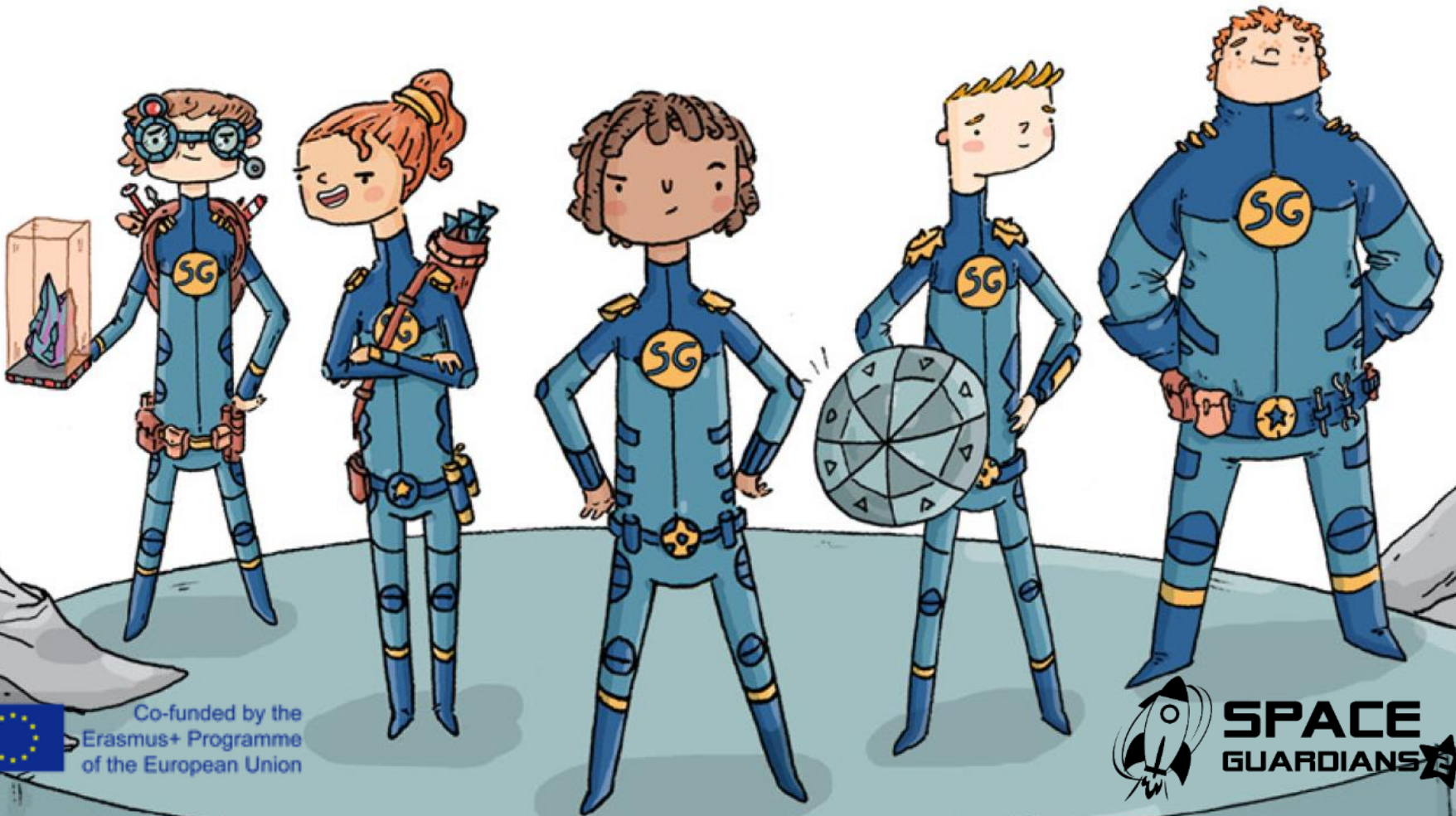


GAME INSTRUCTIONS



Co-funded by the
Erasmus+ Programme
of the European Union



**SPACE
GUARDIANS**

SPACE GUARDIANS 2

PROJ. Nº Project No: 2020-1-UK01-KA201-078865 | © 2021 all rights reserved

Title: Game Instructions

Project Activity: O2/A4. Game Board & Instructions (with improved versions)

Date: February 2023

Version: 1.0

Developed by: Advancis Business Services, Lda (Portugal)



Co-funded by the
Erasmus+ Programme
of the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

TABLE OF CONTENTS

INTRODUCTION

PLAYERS & MODES

PREPARING THE GAME

HOW TO PLAY THE GAME

- Stage 1
 - Objective & Learning Aims
 - Game Elements
 - Board
 - Construction Kit - Telescope
 - Quiz Pack
 - Rules
- Stage 2
 - Objective & Learning Aims
 - Game Elements
 - Board
 - Construction Kit – Spaceship
 - Quiz Pack
 - Rules

- Stage 3
 - Objective & Learning Aims
 - Game Elements
 - Board
 - Construction Kit – Scanner
 - Quiz Pack
 - Rules
- Stage 4
 - Objective & Learning Aims
 - Game Elements
 - Board
 - Construction Kit – Scanner
 - Quiz Pack
 - Rules

INTRODUCTION

The SG2 Board Game is a multiboard game, that takes the players on a knowledge journey through the Earth and space to find the origin of a transmission captured at the SG HQ.

The SG2 Board Game is inspired in the stories of the SG, a group of space explorers created under the previous SG project.

The Board Game has several boards that add to extend the game play as players progress, providing a more unpredictable character to the game that adds to its power to engage children in the process of learning about astronomy topics and STEM.

Each board (or **game Stage**) relates to a group of learning objectives under the Astronomy Literacy Framework developed in a earlier stage of the project SG2.

The learning process benefits from a set of learning mechanisms and contents to address astronomy topics and STEM-related aspects, including: videos, augmented reality, construction kit, game mechanics (e.g. roll of dice for mathematics, money for mathematics, cardinal points to use maps ...)

PLAYERS & MODES

- 1. Competitive play game:** game is played by 2 to 4 individual players that compete to reach the end of the game first. Each player has a marker and the achievements of one player is its own and does not benefit the others (with some exceptions, namely when the planet of origin of the signal is identified, that information becomes of general knowledge; the same with the scanning in the planet of origin, where opponents may gather information by watching the other players scan).
- 2. Combined play mode:** game is played by 2 groups that compete to reach the end of the game first. Each group is composed of 2 to 4 individual players represented by a single marker on the board that collaborate (e.g. discuss and agree on answer to quizzes, discuss and agree on a strategy to win the game, etc).

PREPARING THE GAME

1. The game is available here to download: <https://spaceguardians.eu/space-guardians-2-board-game>
2. Most of the game elements, such as the boards, cards, compass, player markers and other can be printed. We recommend that you laminate the materials, using a thermal lamination machine, so you can re-use them for longer.
3. The boards can be printed either in A4 pages or A3 pages. The A3 format is advisable for bigger groups of players but note that also takes more space
4. The construction kits may be created using the instructions available in the link above and resources like a 3D printer and some basic tools. In alternative, you may also use paper/cardboard replacements.

HOW TO PLAY THE GAME



STAGE 1



OBJECTIVE & LEARNING AIMS

OBJECTIVE

Collect 3 kit construction parts (telescope) and the assembly instructions, get back to the SG HQ and there build the telescope

LEARNING AIMS

Objectives 1 and 3 of the Framework for Astronomy Literacy:

1. The Earth And Its Representations
3. The Earth - Moon System

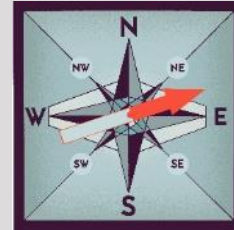
NOTE: please refer to the document “Learning Framework” available here:

<https://spaceguardians.eu/results>

GAME ELEMENTS



BOARD#1 *
Initial board with representation of Earth and Moon.



COMPASS
Spinning wheel to spin and point the directions North, South, East or West



PLAYER MARKERS
One per group or player, featuring SG characters or other elements



SMARTPHONE
Smartphone device with internet connection and a QR code reader app installed to watch videos



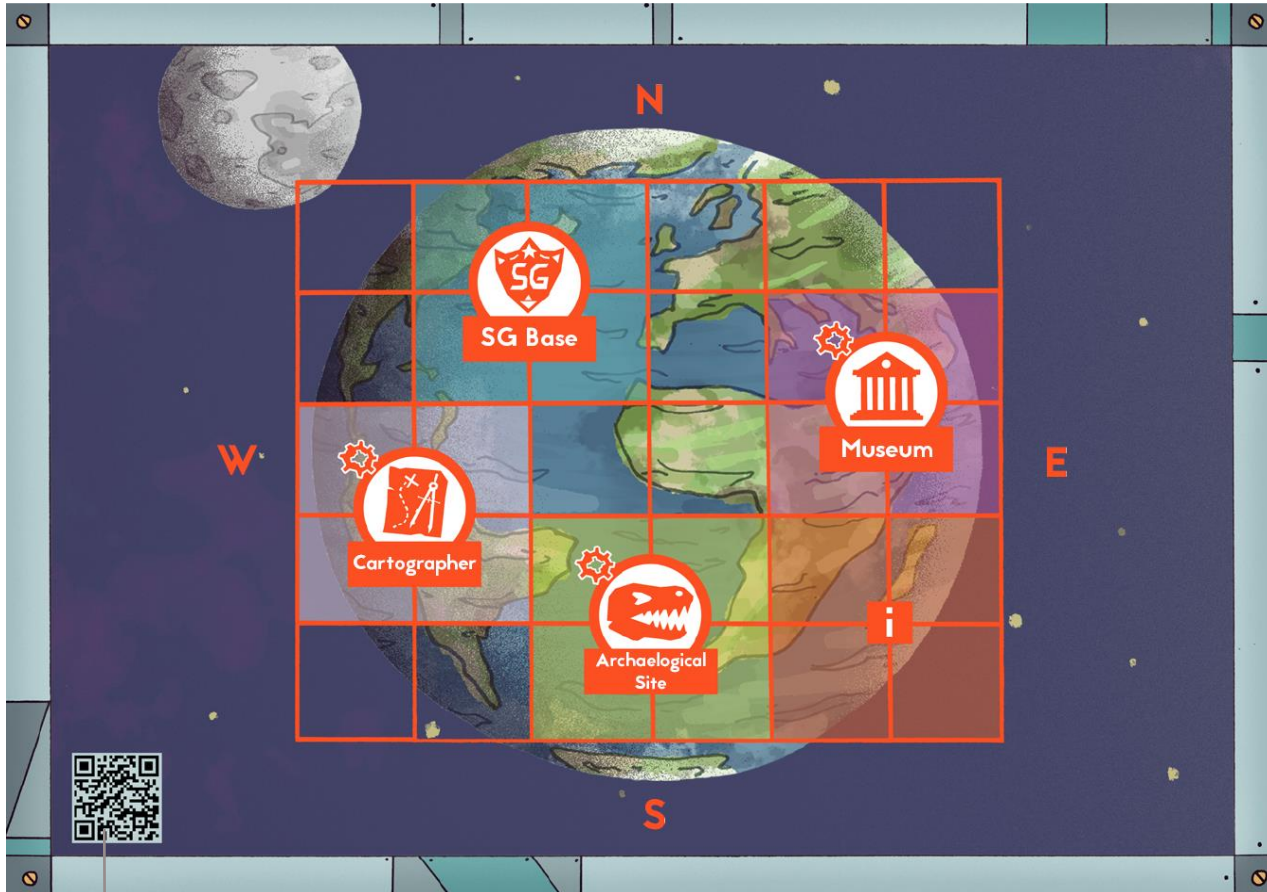
CONSTRUCTION KIT #1 – TELESCOPE *
Kit divided into 3 parts to construct, plus assembly instructions



QUIZ PACK#1 *
Pack of physical cards with questions and answers about the learning topics addressed in the Stage 1 of the game

** See more details in the next pages*

BOARD



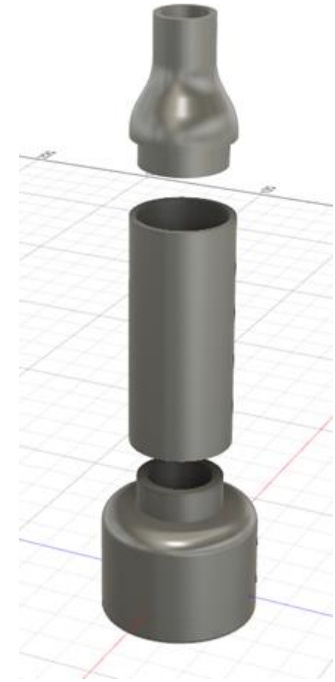
The QR code gives access to the introduction video of Stage 1 and others

BOARD

	<p>VIDEOS QR code to access Intro to the Stage and other content videos</p>		<p>SG BASE Where players start and have to end Stage 1</p>
	<p>CONSTRUCTION KIT INSTRUCTIONS Space where the instructions to build the telescope can be obtained</p>		<p>CARTOGRAPHER Where players can learn about topics related to maps and mapping from a video or other digital content. When landing here, players will have to watch the video, answer a question from Quiz Pack #1 to win the construction kit part.</p>
	<p>CONSTRUCTION KIT PARTS Signalizes where the parts for the construction kit of a telescope can be obtained. Each of these spaces awards one single part, so players must land in all these spaces to gather the parts needed.</p>		<p>ARCHAEOLOGICAL SITE Where players can learn about topics related to life on Earth from a video or other digital content. When landing here, players will have to watch the video, answer a question from Quiz Pack #1 to win the construction kit part.</p>
			<p>MUSEUM Where players can learn about topics related to Earth atmosphere, composition, etc. from a video or other digital content. When landing here, players will have to watch the video, answer a question from Quiz Pack #1 to win the construction kit part.</p>

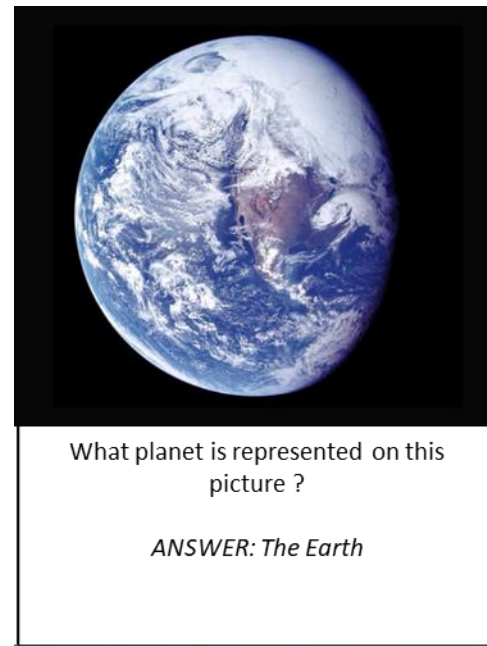
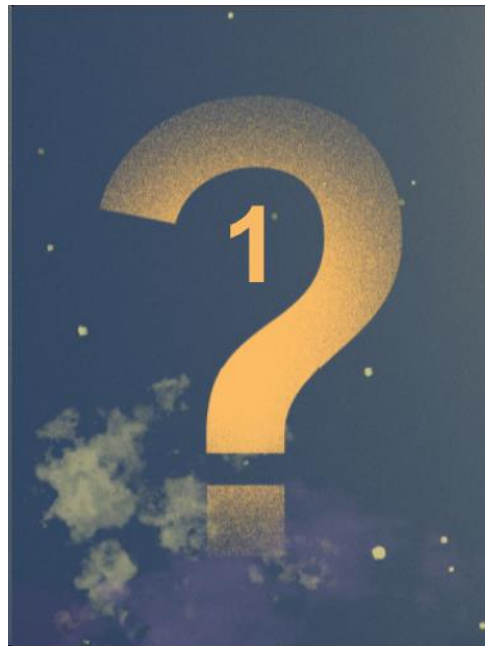
CONSTRUCTION KIT - TELESCOPE

1. The Telescope construction kit is a 3-piece object printed in 3D
2. The object may be printed using the support file ([available in the SG2 website](#)) as an additional activity to conduct with children, before start playing the game.
3. Instead of using the 3D printer, and for the sole purpose of playing the game, you may instead use a 2D representation available in the support file, print it and cut out the 3 parts before start playing the game.



QUIZ PACK

Includes cards with questions and answers about learning topics related to Stage 1 learning aims.



What planet is represented on this picture ?

ANSWER: The Earth

RULES

1. Watch the Intro Video by reading the QR code in the board
2. Each group or player (depending on the game mode) chooses a marker that will represent the game progression/place of the player in the board
3. The markers should initial be placed on the SG HQ space
4. Each group or player will play by turns
5. On its turn, the group or player spins the compass with the cardinal points and move along the lines of the grid in the direction pointed out by he spinning wheel (North, South, East, West). The marker can move along the whole line and either at the end of the line or at any of the intersections in-between.
6. If the compass points to a direction that the group or player cannot take (e.g. the marker is at the right edge of the grid and the spinner points to East), then the group or player cannot move and has to wait for the next turn to spin the wheel again.
7. The group or player starts in the SG HQ and has to visit all the other sights – Museum, Cartographer and Archaeological Sight. It is enough to enter the coloured areas associated with each of these sites.

RULES

8. In each of these sights - Museum, Cartographer and Archaeological Sight – the group or player as to watch a video and then answer a question from the Quiz Pack#1. The question should be read by an opponent or by the Team Leader (e.g. the teacher)
9. If the group or player answers incorrectly to the question, they may remain in the same place in the board and try to answer a new question when its turn comes up again and in that case it does not spin the wheel.
10. If the group or player answers correctly to the question, wins a part of a construction kit, and should then move to the other site in order to win the remaining 2 parts on the next turns. The total of 3 parts are needed to construct a telescope. The construction itself will be done during the next game stage, where instruction will be also provided.
11. The can collect the instructions to assembly the kit by landing on the **I** space.
12. After collecting the 3 parts of the construction kit (one per each of the existing spaces that award the parts) and the instructions, the group or player must return to the SG HQ and assembles the telescope to complete Stage 1 objective and move to Stage 2.

STAGE 2



GAME OBJECTIVE & LEARNING AIMS

OBJECTIVE

Collect 3 kit construction parts (spaceship) and the assembly instructions, and put the spaceship together

LEARNING AIMS

Objectives 2, 6 and 7 of the Framework for Astronomy Literacy:

- 2. The Earth - Sun System
- 6. Astronomy in our Daily Life
- 7. Working on Astronomy or Space Sciences

NOTE: please refer to the document “Learning Framework” available here:

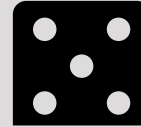
<https://spaceguardians.eu/results>

GAME ELEMENTS



BOARD#2 *

Board representing the SG HQ



2 DICE



PLAYER MARKERS

One per group or player, featuring SG characters or other elements



TOKENS

Tokens represent fuel cells that players can earn to use in Stage 3



CONSTRUCTION KIT #1 – SPACESHIP *

Kit divided into 3 parts to construct, plus assembly instructions



SMARTPHONE

Smartphone device with internet connection and a QR code reader app installed to watch videos and eventually access digital quiz cards

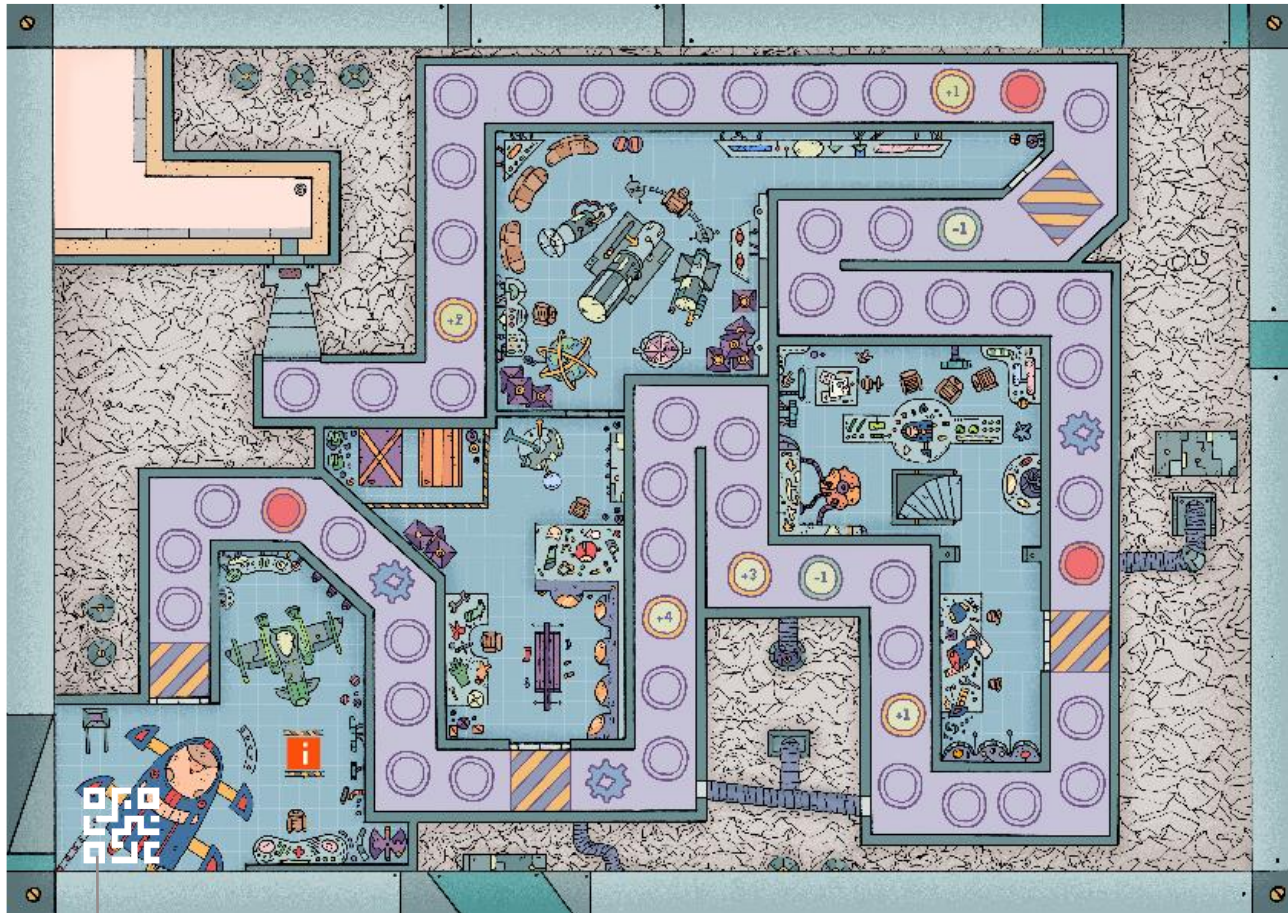


QUIZ PACK#2 *

Pack of physical cards with questions and answers about the learning topics addressed in the Stage 2 of the game

** See more details in the next pages*

BOARD



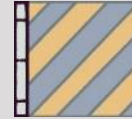
The QR code gives access to the introduction video of Stage 2 and others

BOARD



VIDEOS

QR code to access Intro to the Stage and other content videos



SECURITY DOOR

To go pass a Security door, the player must answer correctly a question from Quiz Pack#2



CONSTRUCTION KIT INSTRUCTIONS

Space where the instructions to build the spaceship can be obtained



WIN / LOSE TOKENS

In this space the player wins or loses the number of tokens indicated



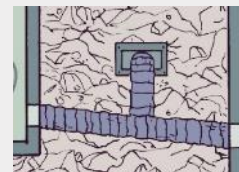
CONSTRUCTION KIT PARTS

Signalizes where the parts for the construction kit of a spaceship can be obtained. **Each of these spaces awards one single part, so players must land in all these spaces to gather the parts needed.**



GO BACK

When landing here, the player must go back to the previous Security Door



AIR CONDUIT

Offers a shortcut that players can take (there is only 1)

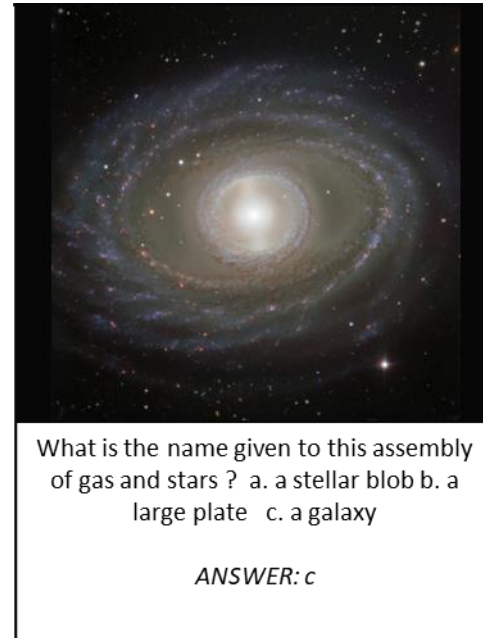
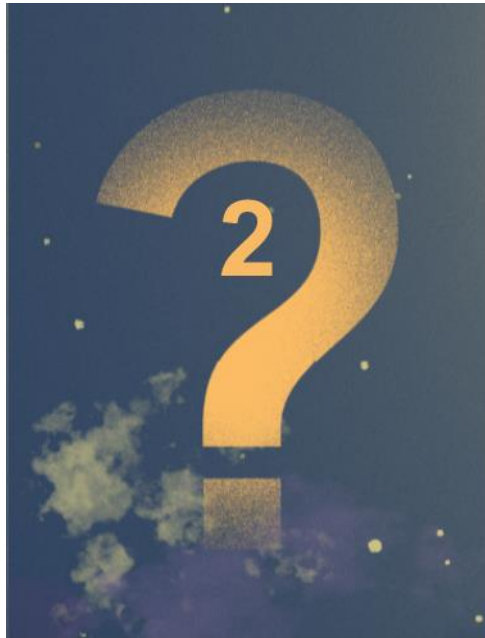
CONSTRUCTION KIT - SPACESHIP



1. The Spaceship construction kit is a 3-piece object printed in 3D
2. The object may be printed using the support file ([available in the SG2 website](#)) as an additional activity to conduct with children, before start playing the game.
3. Instead of using the 3D printer, and for the sole purpose of playing the game, you may instead use a 2D representation available in the support file, print it and cut out the 3 parts before start playing the game.

QUIZ PACK

Includes cards with questions and answers about learning topics related to Stage 2 learning aims.



What is the name given to this assembly of gas and stars ? a. a stellar blob b. a large plate c. a galaxy

ANSWER: c

RULES

1. Watch the Intro Video by reading the QR code in the board
2. The group or player (depending on the game mode) places the marker in the entrance image.
3. On its turn, the group or player rolls the 2 dice (2 to 12) advancing the corresponding number of game spaces.
4. When reaching a security door, the group or player must stop and answer a question from the Quiz Pack#2. Only by answering correctly the door opens and allows to continue on the next turn (player stays on the security door space for the turn, even if answering correctly to the question).
5. There are some special spaces that award the kit construction parts for the spaceship (3 in total) and others that give/take back tokens to the group or player.
6. There is also a space that makes players go back to the previous security door.
7. When passing a space that awards a kit construction part, the players must stop there to collect that part and rest there till their turn to roll the die comes again.
8. In the game trajectory there is a shortcut that the group or player may choose to take. However, taking the longer path maybe rewarding if the marker lands on 'token' spaces.
9. When reaching the last space on the board, the group or players get the instructions to build the spaceship. At that point the spaceship should be assembled, leading the game to Stage 3

STAGE 3



GAME OBJECTIVE & LEARNING AIMS

OBJECTIVE

Collect 3 kit construction parts (scanner) and the assembly instructions, and put the scanner together. Then go to the planet where the signal originates from.

LEARNING AIMS

Objectives 4 and 5 of the Framework for Astronomy Literacy:

4. The Solar System

5. The Universe

NOTE: please refer to the document “Learning Framework” available here:

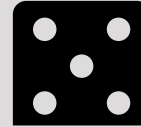
<https://spaceguardians.eu/results>

GAME ELEMENTS



BOARD#3 *

Board representing the Solar System, composed of 4 connected parts



2 DICE

To determine the number of tokens the player wins



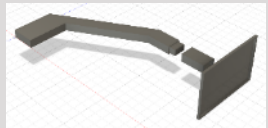
PLAYER MARKERS

One per group or player, featuring SG characters or other elements



TOKENS

Tokens represent fuel cells that players can earn to use no move on the board



CONSTRUCTION KIT #3 – SCANNER *

Kit divided into 3 parts to construct, plus assembly instructions



SIGNAL ORIGIN CARDS*

Pack of 7 cards, 6 blank and 1 symbolising the signal's origin and where player must land to progress to Stage 4 of the game



QUIZ PACK#3 *

Pack of physical cards with questions and answers about the learning topics addressed in the Stage 3 of the game

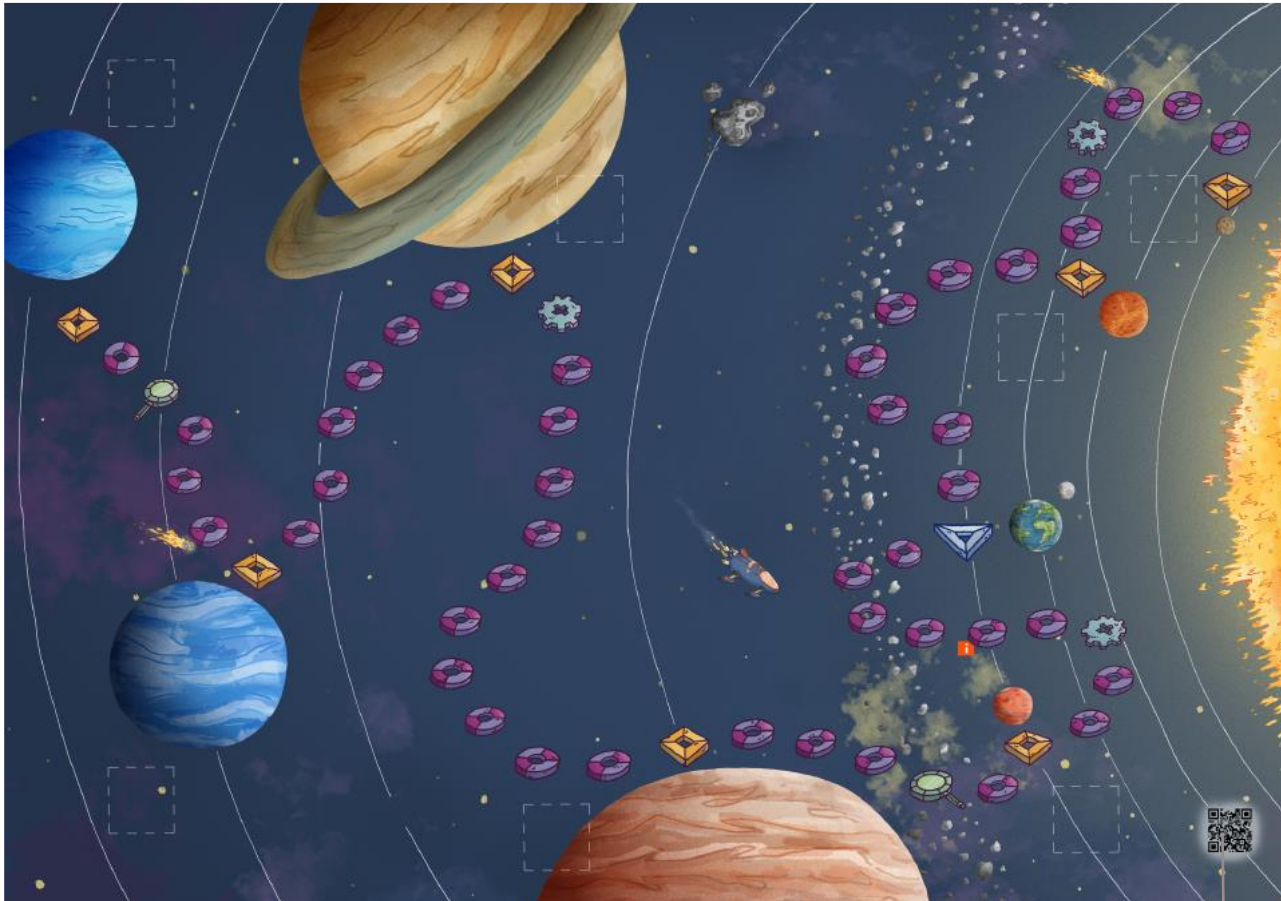


SMARTPHONE

Smartphone device with internet connection and a QR code reader app installed to watch videos and eventually access digital quiz cards

** See more details in the next pages*

BOARD



The QR code gives access to the introduction video of Stage 3 and others

BOARD



INTRO VIDEO
Intro to the Stage



START SPACE
Space next to Earth where the Stage 3 starts.
Place the player marker initially there.



CONSTRUCTION KIT INSTRUCTIONS
Space where the instructions to build the scanner can be obtained



PLANET ORBIT ENTRY
Here players may turn the Signal Origin Card on that planet to reveal if that is the planet where the signal is coming from or not. To turn the card over, players have to “pay” 2 tokens.



CONSTRUCTION KIT PARTS
Signals where the parts for the construction kit of a scanner can be obtained. **Each of these spaces awards one single part, so players must land in all these spaces to gather the parts needed.**



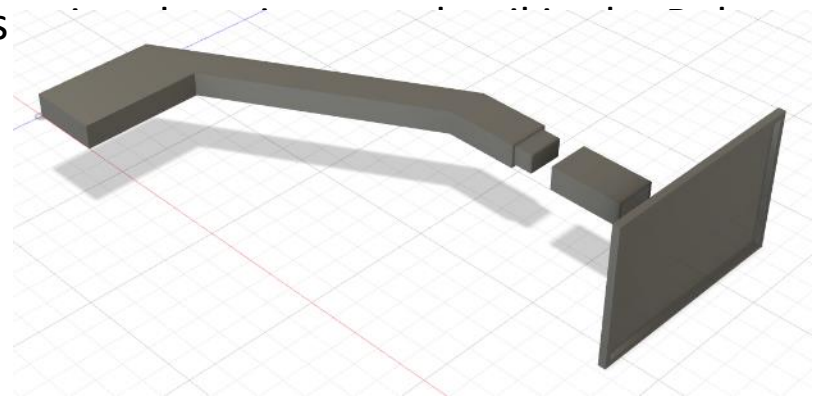
MAGNIFIER
This space amplifies SG1 sensors and allows players to pick any Signal Origin Card and turn it. It can only be used one time by each group or player.



COMET
There are 2 spaces on the board with a comet. Allows players to move from a space with a comet to the other, using only one token or fuel cell.

CONSTRUCTION KIT - SCANNER

1. The Scanner construction kit is a 3-piece object with 3D printed parts and electronic parts. This is a functional object that bips when finding a magnetised card (explained ahead in the rules how to use)
2. The object may be printed and assembled using the support file ([available in the SG2 website](#)) as an additional activity to conduct with children, before start playing the game.
3. Instead of using the 3D printer and electronic parts, and for the sole purpose of playing the game, you may instead use a 2D representation available in the support file, print it and cut out the 4 parts before start playing the game. If you use this option, there are some changes to how to play this Stage, as ahead.



QUIZ PACK

Includes cards with questions and answers about learning topics related to Stage 3 learning aims.



What is the name of this planet ?

ANSWER: Neprune

SIGNAL ORIGIN CARDS

Pack of 7 cards, 6 blank and 1 symbolising the signal's origin and where player must land to progress to Stage 4 of the game



RULES

1. Watch the Intro Video by reading the QR code in the board
2. The Signal Origin Cards should be shuffled and, without looking, they should be placed on the squares spaces next to each planet. One of the Cards indicates the origin of the signal that the group or players must find.
3. The group or player (depending on the game mode) places the marker in the “start” space on the board.
4. The group or player play by turns.
5. To move across the path, the group or player must spend tokens (representing fuel cells). One token corresponds to one space.
6. The movement is free – the marker can go as far as the tokens the group or player wants to spend and the marker can change direction in different turns (towards the sun or away from the sun)
7. To win tokens, the group or the players must answer correctly to a question from Quiz Pack#3.
8. If the answer to the question is correct, the group or player have to roll the 2 dice that dictates the number of tokens they win.

RULES

9. In each turn, the group or players may only move or answer a question, and not both.
10. To check if a planet is the origin of the signal, the group or players must land on the planet space (in different colour) and pay 2 tokens to land.
11. There are some special spaces that award the kit construction parts for the scanner (3 in total), others that allow the players to have a peek into one (any) Signal Card placed on a planet, and one that provides the instruction to build the scanner.
12. When the group or the player has the scanner assembled it should go to the Planet where the signal comes from to progress to Stage 4.

STAGE 4



GAME OBJECTIVE AND LEARNING AIMS

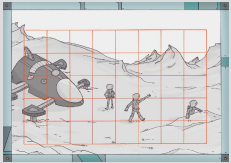
OBJECTIVE

Find the signal on the Planet's surface.

LEARNING AIMS

None specific aim. The use of the scanner can have a broad learning objective and spark the interest about STEM topics.

GAME ELEMENTS



BOARD#4 *

Board representing the missing part of the Solar System, composed of 3 elements that add to Board#1



WIN CARD

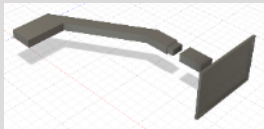
This card should only be flipped by the winner, showing a QR code with the final game video



SIGNAL CARDS 2*

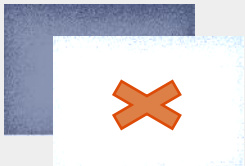
Pack of 40 cards, including:

- 2 symbolising the signal's origin/emitter. These cards have a QR code to access the final video
- 38, with 19 matching pairs, with astronomy motifs.



SCANNER

Assembled and functional scanner

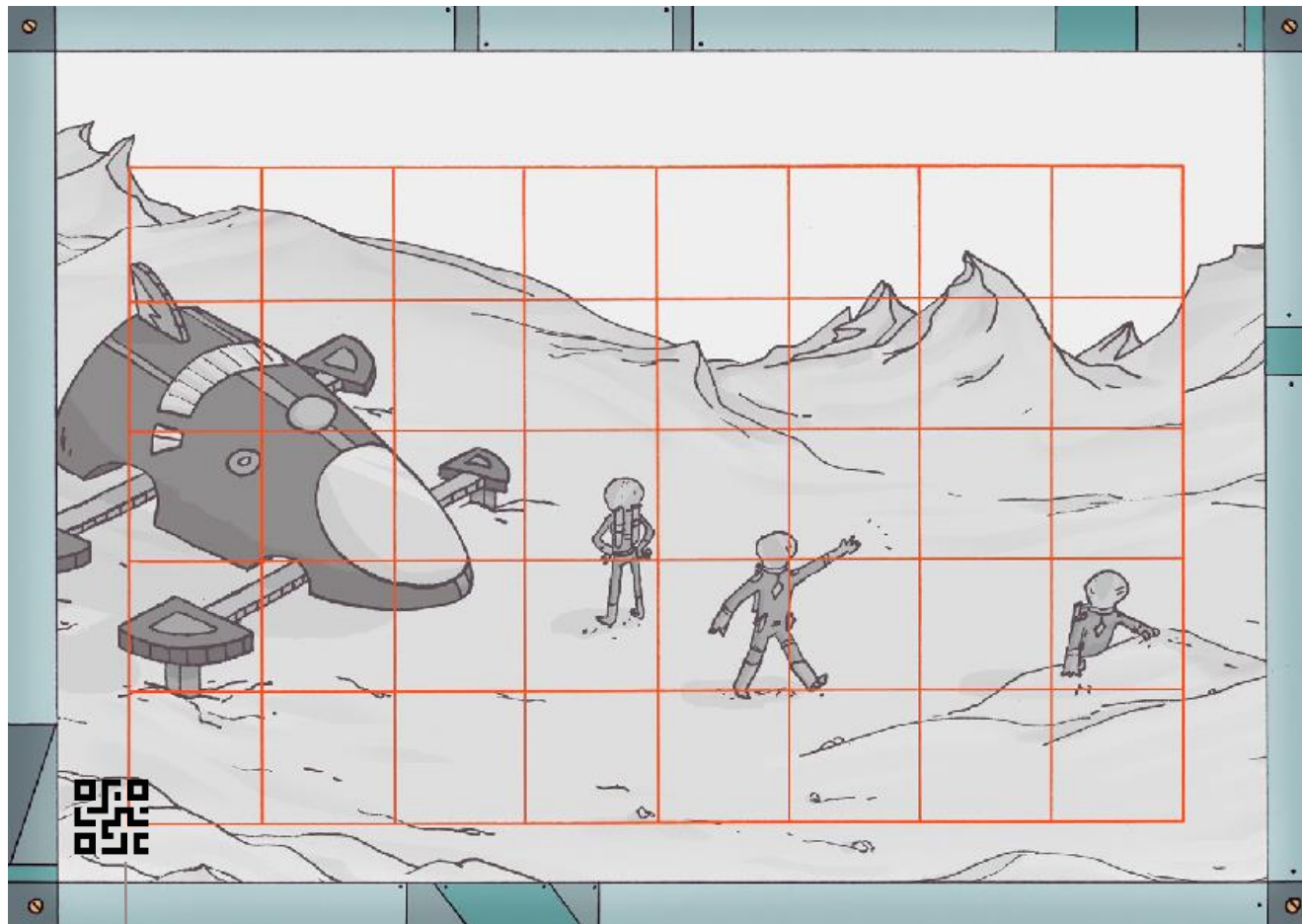


SCAN CARDS (TO USE WITH SCANNER)

- (paper version) 1 with an 'x' that results in missing a turn when drawn, and 2 blank cards with no consequences for players
- (digital version) 1 card that 'beep', meaning the player lose their turn and 2 cards that don't beep

* See more details in the next pages

BOARD

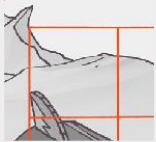


The QR code gives access to the introduction video of Stage 4 and others

BOARD



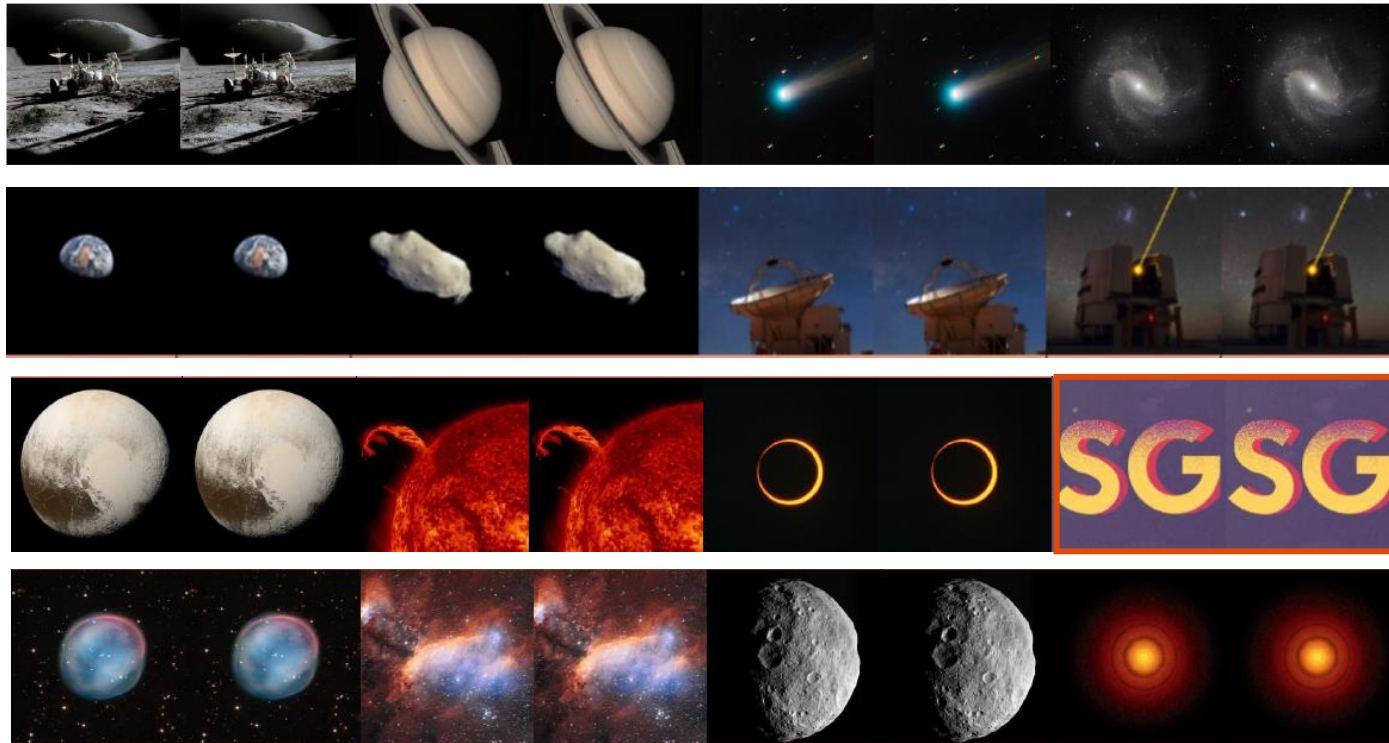
INTRO VIDEO
Intro to the Stage



SPACES TO PLACE THE SIGNAL ORIGIN CARDS
General videos and or other digital contents
(holograms, etc.) for viewing at any point of the
game play.

SIGNAL ORIGIN CARDS 2

- There are 40 cards in total
- Two of the Cards indicate the origin of the signal that the group or players must match



RULES

1. The Signal Cards Pack should be shuffled and, without looking, they should be placed on the squares spaces on Board#4. Two of the Cards indicates the origin of the signal that the group or players must find
2. The Scan Cards should then also be shuffled and place in front of the players.
3. The group or player (depending on the game mode), on its turn, may flip 1 Scan Card. If the scan card is 'blank' (paper version) or does not 'beep' (digital version) then they can proceed to find the matching pair of signal by flipping 2 cards from the Cards Pack. Whenever players get a matching pair in their turn, they win another turn, i.e., they may flip other 2 cards till they are unable to form a pair
4. Whenever pairs are matched, the corresponding cards will remain with their face up
5. Whenever the 2 cards turned are not a match, the cards should be flipped again on their backs before the other players make their move (players should try to mentally record the cards they have flipped, and the opponent team may observe and also do the same)
6. If the players flip, in the same turn, both the signal cards, game ends and they will be winners.
7. There is a new QR code for the video that closes the game.

