blend into environment), flouro (stand out from environment), and understands the reasons and puposes for this <p>Players learn to:</p> <ul style="list-style-type: none"> -- use available paint colours, brushes, buckets, to design and create objects in different environemnts for different purposes
Music and Sound FX	<p>Players learn about:</p> <ul style="list-style-type: none"> -- sequential movements can constitute a dance performance <p>Players learn to:</p> <ul style="list-style-type: none"> -- code bot to dance with a step and turn 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- design and the role it plays in combining artistic elements for creative expression <p>Players learn to:</p> <ul style="list-style-type: none"> -- isolate body parts (of robot and by extension - self) to identify individual movement -- combine movements with visual fx 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- combining different intruments to create different sound FX -- multisensorial storytelling benefit of combining sound fx with movement <p>Players learn to:</p> <ul style="list-style-type: none"> -- code melody and sound fx using the in-game instruments -- experiment with variety of instruments to create different noises 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- electronic music composition -- music, dance, and visual aesthetics <p>Players learn to:</p> <ul style="list-style-type: none"> -- compose sound FX for different purposes -- write, code and create narrative interaction between bots -- code bots with combinations of music composition and dance moves
Photography	<p>Players learn about:</p> <ul style="list-style-type: none"> -- take photos for different purposes -- photos can used as a record of memory <p>Players learn to:</p> <ul style="list-style-type: none"> -- use the camera tool to take photos -- organise photos into groups (classify) 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- viewpoint, perspective, and light in photography <p>Players learn to:</p> <ul style="list-style-type: none"> --take long-shot (panorama) and close-up photos during day and night -- annotate photos 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- focus, tracking objects in viewfinder, and capturing 'moments' <p>Players learn to:</p> <ul style="list-style-type: none"> -- takes photo of landscape, various creatures (incl. monsters) as they move around, and selfies. 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- creating multimodal texts to represent a journey and convey 'story' to communicate ideas, explanations and processes <p>Players learn to:</p> <ul style="list-style-type: none"> -- design and builds a photo journal to create a narrative within the game storyworld

ARTS



PLANETEERS - STEAM LEARNING CONTINUUM

MATHEMATICS

Core Objectives: Demonstrates knowledge of mathematical concepts and skills in investigating, representing and interpreting mathematical problems. Players think analytically and use reason and logic to interrogate, calculate, process, manage and represent data relating to their experience in the world. They collect, classify, and process data in a variety of formats.

MATHEMATICS

Key Concepts	Level 1	Level 2	Level 3	Level 4
Calculating	<p>Players learn about:</p> <ul style="list-style-type: none"> -- simple calculations that can be used to work solve simple problems in the environment -- functions including addition, subtraction of two-digit numbers related to objects in the environment. <p>Players learn to:</p> <ul style="list-style-type: none"> -- calculate solutions to problems using numbers and simple functions (+, -) -- use two groups of objects to determine "how many more" -- use visual representation of numbers when adding/subtracting (e.g. blocks) 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- calculations that can be used to work solve problems in the environment. -- manipulations of 3d objects <p>Players learn to:</p> <ul style="list-style-type: none"> -- calculate solutions to problems using numbers and functions -- measure and positioning of 3D objects -- combine a range of materials (blocks, poles, cylinders and other 3D objects) to build objects of certain shapes/sizes 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- a range of calculations can be used to measure and solve complex problems in the environment. <p>Players learn to:</p> <ul style="list-style-type: none"> -- produce creative solutions to problems using calculations that involve numbers, functions and related components, for example: -- measurement area for a specific purpose -- combining a range of materials to build unique objects and explaining reasoning -- explaining solutions to increasingly complex problems 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- a range of calculations such as average and median, range, maximum and minimum can be valueable <p>Players learn to:</p> <ul style="list-style-type: none"> -- produce innovative solutions to problems using complex calculations with numbers, functions and related components -- explain solutions to increasingly complex problems -- use increasingly complex visual representation of calculations to explain representations
Data	<p>Players learn about:</p> <ul style="list-style-type: none"> -- simple forms of data that can be drawn from the game environment <p>Players learn to:</p> <ul style="list-style-type: none"> -- describe data using simple observations -- design and create tallies based on frequencies -- identify maximum and minimum values 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- a range of data that can be drawn from the game environment. <p>Players learn to:</p> <ul style="list-style-type: none"> -- gather, describe and use data based on observations and descriptive statistics -- decript categorical variables, for example: simple binary codes (in either numbers or shapes) 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- a range of increasingly complex data that can be drawn from the game environment <p>Players learn to:</p> <ul style="list-style-type: none"> -- gather and represent data based on observations, descriptive statistics and simple multivariate analysis such as: averages and hypotheses 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- a range of complex data that can be drawn from the game environment <p>Players learn to:</p> <ul style="list-style-type: none"> -- describe and use data based on observations, descriptive statistics and simple multivariate analysis such as: averages
Shapes and Representation	<p>Players learn about:</p> <ul style="list-style-type: none"> -- simple representations of static phenomena in the game environment -- combination of shapes can create other shapes <p>Players learn to:</p> <ul style="list-style-type: none"> -- construct simple representations, visual and numerical, to describe in-game phenomena -- manipulate, sort, describe, various shapes in the environment 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- representations of static and changing phenomena in the game environment -- shapes and language that can be used to describe form and function of related objects <p>Players learn to:</p> <ul style="list-style-type: none"> -- construct visual representations to describe static and changing phenomena -- identify, record, and create a variety of 2d and 3d shapes for specific purposes 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- multiple representations of static and changing phenomena in the game environment -- language that can be used to describe features and purpose of objects in built environments <p>Players learn to:</p> <ul style="list-style-type: none"> -- construct and interpret increasingly complex representations to describe static and changing phenomena, drawing on data and calculations to support findings 	<p>Players learn about:</p> <ul style="list-style-type: none"> -- complex representations of changing phenomena in the game environment <p>Players learn to:</p> <ul style="list-style-type: none"> -- construct and interpret increasingly complex representations to describe changing phenomena, drawing on data and calculations to support findings. -- manipulates, sorts, and builds on, shapes using complex language, justifying design decisions

About: The Planeteers STEAM learning continuum is a sequence of skills that build in complexity from one level to the next. Initial skills provide the foundation of background knowledge necessary in order to begin learning skills at the next level. The learning skills are cumulative.

STEAM Educational Standards Mapping

The STEAM standards and concepts in the STEAM Learning Continuum and educational quests mapped to the Planeteers game have been informed by a range of syllabus and policy documents including but not limited to the new Australian syllabus documents, the New Zealand syllabus, the international ISTE standards, and the IFTF future work skills 2020 document.

The standards are phrased as "learn about" and "learn to" statements. The "learn about" statements pertain to knowledge that is acquired through the achievement of the standard in question, while the "learn to" statements pertain to skills that are developed. Standards are also mapped to key concepts for each of the STEAM pillars.



TEACHER RESOURCES FOR DOWNLOAD

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