FEMSTEAM MYSTERIES: STEAM SCENARIO

Title

Could I become a game designer?

Authors

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Summary

The main objective of the scenario is for students to reflect on the challenge of becoming a game designer by going through the following three phases:

- *Designing a game where they are asked to imagine real objects, observe the figures they can find in the playground of the school, analyse the geometric properties of these figures, create these 3D figures from their 2D development, create a virtual reality game, code it using the coSpaces educational application (https://cospaces.io/edu) and play with it.*
- *Testing the FemSTEAM Mysteries game and comparing its features with those of the game they have created, with the aim to analyse how they can improve their own game.*
- *Reflecting on the role-model learning provided by FemSTEAM Mysteries, which could help them to break the traditional STEM stereotypes and to infer if students want to continue studying STEAM subjects and if they are challenged to pursue STEAM vocation.*

The expected learning outcomes are:

- *To value and respect the differences and the equality of rights and opportunities between genders, and to reject stereotypes that discriminate between men and women.*
- *To develop basic skills in the use of information sources in order to acquire new knowledge with a critical sense.*
- *To develop basic technological competences and to advance in an ethical reflection on their operation and use.*
- *To come to appreciate scientific knowledge as an integrated form of knowledge structured in different disciplines*
- *To be familiarised with and apply scientific methods to identify and tackle problems in the different fields of knowledge and experience.*
- *To develop entrepreneurial spirit and self-confidence, participation, critical sense, personal initiative and the ability of learning to learn, plan, make decisions and assume responsibilities.*
- *To appreciate artistic creation and understand the language of different artistic manifestations, using different means of expression and representation.*

The driving question intended to guide the entire scenario is: "Could I become a game designer?"

Subjects

The STEAM subjects taught in this scenario are:

- Plastic, Visual and Audio-visual Education will give students the appreciation of artistic creation when imagining real objects, and the visualisation of these objects as figures of reality.
- Mathematics will give students the capacity of the mathematization, modelling and analysis of the properties of real objects as geometric figures in 2D and 3D space, and it will provide them with the tools of computational thinking to code the game.
- Technology and Digitalization will provide students with the knowledge and tools to codify, test and analyse virtual reality games.

Real- life questions

The driving question intended to guide the entire scenario is: "Could I become a game designer?"
This driving question leads to the following questions:

- Which properties does the digital form of a real object have?
- How can we create a 3D figure from its flat development?
- Which are the characteristics of figures in three dimensions?
- Which is the area and volume of the figures that we have found in the playground?

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- How should we create a virtual game that emulates an exposition in the playground?
- How should we code our virtual game?
- What is the FemSTEAM Mysteries game about?
- What are we going to learn from playing this game and how is this going to help us improve our own game?

After designing their own game and experimenting with the FemSTEAM Mysteries game, students will also be asked to reflect on the following real-life questions:

- How does the game help to break gender stereotypes about the presented STEAM role-models?
- Have the role-models presented in the game inspired you to continue your studies in STEAM subjects, and if yes how?
- What have you learned from the design, implementation and evaluation of our own game?
- How hasthe FemSTEAM Mysteries game evaluation helped you to improve your own game?
- Has the design of your own game and the experimentation with the FemSTEAM Mysteries game increased your interest in pursuing a career in the field of game design?

Aims of the scenario

The main objective of the scenario is for students to reflect on the challenge of becoming a game designer. The scenario aims for students to: (i) imagine real objects through their digital design, to observe the figures that they can find in the playground of the school; (ii) analyse the geometric properties of these figures, (iii) create these 3D figures fromtheir2D development, (iv)create a virtual reality game and code it using the coSpaces educational environment (https://cospaces.io/edu/), (v) play with and test their game, (vi) play with and evaluate the FemSTEAM Mysteries game, (vii) compare the features of the FemSTEAM Mysteries game with those of their own game in order to improve it. At the same time, students' engagement with the FemSTEAM Mysteries game aims to encourage students to reflect on the role and contribution of both men and women in STEAM education and to overcome any gender-related STEM stereotypes they might have, and to motivate them to continue studying STEAM subjects and to pursue STEAM vocations.

Connection to STEAM careers

The scenario aims to promote the development of these main skills: imagine, observe, create, analyse, code, test and reflect through the engagement in team-works with an equal distribution of boys and girls.
The skills of imagination and observation will be developed in Plastic, Visual and Audio-visual education. This subject integrates all the dimensions of the image, its form. The image, which can be two-dimensional or three-dimensional, and either concrete or virtual, is shown from the different techniques that have been using technologies in the expansion of the registers of creation.
The skill of analysis and reflection will be developed mainly in the subject of mathematics. The real-life questions posed will guide the problem-solving process: formulating conjectures, reasoning mathematically, establishing connections between different areas of mathematics, and between mathematics and the other subjects, connecting mathematics to the real world, using technological tools to support the problem-solving process. Particularly, problem solving will involve processes of application of mathematical strategies, evaluation of the process and verification of the validity of the solutions through playing the game developed. Students will be engaged in developing their computational thinking by searching for solutions in sequences of ordered steps and by obtaining solutions with instructions that can be executed by the Scratch blocks included in coSpaces.
The skills of creation, codification, and testing will be developed in the Technology and digitalization subject, which will provide students with the opportunity to engage in problem solving project-based learning, to develop their computational thinking, to use digital technologies in the learning process, to experience interdisciplinary nature of technology and its contribution to the achievement of Sustainable Development Goals and connection with the real world, as well as to develop transversal skills and competences such as creativity, cooperation, sustainable technological development or entrepreneurship.
Through the integration of the different activities, students can analyse the transdisciplinary nature of the three STEAM subjects (Arts, mathematics and Technology) and they can reflect on the potential career path to becoming a game designer. The scenario will provide students with an initial vision of the “degree on video game design and development”, a non-stereotyped and unbiased view of the work of a team of engineers (females and males), and a distinction between the artistic and the computer profile of game design.

Age of students

13 years old

Time

Preparation time: 1 hour
Teaching time:

- **Preparation: 1 hour**
- **Plastic, Visual and Audio-visual education: 2 hours**

- **Mathematics: 3 hours**
- **Technology and Digitalization: 4 hours**

Teaching resources (material & technological tools)

Materials: *cardboards, glue and scissors.*

Online tools: *coSpaces (https://cospaces.io/edu/), YouTube, Google classroom, Google Forms.*

21st century skills

This educational scenario will enhance among the students the following skills, defined as 21st century skills:

- Critical thinking through the testing of the two games, the game developed by the students and the FemSTEAM Mysteries game, and reflection on the biographical facts of the FemSTEAM Mysteries role-models and potential to become a game designer.
- Communication through the expression of the figures that they have visualized, the description of the properties of the figures, the coding language of the game.
- Collaboration through the application of different techniques and roles of team work with an egalitarian gender approach.
- Creativity in the design of the game about the exposition in the playground.

Teaching approaches and learning strategies/theories

The main pedagogical approach is design-based learning, consisting in the integration of design thinking and the design process. Design thinking includes the strategic and practical processes by which the design concept of the game is developed. Design thinking, as an iterative, non-linear process, includes activities such as: context analysis through the visualisation of the real objects and figures of the playground, problem finding of the different real-life questions that guide the scenario, ideation of the game, sketching and drawing of the characters and objects of the game, game prototyping and evaluation. Design process with the stages of design brief, analysis of design goals of an exposition in the playground, research of similar design solutions that can be found in coSpaces, design of solutions and problem solving, coding using Scratch blocks, testing, implementation and evaluation and drawing of conclusions.

Educational scenario

Name of activity	Procedure	Time
1st Lesson		
Brainstorming and discussion	Brainstorming and discussion around the question that guides the scenario: *Could I become a game designer?*	20 minutes
Discussion and preparation for the next lesson	Discussion on which would be the process of designing and implementing a game about a geometrical exposition in the school playground	40 minutes
2nd Lesson		
Plastic, visual and audio-visual education	*Visual analysis of the digitalized models of reality. Concrete and virtual images of reality.* *Abstraction of the two-dimensional and three-dimensional figures in the courtyard.*	1 hour

Name of activity	Procedure	Time
Learning products	*Annex I. Visual analysis of reality. Task 1*	
3rd Lesson		
Plastic, visual and audio-visual education	Creation of three-dimensional figures from their flat development	1 hour
Learning products	*Annex I. Visual analysis of reality. Task 2.*	
4th Lesson		
Mathematics	Analysis of the properties of figures in three dimensions	1 hour
Learning products	*Annex 2. Mathematical analysis of 2D and 3D figures. Task 1.*	
5th Lesson		
STEAM Subject 3	Calculus of areas and volumes of figures that had been found in the playground	1 hour
Learning products	*Annex 2. Mathematical analysis of 2D and 3D figures. Task 1.*	
6th Lesson		
Technology and digitalization	Creation of the coSpaces virtual scenario of the school playground	1 hour
Learning products	*Annex III. Coding our game. Task 1.*	
7h Lesson		
Technology and digitalization	Design and codification of the characters that explain the geometric figures of the playground	1 hour
Learning products	*Annex III. Coding our game. Task 2.*	
8th Lesson		

Name of activity	Procedure	Time
Technology and digitalization	Design and codification of the three dimensional (3D) geometric figures that we place in the different fields of the playground	1 hour
Learning products	*Annex III. Coding our game. Task 3.*	
9th Lesson		
Technology and digitalization	Task 1. Deliberate discussion about the FemSTEAM Mysteries game Task 2. Play with FemSTEAM Mysteries game Task 3. Administration of a questionnaire inquiring about the FemSTEAM Mysteries gaming process	2 hours
Learning products	*Annex 4. Playing and testing with FemSTEAM Mysteries game. Tasks 1, 2 and 3.*	
10th Lesson		
Mathematics	Task 4. Discussion about the role of the game	1 hour
Technology and digitalization	Task 5. Improvement of the game design.	1 hour
Learning products	*Annex 4. Playing with and testing the FemSTEAM Mysteries game. Tasks 4 and 5..*	
11th Lesson		
Mathematics	Self-assessment and co-assessment of the design thinking and design process learning.	1 hour
Learning products	*Annex 5. Evaluation*	

Assessment

Initial assessment

The initial assessment is done through observation during the brainstorming and discussion around the question that guides the scenario: *Could I become a game designer?*

Formative evaluation

Given the fact that the scenario is an iterative design based-research, the formative evaluation is done in all the sessions, but specially in lesson 10th.

Final assessment

Final assessment is included in "Annex 5. Evaluation" and consists of the self-assessment and co-assessment of the design thinking and design process learning.

Student feedback

Some feedback about the collaborative nature of the scenario:
Coordinator: "I had fun with the game because it is a different way of teaching maths and to do the game it was necessary to learn maths and do activities. The evaluation has been fun because we have seen other classmates' work and our final work".
Spokesperson: "He made an effort but did some things regularly in terms of coding, but he worked hard".
Feedback about the strengths of the game developed by the students:
GR3 "the interaction and the capabilities that the game allows, also the movement, the bilingualism used by most of the teams, all or almost all are presented by a character so that the purpose of the game is known. Most of them have tables where the concepts are developed and explained with an image that favours the understanding of the information".
Feedback about the improvements of the game developed by the students
GR2. *"With better organisation and more effort, since coSpaces has many, many more ways of interaction and there are many more skills and actions that could moderately improve the game and make it a more fun space in which to play and learn".*
Feedback on what students have learned from the FemSTEAM Mysteries game
GR1. "The goal of the game is to get all the proposed items, as well as, to overcome all the stages of it, and to realise the errors that the game has".
GR2. "I have learned about escape rooms, the most important characters in science and I had never played one of them". Learn about FemSTEAM scientists and artists and at the same time be able to have fun while we learn, making it so that when we have to find out clues we will concentrate and remember what we have played.
GR3. "I have learned how a game is created in a very short time, to know how to use logic more than theory".
GR4. "We have learned to test games, to solve clues by applying the STEAM subjects"
GR5. "It's very interesting and I have learned that both genders are equal". "Know more about role models that have increased society knowledge and equality".
GR6. "How to move in a virtual world". To learn more about important people that have improved our society and knowledge.
GR7. "Knowing that all people can do any job regardless of gender".
GR8. "Learn more about important and famous mathematicians''

Feedback on how students will use the testing and assessment to improve the design of the game
GR1. "To be aware of the design capabilities that exist with just one application and to realise how to learn based on a video game. Also, to improve designs and use 3D realities"
GR4. "Using the errors found in order not to make the same mistakes, such as font size, mobility, colours...".
GR9. "To improve the design and look of the game''.

Teacher feedbac

Feedback of the Plastic, Visual and Audiovisual teacher
“Students presented difficulties in imagining and visualising real objects to identify the main geometric figures. However, they enjoyed the manipulative actions of converting the flat developments to3D figures”
Feedback of the Mathematics teacher
“As it has been expressed by the students’ engagement and enjoyment of geometry was fulfilled integrating its learning in the scenario”.
Feedback of the Technology and digitalization teacher
“The manual prepared to codify the game using techniques and roles of team-work was an innovative resource that helped students to feel as a team of engineers designing a game”.

Annexes

Annex 1. Visual analysis of the digitalized models of the reality
Annex 2. Mathematical analysis of 2D and 3D figures
Annex 3. Coding our game
Annex 4. Playing with and testing of the FemSTEAM Mysteries game
Annex 5. Evaluation

Annex I. Visual analysis of the digitalized models of the reality

Task 1: We Imagine and observe the reality

Objective:

- To Visualise and to analyse digital models of the reality

1. Go to the following website:
   https://www.imaginary.org/es/gallery/herwig-hauser-clasico
   Read the pages and answer the following questions
   - Zitrus (Lemon)
     - What is a mathematical model and what is it used for?
     - What are equations for?
   - Diabolo (Diabolo)
     - What does it mean that the portion is symmetrical?
     - What are the names of the figures that are obtained by rotating a curve?
   - Distel (Flash)
     - How many ways are there to coat a flat surface with tiles? Where did they discover it?
     - What other three-dimensional research uses these same research strategies?
   - Dullo (Apple)
     - What example of physics can be modelled using the equation of an apple?
   - Kreisel (Gyroscope)
     - What is a specular symmetry?

2. Think:
   Do the target and its shadow form a specular symmetry?

3. Let's mathematize, looking at the reality of our yard:
   Look at two-dimensional and three-dimensional figures in the courtyard and complete the following table:

Description of the object	Number of dimensions	Name of the figure

Task 2: We create from two to three dimensions

Objective:
Create three-dimensional figures from their flat development

1. Select two 3-dimensional figures per team member (polyhedral, pyramids, round bodies).
2. Each team member should:
    a. draw the flat development of each of the figures,
    b. cut the flat development of each of the figures,
    c. paste it so that the corresponding figure is obtained in three dimensions.

Annex 2. Mathematical analysis of 2D and 3D figures

Task 1: To Analyse the characteristics of figures in three dimensions

OBJECTIVE:
To Analyse the characteristics of the figures in three dimensions

1. Watch the following video carefully from 0:00 to 4:37:
   https://youtu.be/ePY7KXkykNI
   Respond to the following questions:
   What elements does a polyhedron have?
   What conditions do regular polyhedral meet?
   How many and what are the regular polyhedral?
   What is Euler's formula that relates the number of vertices, faces, and edges?

2. With the help of what you learned in the video and your textbook, analyse and write down the characteristics of the polyhedral you built yesterday:
   - What is the name of the figure?
   - What are their regular, semi-irregular or irregular faces like?
   - Is it a prism or pyramid?
   - Is it a convex or concave polyhedron?
   - Is it straight or oblique?
   - What is the number of vertices?
   - What is the number of edges?
   - What is the number of faces?
   - Does it meet the Euler characteristic? (Check numerically)

3. With the help of your textbook, analyse and write down the characteristics of the round bodies you built yesterday:
   - What is the name of the figure?
   - Which figure rotates?
   - What properties does its axis fulfil?
   - What is generatrix?
   - How tall is the radius of the base?
   - How tall is it?
   - How tall is the generatrix?
   - In the case of the cone, do the radius of the base, height and generatrix meet the Pythagorean Theorem? (Check it out)

Task 2: Areas and Volumes of Everyday Figures

Objective:
Calculate areas and volumes of the figures that we have found in the playground

1. Analyse and describe the characteristics of each of the everyday objects that you have found in the playground from (name, type of 3D figure, properties)

2. Calculate the lateral area and volume of each of those objects

Annex 3. Coding our game

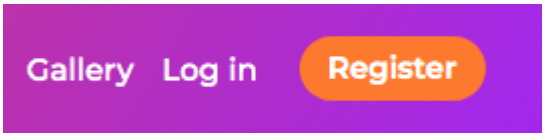
Attention in this work you will have different functions according to the team work roles. It lasts three class sessions plus the time you invest at home.

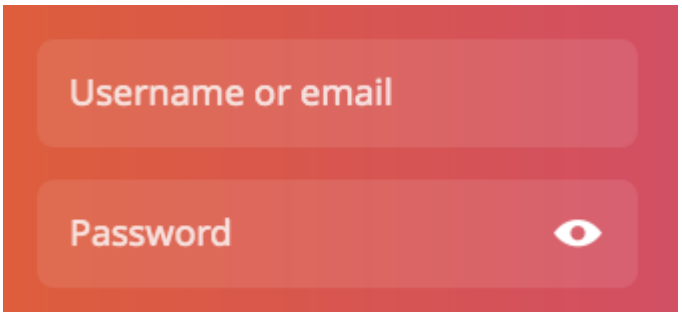
Task 1: We create the scenario

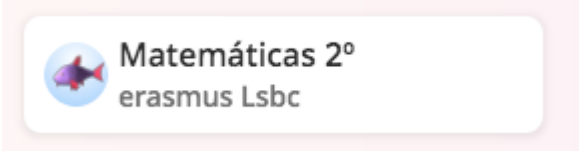
Work for the team secretary

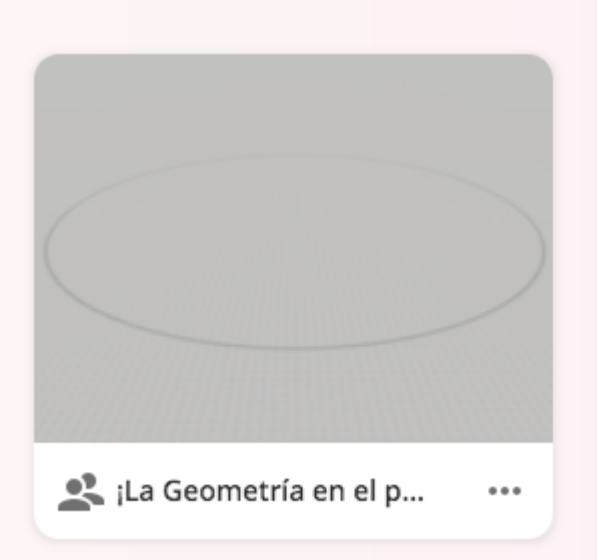
The secretary shares this document with the rest of his or her teammates. The objective is to ensure that everyone knows what they should do and how the information should be delivered to facilitate the group work

Work for the team coordinator

1. The team coordinator must access the CoSpaces website: https://cospaces.io/edu/
2. Log in 

3. Enter the username and password that your teacher has provided 

4. Enter 2nd grade mathematics 

5. Enter your assignment: 

Work for the organiser and team spokesperson

1. We watch the following video on how to create a scenario: **https://youtu.be/bDu19TUbqxA**
2. The spokesperson and the organiser think about how to explain to the coordinator and secretary how they should create the stage of the schoolyard.
   Note: the 360º photograph is in the classroom.

TASK 2: WE CREATE CHARACTERS THAT EXPLAIN THE GEOMETRIC FIGURES OF THE PLAYGROUND

Work of the coordinator and secretary

1. We look in our notebook at the information from session 10 about the figures in the courtyard and select which one we are going to present in our coSpaces environment.

Work of the organiser and spokesperson

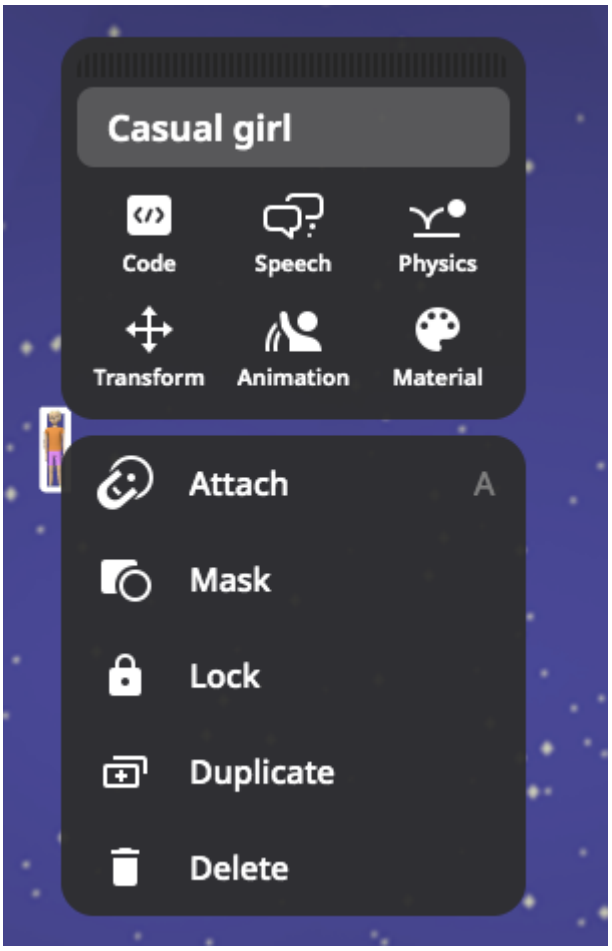
1. Watch the video about how a character is created from minute 1:59
   https://youtu.be/NoaW3YXmQVo
2. Summarise what actions the coordinator must perform to create a character for each of the figures we want to describe.

Everyone's work

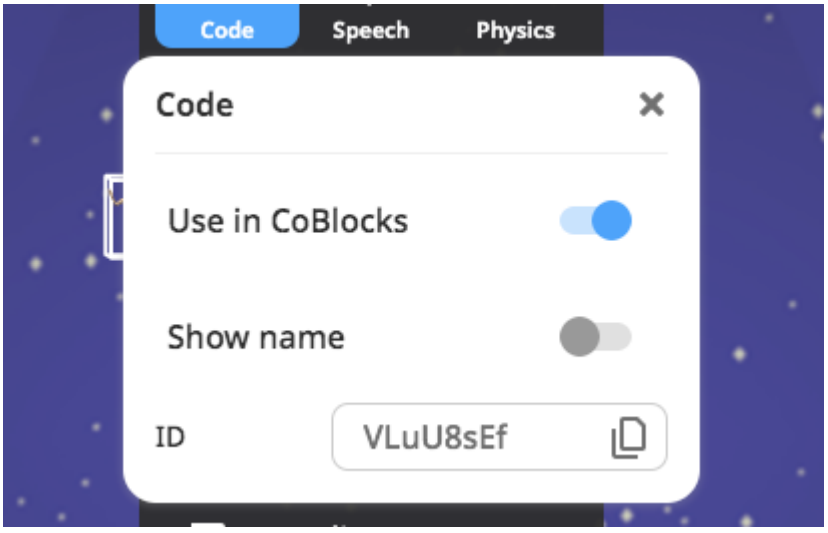
Character presenting the exhibition

1. Access the coSpaces of the group, as we learned in the first phase.

2. Create a character and place it in the centre of the courtyard to explain what you are going to see in a geometry exhibition.
   To do this:
   Once the figure is located, enlarge or reduce it to an appropriate scale with the size of the school
   To do this:
   - point out the object,
   - click on the right mouse or track button and the following menu will open:

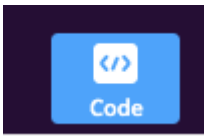


   - click coding

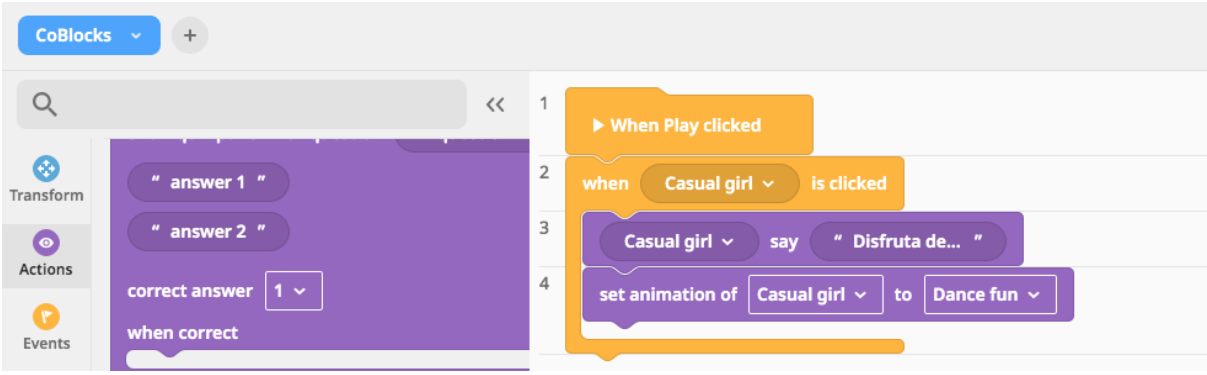


Select Use in coBlocks

- Go to the top of the menu and click Code:



- Encode the character's actions by following the instructions below



- Click Play to validate the character does what you want.

Questioner presents information about a school figure

1. Proceed as with the previous character, but this time having the character o explain:
    1. The mathematical name of the object and how many dimensions it has and any additional information that you think is helpful.
    2. Create other weights that explain other figures of the school

Task 3: We create geometric figures in three dimensions that we place in the different fields of the schoolyard

Work of the coordinator and secretary

1. We look in our notebook at the information of sessions 11, 12 and 13 on the figures of the courtyard and decide what to present in our environment of coSpaces (images of the constructed figures, of the problems carried out)

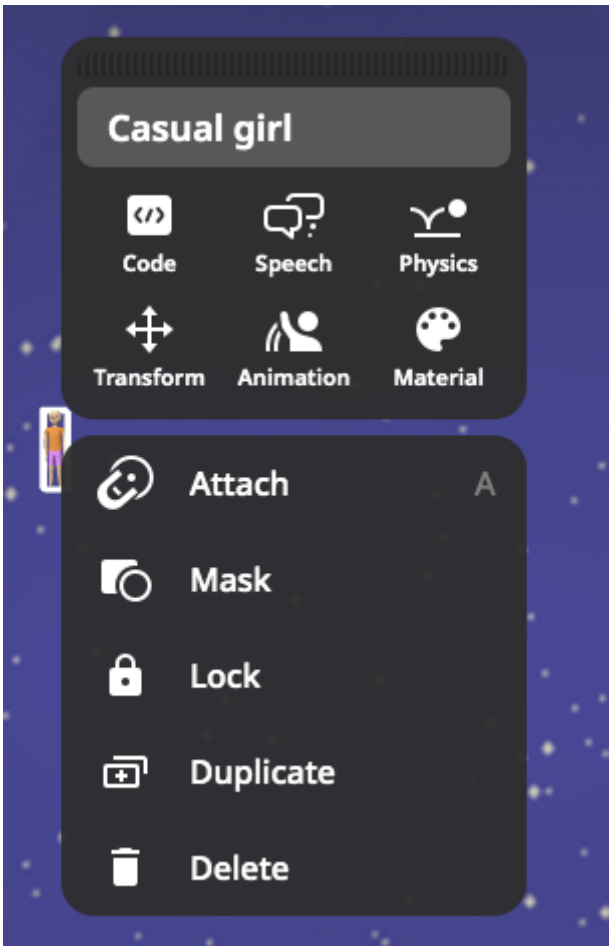
Work of the organiser and

3. Watch the video on how images are uploaded: https://youtu.be/LLOHfP7FxMc
4. Summarise what actions the coordinator and secretary should take to upload images

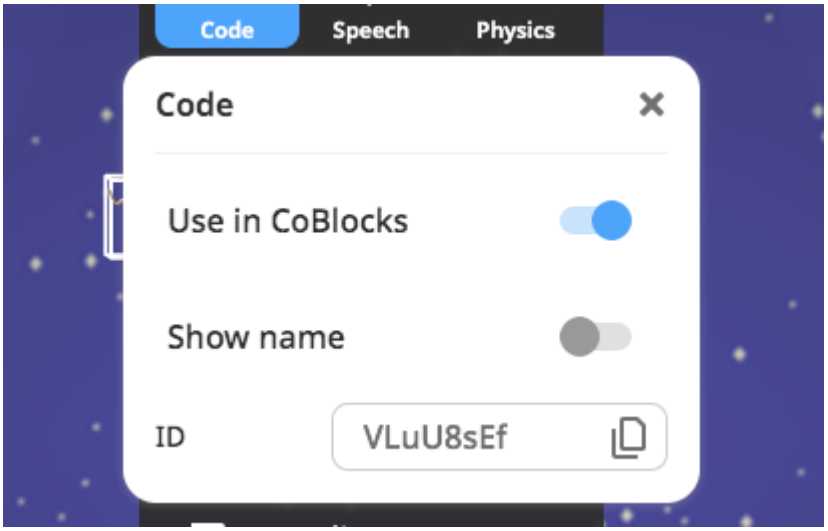
Work for everyone

1. Access the coSpaces as we learned in the first phase.

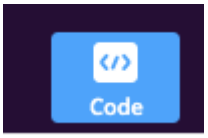
2. Select from the object library, 3D objects that we have studied in class.
3. Place one of the objects in one of the courts in the schoolyard, so that it has three dimensions.
   Include next to it a whiteboard that has photographs with the information you have learned about, for example:
   - the characteristics of the polyhedron or figure in question,
   - the flat developments and the figures built in 3D
   - the problems of calculating areas and volumes
4. Place a character next to the figure who makes a question that must be answered by the player.
   To do this:
   Once the figure is located, enlarge or reduce it to an appropriate scale with the size of the school
   To do this:
   - point out the object,
   - click on the right mouse or track button and the following menu will open:



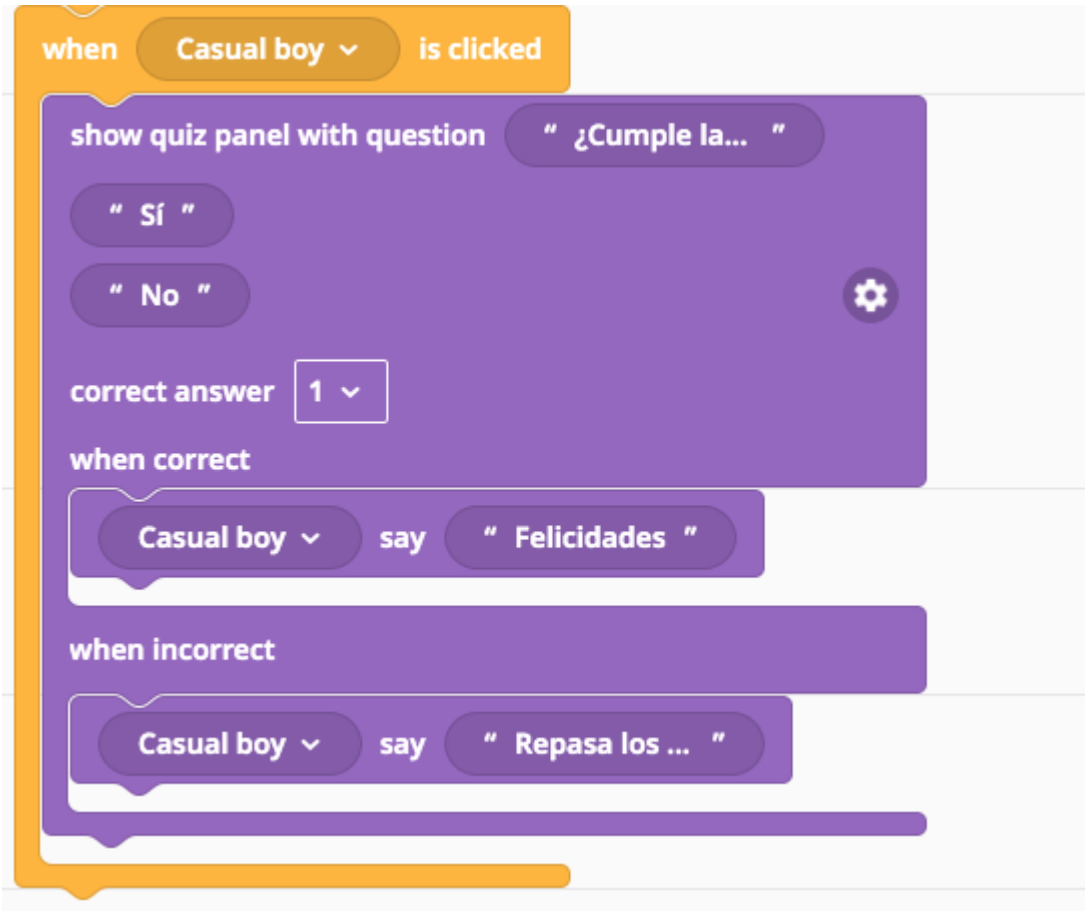
   - click on Code and activate Use in CoBlocks



- Click on Code which is at the top of the screen:



- Code the actions of the character to ask questions by following the following programming instructions:



- Click Play to make sure that the game works as intended:

5. Include other geometric figures and proceed as in the previous activities

Annex 4. Playing with and testing the FemSTEAM Mysteries game

Create teams of three students to play with and test the FemSTEAM Mysteries game. Each student has a different role:

Gamer. Student who plays the game listening the other members of the team and suggesting information to the role-model analyst and game analyst.
Role-model analyst. Student who analyses what information the game provides about the different FemSTEAM role-models
Game analyst. Student who analyses how the virtual reality game is constructed (environment, clues, movement, information delivered).

Task 1: Deliberate dialogue

Deliberate dialogue with the students to answer these three questions:

a. What do you think the FemSTEAM Mysteries game is about?
b. What do you think you are going to learn by playing this game?
c. How do you think playing with the FemSTEAM Mysteries game will help you to improve the design of your own game?

Task 2: Play with FemSTEAM Mysteries game

Students play two rooms of the FemSTEAM Mysteries game using the roles established in the beginning. They collect information on the role-model analysis and the game analysis.

Task 3: Answering a questionnaire about the FemSTEAM Mysteries gaming process

Students cooperatively answer the questionnaire:

Demographical questions:

a. Indicate your study level
b. Indicate the gender of the three gamers
c. Do you usually play games? Yes, No
d. Have you ever tested a game? Yes, A few games, Many games

Challenging

e. Indicate using a scale from 1 to 5 your level of agreement with each of these sentences:

	I completely disagree	I almost disagree	I neither agree or disagree	I almost agree	I completely agree
The game is challenging for my competence					
The game gets easier as I learn more about the					

role-models presented					
In each room new obstacles and situations appear					
I kept interested in the game from room to room					

Virtual environment

f. Assess from 1 to 5 the level of agreement with these sentences

	I completely disagree	I almost disagree	I neither agree or disagree	I almost agree	I completely agree
The virtual environment is adequate for the aim of the game					
I feel that I'm inside the room of a residence					
The design of the rooms is encouraging					

Immersion

g. Assess from 1 to 5 the level of agreement with these questions

	I completely disagree	I almost disagree	I neither agree or disagree	I almost agree	I completely agree
I have been completely immersed in the game that I didn't remember that I was playing					
I have been completely immersed in testing the game instead of just playing					
The game is challenging for its relationship with a real-world situation					

Usability

h. Assess from 1 to 5 the level of agreement with these sentences

	I completely disagree	I almost disagree	I neither agree or disagree	I almost agree	I completely agree
The game is usable in terms of awareness of progress					
The interface has colours that promote learning					
The interface as fonts which help to read and learn about what you learn					
The game is useful for learning about role-models					
The time needed for its implementation was adequate					
The access to all the clues was easy					

Goal clarity and learning

i. Assess from 1 to 5 the level of agreement with these sentences:

	I completely disagree	I almost disagree	I neither agree or disagree	I almost agree	I completely agree
The goal of the game was clear					
The game increased my learning					

j. Which is the goal of the game?

k. What have you learned by playing the game?

l. How are you going to use this assessment/testing to improve the design of your game?

Task 4: Discussion about the goal of the game

The role-model analyst summarises the team response to the question inquiring them about what they have learned from the game.
Teams summarise the information obtained in relation to the biographical notes obtained from the game.
They discuss the following:

- How will the game help to break gender stereotypes about the STEAM role-models presented?
- If and how have the role-models inspired them to continue their studies in STEAM subjects and could influence their future vocations?

Task 5: Improving the design of their game

The game analyst summarises the team's answer about how they are going to use the evaluation/testing of the FemSTEAM Mysteries game to improve their game. Students are challenged to do all the improvements suggested.

Annex 5. Evaluation

We evaluate the work of our team and other teams

Evaluation of the game designed by our team

1. Indicate the extent to which the game that your team designed has the following qualities using a scale between 1 (not at all) -> 5 (completely)

Items	1	2	3	4	5
The person who plays can understand that they are visiting a virtual exhibition of geometry in three dimensions that is located in the courtyard of your school					
The different characters are constructed on a scale appropriate to the size of a secondary school student					
The different geometric figures are built on a suitable scale so that their properties can be presented correctly.					
The information included in the whiteboard allows the person visiting the exhibition to learn about geometry					
The information that the characters convey allows the person who visits the exhibition to learn about geometry					
The game is well coded to explain the characters when clicking					
The game is well coded for you to ask the corresponding questions					

2. Explain what the strengths of your game are:

3. Explain what aspects you should improve in your game:

Evaluation of the game developed by another team

4. Ask your teacher to tell you which game to evaluate.
5. Indicate the extent to which the game you're evaluating has the following qualities using a scale between 1 (not at all) -> 5 (completely)

Items	1	2	3	4	5
The person who plays can understand that they are visiting a virtual exhibition of geometry in three dimensions that is located in the courtyard of your school					

The different characters are constructed on a scale appropriate to the size of a secondary school student					
The different geometric figures are built on a suitable scale so that their properties can be presented correctly.					
The information included in the whiteboard allows the person visiting the exhibition to learn about geometry					
The information that the characters convey allows the person who visits the exhibition to learn about geometry					
The game is well coded to explain the characters when clicking					
The game is well coded for the player to ask the corresponding questions					

6. Explain what the strengths of the game are:

7. Explain what aspects of the game should improve:

Co-evaluation of teamwork

8. Rate the following items in your game with 1 (not at all) -> 5 (completely)

The teamwork has promoted:	1	2	3	4	5
The engagement of colleagues in a common task					
The involvement in the team to create the game					
Communication of everyone's ideas					
The ability to listen to everyone's ideas					
The ability to accept and welcome the proposals of other team members even if they are different from mine					
The ability to take advantage of the knowledge and ideas of others					
The organisation of time and tasks					
Responsibility for individual tasks					
A commitment to creating the best possible game in the class					

Self-assessment of learning

1. Explain what you have learned from the design, implementation and evaluation of the game.

Coordinator:

Secretary:

Spokesman:

Organiser:

2. How has the FemSTEAM Mysteries game evaluation helped your team to improve your game?