



FERTILE Community Platform User's Guide

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1. Introduction

The aim of this user guide is to introduce you to the "FERTILE" community platform (CP). This platform is the meeting point for teachers interested in creating learning designs that promote Computational Thinking by combining Educational Robotics (ER) and Arts.

The "FERTILE" platform will help you connect with other educators and collaborate with them in designing Artful Educational Robotics projects following the "FERTILE Design Methodology".

This user guide is structured in several sections, each of which corresponds to the main functions of the platform. The aim of the guide is to show you how to use it to communicate with other teachers, to chat with them, to (co-)create and edit Artful Educational Robotics projects and to share them with your students.

2. User Registration

First of all (Figure 1), you need to register into the FERTILE Community Platform (CP). Please, go to <u>fertile.gsic.uva.es</u>. You can change the language of the platform (although we will use the English version in this document). Then, follow the "Sign up" process to create your FERTILE account.



Figure 1. Home page for the FERTILE CP.

During the registration process (Figure 2), you can introduce your basic personal data, your teaching experience, the educational levels in which you have experience.... and you can also select whether you consider yourself more experienced in Art-related topics, or in Educational Robotics (ER).

Name		
Enter your first name		
Surname		
Enter your last name		
Institution		
Enter your institution		☐ ←───── 1 Enter you data
Country		
Select a country	~	
Teaching level		
Lower Primary	0	2 ← 2 In which teaching levels do
+ Add Level		you have previous or current
Art / ER		experience?
Art	0	• 3 Do you consider yourself
Years of experience		more experienced in Arts or
Write a number		in Educational Robotics?
Email address		
Enter a valid email address		4 IMPORTANT: you will receive a confirmation link in
Password		your INBOX
Enter password	۲	
Password Confirmation		
Confirm password	۲	
Commin password		
		5 Press when ready!!
Create account		

Figure 2. User Registration page.

When you press "Create account" you will be presented with the warning message shown in <u>Figure 3</u>. A confirmation email message will be sent to your email account (see an example in <u>Figure 4</u>). Please, do not forget to check your SPAM email folder in case you don't receive the confirmation message.



Figure 3. Account not verified yet.

Artful Educational Robotics to promote Computational Thinking in a Blended Learning Context	
Hello!	
Please click the button below to verify your email address.	
Verify Email Address	
If you did not create an account, no further action is required.	
Regards, FERTILE	
If you're having trouble clicking the "Verify Email Address" button, copy and paste the URL below into your web browser: <u>https://fertile.gsic.uva.es/verify-email/19/881d82a8ddc52e745cb31effcc59203305464bee?expires=17013699</u>	
32&signature=1505a2bd28ea3c565e54d56fc8a131fb4988f8f2bbfbfb702c86 71c2b7192b80	

Figure 4. Example of a verification email message for the registration process.

Once you have completed the registration process, you will be redirected to the home page of the Community Platform. You are now a new member of the FERTILE Community!

3. User Profile and Platform Settings

From the home page of the FERTILE CP you can change your personal data and settings by clicking on the top-right part of the screen (see Figure 5).

EFERT LE			D	₩	⊠_ <u></u>
FERTILE Designs	Edit my profile	1 Click for opening personalization opti	ons		Juan I. 😁 My Profile
Create new design	Profile	Profile Information			Settings
My designs		ount's profile information and	email address.		Logout

Figure 5. Accessing personalization options (user profile).

<u>Figure 6</u> shows the options you have for configuring your personal profile. You can select a photo for your profile, indicate your country, the preferred language for the FERTILE CP, and the languages in which you might collaborate (the FERTILE CP gathers teachers from several countries!). Click on "Save" when you have finished.

Profile In	formation		
Update your account	t's profile information and email address.		T all the second
Name	Juan I.		Edit your
Surname	Asensio-Pérez		profile photo
Email	juaase@uva.es		
institution	University of Valladolid	Undets Innets	
Teaching Level	Lower Primary	Examinar No se ha seleccionado ningún archivo.	
	Lower Secondary		
	Upper Secondary		
	Higher Education		
Art / ER	ER	V Vh	ere are you from?
Years of experience	28		
Country	Select a country	v	
Website language	Select a language	v	
Spoken languages	English		
	Spanish		
	Czech	In which	i languages you might
	Save	collabor	ate?
	Update your account Name Burname Email Institution Teaching Level Art / ER Wares of experience Country Website language	Las 1. Las 1. Las 2. La	

Figure 6. Editing the user profile.

By accessing the platform settings page (Figure 7) you can decide when you want the FERTILE CP to send email messages to you (Figure 8). By default, no message will be sent... but you can change that on this page at any moment. Email messages may help you be aware of what is going on at the FERTILE Community! Click on "Update email setting" when ready.

FERT LE				ж	M _ A - 🙁
FERTILE Designs	Edit my profile	1 Click for opening personalization options			Juan I.
 Repository Create new design 	Profile	Information			🏚 Settings
My designs	Update vour ac	idress.		Logout	

2 Customize the platform settings



You can update email notifications.	
Receive email when someones send you a message	0
Receive email when someone shares a design with you	0
Receive email when someone comments on your designs	0
Receive email when someone comments on your forum thread	0
Receive email when someone starts following you	Ο

Figure 8. Email settings page.

4.1 Teachers

As you can see in <u>Figure 9</u>, on the left side of the screen, the platform has a toolbar that is the main way to navigate the platform. Let us start by selecting "Teachers" from the toolbar to see that the platform provides a list of teachers who are members of the FERTILE community.

FERT ! LE								8	₩ ⊠	Ĺ
ERTILE projects	List of Tea	chers							Commu	unit
Repository										
🖋 Create new project	Search:	Type the name or the email		Art / ER	•	Teaching Level 🝷	Language 👻	~		
My projects										
lassrooms										
🖋 Create Classroom	Name		Teaching level 0	Art/ER	Country	Number of projects	Project rating	Actions		
My Classrooms	2	Effie ANTONOPOULOU Member Since October 2024	UP, LS, US	ER	Greece	0	****	😫 Follow	P Mes	ssaj
ommunity	2	Marcela Marková	LP, LP, UP	Art	Czech Republic	2	****	*# Follow	🗖 Mesi	issaj
Forums Messages	2	Josef Meszáros	LP, UP	ER	Czech Republic	0	****	🗳 Follow	🗖 Mest	ssa
Teachers	2	Vlastimil Schoř	US	ER	Czech Republic	0	****	😫 Follow	🗖 Mest	ssa

Figure 9. Accessing the list of teachers in the FERTILE Community Platform..

<u>Figure 9</u> shows the result of the "Teachers" selection from the platform toolbar. It is a list of all users (teachers) registered on the platform. The teachers are listed according to their registration date. You are also provided with basic information about the teachers and have the possibility for searching and filtering, as well as taking certain actions regarding the selected teachers.

Specifically, the list shows for each teacher the levels of education they teach, their specialization in Educational Robotics or Art, their country, and the number of projects they have publicly available in the community. You are given the option to search for teachers by name or email. You can also filter teachers according to their specialization in Educational Robotics or Art, and/or their country, and/or the level of education they teach. Finally, the actions you can take are to "Follow" teachers to receive a notification when they publish a new project on the platform and/or start a conversation with them by sending them a "Message".

When you select a teacher from the list you can see the projects (s)he has published in the platform community. Figure 10 shows an example of the information you can get about a teacher.

Desig	ns created by Nafsika Papp	a				jects / Nafsika
Searc	h:	Category -	Educational Le	evel - Language	•	
Image	Title	Category	Co-designers	Creation date	Modification date	Actions
	Journey to Mars	Program robot to perform Art	Nikos Kladis	2024-04-05 14:10:53	2024-10-13 17:29:54	:

Figure 10. Information about the projects that a teacher has made publicly available.

4.2 Messages

If you want to find and contact a specific teacher, you can type her/his name in the search textbox, and then either "follow" that teacher (you will be informed when that teacher has published a new project) or send a message to her/him. This process is illustrated in Figure 11.

Search	Type the name or the	email	Art / ER	•	Teaching Level 🔻		1 Start typin name of yo partner (sea	ur design
Name		Teaching level 0	Art/ER	Country	Number of designs	Design rating	Actions	aroning)
	Mohamed Saban Member Since November 2023	HE	Art	Morocco	1	****	😤 Follow	🗖 Message
2	Maria Tzelepi Member Since November 2023	LP	Art		0	****	😫 Follow	🗖 Message
Ş	Yannis Dimitriadis Member Since November 2023	HE	Art	Spain	0	****	😫 Follow	🗖 Message
2	moha saban Member Since November 2023	LP, HE	Art		0	****	🔩 Follow	► Message
	Claude Shannon Member Since December 2023	HE	Art	v" some	o eone, you	****	🕊 Follow	P Message

Figure 11. Searching for a teacher to "follow" her/him and/or send a message.

When you click on the button "Message" corresponding to a certain teacher then a pop-up window appears, as in Figure 12, in which you can compose your message.

ne name or t	Send a message to	×	vel 🔻		
	Subject:	Send a mes	sage to		
	Possible collaboration	your colleag	jue!!	signs	Design ra
Saban vember 2023	Message: Hi, Claude Would you lik	ke to collaborate?			***
epi vember 2023					***
vember 2023		Cance	l Send		***
t n vember 2023					***
annon cember 2023	HE	Art	0		***

Figure 12. Sending a message to a member of the FERTILE Community.

The top toolbar of the Community Platform will inform you about the reception of message (see <u>Figure 13</u>).:





Alternatively, as shown in <u>Figure 14</u>, you can select "Messages" from the platform's toolbar to see your list of messages. You can search for a message you have received, reply to messages, or compose a new message.



Figure 14. Messages page.

When you select a specific message from your message list, as shown in <u>Figure 15</u>, you can view the entire thread of messages you have exchanged and send a new reply.



Figure 15. Reading messages.

To contact teachers who are users of the platform you can also use the Forum feature as shown in <u>Figure 16</u>. Selecting "Forums" from your toolbar displays a list of forums created on the platform. You can search for specific topics and/or filter the list of forums by category (according to the Educational Robotics or Art course) and/or language. Clicking on a forum will take you to the list of its messages.

	categ	3 - You can filter the list of forums per category (Art vs. Educational Robotics) and/or Language				5 - Click here to create a new forum thread		
E COT LE								: 💥 🖉 🚝
FERTILE projects Repository Create new project	orums							Community / Forums + Add new thread
My projects	Search :					Category *	Language *	~
Classrooms		1						
Create Classroom								
My Classrooms	Topic 🌾			Туре	Language	Created by	Creation Date 17	Last post by
Community	Dudas del curso FDM UVA			ER	Spanish	Lía García	18/03/2024 17:37	Carmen del Hoyo (10 months ago)
E Forums	Επιμόρφωση 2024-2025: Προσδοκίες	των συμμετεχόντων από την επιμ	όρφωση	ER	Greek	Maria Tzelepi	05/11/2024 17:40	Zoe Oikonomidou (2 months ago)
- Pordins	Επιμόρφωση 2024 - HELPDESK			ER	Greek	Maria Tzelepi	08/11/2024 17:55	Sofia Nikitopoulou (1 month ago)
Messages	Επιμόρφωση 2024 - 1η Φάση - Προσδ	οκίες των συμμετεχόντων από την	ν επιμόρφωση	ER	Greek	Maria Tzelepi	08/11/2024 20:04	Eleni Papagiannakopoulou (2 months ago)
🚜 Teachers	Επιμόρφωση 2024 - 2η Φάση - Πρότα			ER	Greek	Maria Tzelepi	10/11/2024 14:32	Vicky Karampa (2 months ago)
1- Go to For	Eπμόρφωση 2024 2η φάση-Πρόταση		an search orum	for a	Greek	Χρυσούλα Θάνου		xpupoubla dayou () meets age ck on a thread to messages

Figure 16. Forums page.

By selecting the "+Add new thread" button you can create a new forum. In Figure 17 below you can see an illustrative screenshot showing the creation of a new forum. Notice that you can define the topic of the forum, its category (Educational Robotics or Art) and the language in which the communication will take place. In the text, "rich text" edition is supported and you can insert formatted text, hyperlinks and images to communicate your message more effectively.

When you want to participate in a forum, you select it from the list and, on the page that appears, you can add your own comments, reply to an existing comment or approve a comment with a "like", as shown in the example of Figure 18.

Add a new Forum Threa	d	Trending
Anyone experienced in Lego Mindstorm?		by Alberto Carrascal 4 weeks ago
hoose Type: ER ${\color{red} {\begin{subarray}{ccc} {\bed{subarray} {\begin{subarray}{ccc} {\begin{subarray}{ccc} {\be$	Choose Language: ✓ English J S A ✓ Z ✓ E E E E E E E G E &	Arite FERTILE CFIE Valladolid Posted by Garcia 2 months ago Arite Ago
<> Hi, I'm having difficulties in setting u Thanks!! Juan	p a Lego Mindstorm kit Anyone there having the same problem	n?
p	1	Build with O tinyMCE



Forum Thread	Discussion / Forum / Anyone experienced in Lego Mindstorm?
Anyone experienced in Lego Mindstorm? Hi, I'm having difficulties in setting up a Lego Mindstorm kit Anyone there having the same probl Thanks!! Juan	lem? Edit Delete
Add a comment	Comment
Claude Shannon Hi, Juan. I'm having a similar problem Let's wait and see if someone of Like Reply 0 xb 0 minutes ago	an help us!! Best, Claude

Figure 18. A Forum thread.

5. FERTILE PROJECTS

5.1 Repository

As shown in <u>Figure 19</u>, selecting "Repository" from the toolbar displays a list of all projects created on the platform and made public by their creators. The projects are listed according to their creation date, starting from the most recent.

FERT/LE						° ж 🖥	å 🖁
FERTILE projects	Repository					FERTILE Proje	ects / Reposito
Repository							
🖋 Create new project	Search:	Category - Educa	tional Level •	Language -	•		`
My projects Exemplars							
Exemplars Classrooms							
🖋 Create Classroom	image Title	Category	Creator	Co-designers	Creation date	Modification date	Actions
T My Classrooms	Arte geométrico y pensamiento computacional.	Program robot to create Art	María Etelreda López	Lia García	2025-01-29 16:45:34	2025-02-10 17:27:42	:
Community	"Roboteatro: Locuras mecánicas en el País de las Maravillas"	Program robot to create Art	MANUELA SUAREZ	Lía García	2025-01-27 19:01:40	2025-01-29 19:40:02	:
🗈 Messages 🛛 🔕	Reconocedor de tipos de arcos con microbit	Other+	Rosa María Cabrero	Ana Hernandez	2025-01-27 18:10:53	2025-01-27 19:28:40	:
Admin Options	🎉 la vuelta al mundo en 80 días	Program robot to respond to artful triggers	ANA MARIA ALONSO FERNÁNDEZ	Juan I. Asensio-Pérez Yannis Dimitriadis	2025+01+26 21:17:38	2025+01+26 21:50:39	:
⊥ Users >	Reconocedor de Tipos de Arcos	Other+	Ana Hernandez	Rosa María Cabrero	2025-01-26 08:51:43	2025-01-27 18:02:57	:
Users activities Gommunity analytics	Mi Quixote 4.0	Other+	Jesús Manzaneque	María Lagares Rubén Polo Hernán Álvaro Cortés Herreros	2025-01-23 16:43:33	2025-01-24 08:18:09	÷
Help	ADIVINA LO QUE SUENA	Program robot to create Art	MARIA DOLORES VALLEJO SANZ	María Méndez Arcos Lía García	2025-01-23 13:32:51	2025+01+30 16:52:43	:
	Blog de viajes en francés	Program robot to create Art	María Galindo		2025-01-21 17:35:08	2025-01-30 17:14:55	1
	es Pradoas	2 3 4 5 6 7 8 16	17 18 N	ext>>			

Figure 19. Accessing the platform's Repository for an overview of the projects that are publicly available to the FERTILE Community.

<u>Figure 20</u> shows how you can search for a project by its title. Also, you can filter projects according to the "Category" they belong to, the "Education Level" they are addressed to, and the "Language" in which they have been developed.

Recall that the project categories refer to the four proposed project categories of the FERTILE design methodology which are:

- Program robot to create Art
- Program robot to perform Art
- Create Artful Robots
- Program robot to respond to artful triggers

<u>Figure 20</u> also shows the basic information available for each project that appears in the list of projects listed in the Repository. You can see the featured image set by the project creator, the project title, the project creator, and the project creation date.

FERT/LE							₩ ⊠	2
ERTILE projects	Repository	You can sea term in the ti	rch designs by tle, author, etc…	You can filter the p educational level a	rojects by ca nd language	tegory,		s / Reposi et filter
Repository Create new project My projects	Search:	ł	Category -	Educational Level -		guage -		_
Exemplars					Тс	oggle betwee	n list or table	Э
Create Classroom	Image Title		Category	Creator	Co-designers V	Creation date	Modification date	Actions
My Classrooms Immunity	😹 pensan	eométrico y niento tacional.	Program robot to create Art	María Etelreda López	Lía García	2025-01-29 16:45:34	2025-02-10 17:27:42	:
Messages O	mecáni	eatro: Locuras icas en el País de ravillas"	Program robot to create Art	MANUELA SUAREZ	Lía García	2025-01-27 19:01:40	2025-01-29 19:40:02	:
		ocedor de tipos de con microbit	Other+	Rosa María Cabrero	Ana Hernandez	2025-01-27 18:10:53	2025-01-27 19:28:40	:
	la vuel dias	ta al mundo en 80	Program robot to respond to artful triggers	ANA MARIA ALONSO FERNÁNDEZ	Juan I. Asensio-Pérez Yannis Dimitriadis	2025-01-26 21:17:38	2025-01-26 21:50:39	:
	Recond Arcos	ocedor de Tipos de	Other+	Ana Hernandez	Rosa María Cabrero	2025-01-26 08:51:43	2025-01-27 18:02:57	:
	Mi Quix	xote 4.0	Other+	Jesús Manzaneque	María Lagares Rubén Polo Hernán Álvaro Cortés Herreros		2025-01-24 08:18:09	:

Figure 20. Searching and filtering the list of projects in the Public Repository of the platform.

Finally, as shown in <u>Figure 21</u>, the actions you can take on a project of the Repository are "View" to view the project, or "Duplicate" to create your own copy of the project and modify it at will.

FERT LE				: 💥 🗟 🛱 🤹
FERTILE projects	Repository			FERTILE Projects / Repository
Repository				
🖋 Create new project	Search:	Category -	Educational Level	- Language - 🔳 📕
My projects				
Exemplars			Availa	able options for projects in the Repository
Classrooms				
🖋 Create Classroom	Image Title	Category	Creator	Co-designers Creation date Modification date Actions
My Classrooms	Arte geométrico y			
Community	pensamiento computacional.	Program robot to create Art	María Etelreda López	Lia Garc 16:45:34 2025-02-10 17:27:42
E Forums	computational.			Duplicate
Messages 0	"Roboteatro: Locuras mecánicas en el País de	Program robot to create Art	MANUELA SUAREZ	Lía García 2025-01-27 19:01:40 2025-01-29 19:40:02

Figure 21. Available actions for projects listed in the Repository.

As shown in Figure 22, selecting "Exemplars" from the toolbar displays a list of projects that the FERTILE project team suggests you consider as examples. The actions you can take on these projects are to view and/or create your own duplicates of them.



Figure 22. Accessing the "project exemplars" in the FERTILE CP.

5.2 Creating a new project

The most creative functionality of the FERTILE community platform is the creation of an Artful Educational Robotics project. As shown in <u>Figure 23</u> you can select "Create a new project" from the platform toolbar to access this functionality. When creating a new project, or editing it, you are provided with the options to "Save" the project and continue editing it, "Save and exit" from editing it, and "Cancel" the editing you have done until the last time you saved it. Also, you will find the vertical scroll bar useful to move around in all parts of your project.



Figure 23. Creating a new project.

The representation of the FERTILE design methodology in project creation and edition

The creation and edition of projects on the FERTILE community platform is based on the FERTILE design methodology. The platform visualizes and facilitates the composition of interdisciplinary projects that combine Educational Robotics with Arts based on the methodology. Figure 24 represents an overview of the FERTILE learning design methodology.



Figure 24. Overview of the FERTILE Design Methodology.

Project Description

As shown in Figure 24, the creation of a project following the FERTILE learning design methodology starts with the general description of the project. Therefore, the platform supports teachers to provide the "Project Information". The information of a project consists of 4 sections.

The 1st section, illustrated in Figure 25, contains the general context of your project. You are invited to provide a title and a brief description of your project. You can also select the category of your project according to the FERTILE design methodology and the language of your project. Finally, you can upload a representative image for your project.

Take into account that the "project category" enhances the description of the interdisciplinary nature of your project in relation to the subjects of Educational Robotics and Art. It refers to the 4 proposed project categories of the FERTILE design methodology which are:

- Program robot to create Art
- Program robot to perform Art
- Create Artful Robots
- Program robot to respond to artful triggers

te a new project						ERTILE Projects / Create new pr
Student preview			iii Save	5	ave and Exit	E Cancel
u can navigate between th	e tabs to	fill all the project information Color	of the subject addressed in the activity: • Art, • ER,	• Both.		
Project Information		1				~
Understanding	۰	Project Title			A State	*
Generating	٠	Description				
Formulating	۰					-
Creating	۰	Project Category	Program robot to create Art	v	Update Image	
Evaluating	۰	Language	English	×	Choose File No file cho	1871
		N.				-

Figure 25. Project Information (1st section): title, description, category and language.

Next, the second section of the "Project Information", illustrated in <u>Figure 26</u>, includes a description of the context of the art subject in your project. You are asked to describe the learning objectives of the art subject and identify the forms of Art. You have the option of identifying one or more forms of Art. Your description is facilitated by the following predefined categories and subcategories of Art.

	Art Disc	sipline	
Learning Objectives: 0			li.
Art form(s):			
	Category	Other	v +
	Subcategory		~

Figure 26. Project Information (2nd section): learning objectives and Art form(s).

Art Category	Subcategory
Visual	Arts and Crafts, Drawing, Animation, Painting, Other
Performing	Dance, Music, Theatre, Other
Literature	Drama, Poetry, Storytelling, Other
Other	N/A

Similarly, section 3 of the "Project Information", illustrated in Figure 27, includes a description of the educational robotics discipline in your project. You are invited to describe the learning objectives of the Educational Robotics subject area. You may also describe the construction and programming of the robot you will use. To describe the technical requirements of your robot, you are given the opportunity to choose from the following technologies and construction elements:

	Educational I	Robotics Discipline	
Learning Objectives: 0			
			1
	Construction		
	Programming		
Technical requirements for the	robot:		
Technology Used:	Robotic Kit:	N/A	~
	Programming Environment:		
		N/A	~
	Simulator:	N/A	~
Construction Elements:			
	Actuators:	N/A	~ +
	Sensors:	N/A	~ +

Figure 27. Project Information (3rd section): educational robotics discipline.

Technica	Technical requirements for the robot						
Technolo gy used	Robotic Kit	Thymio, Alpha Bot 2, Artie, Blue-Bot, Bee-Bot, Boe-Bot, Cubetto, Edison, Escornabot, Fable, GoPiGo, KeyBot, Lego, Mindstorm, Lego Spike, LinoroBot, MakeBlock Ultimate, Micro:Bit, Makey, Matatalab, MiniSkyRobot, mTiny, Coding Kit, NAO, Neuron, Ozobot, Robotis, Premium, Sphero, Speechi, Robotics, Tello drone, TurtleBot 3, Vex Robotic platform, N/A.					
	Programming Environment	W3schools, Doodles, Scratch, Python, Edublock, Code.org, Minecraft, VPL. LEGO, Micro:Bit, DroneBlocks, Blue-Bot app,					

		MakeCode, Other		
	Simulator	AlphaBot2, EUROPA, GearsBot, OpenRoberta, WeBots, Vex Code, Miranda, Software, Kibotics, Simpark, MakeCode, Micro:Bit-EV3, Virtual Robotics Toolkit, TinkeCard, RoboBlockly, Beebot simulator, Thymio suite, Other		
Construc	Actuators	LED diodes, Single motor, Multiple motors, LED diode, LED strip,, Speaker, Light matrix, Display, Other		
tion Elements	Sensors	Distance, Colour Sensor, Button, Thermometer, Gyroscope, Til Sensor, Microphone, Sound Sensor, Other		

Finally, in the 4th section of the "Project Information", illustrated in Figure 28, you can specify the educational level that the project is aimed at, and a list of ideas for its extension. Note that the education levels that are supported are grouped as follows: Lower Primary, Upper Primary, Lower Secondary, Upper Secondary, Higher Education, N/A.

Educational Level:	Lower Primary ~	+	
Extension ideas:			
		11.	

Figure 28. Project Information (4th section): educational level(s) and extension ideas.

5-step organisation

After describing the overall description, you can develop your projects according to the steps of the FERTILE design methodology (see Figure 24). Figure 29 shows how you can select a step (e.g., the step "Understanding the challenge") to get help for it and/or add a short text explaining how you intend to use it to cultivate Computational Thinking. Also, Figure 29 shows how you can add activity/s to each step by utilizing the "+Add Activity" button.



Figure 29. Browsing and creating learning activities within each step of the FERTILE Design Methodology (I).

Notice in <u>Figure 29</u> the fields provided for the description of each activity. There are fields in which you can fill in free text, and fields from which you can select among suggested values. The "Activity Title" in each new activity is "Untitled" by default. As soon as you provide a new title, it will appear in the project overview in the left column. Also, fields that you can fill in with free text are "Description", "Material" and "Duration" of the activity.

The remaining fields include suggested values based on the FERTILE design methodology to make it easier for you to describe your Artful Educational Robotics project. In particular, the suggested values per field are as follows:

- "Activity Type": engaging students, Exploring new content, Exploring the challenge, Planning, Programming, Constructing, Evaluating, N/A.
- "Subject": Art, ER, Both.

- "Computational Thinking Skill": Abstraction, Decomposition, Pattern Recognition, Algorithmic Thinking, Evaluation, N/A.
- 'Modality': face-to-face (F2F), Online synchronous, Online asynchronous, N/A.
- "Class orchestration": individual, teamwork, plenary, N/A.

Notice that according to the value you enter in the "Subject" field, a different color will appear in the project overview in the left column.

<u>Figure 30</u> illustrates the last part of the edition of an activity in which the availability of an activity to students is configured. It relates to the platform functionality of making projects available to teachers via "Classrooms", and the functionality of the platform to support the input of students to implement in "Classrooms" the projects developed by teachers.

The three fields provided to teachers enable them to write instructions to students, upload a relevant file (a "worksheet" for the students), and decide on the visibility of the activity to students via "Classrooms". More information about this functionality can be found in the corresponding chapters of this guide regarding the "Classroom" functionality supported by the platform.

Finally, the distinctive red "Delete Activity" button allows you to delete the current activity after asking for extra confirmation for this critical action.



Figure 30. Browsing and creating learning activities within each step of the FERTILE Design Methodology (II).

When editing a project you have the option to see how the project will be made available to your students via the "Student Preview" functionality. <u>Figure 31</u> illustrates the selection of the functionality and <u>Figure 32</u> shows an illustrative screen with the preview of a project.

oject		10	TILE Projects / Edit project / Abstract Exp	ressionism through Educati
Student preview		i ter	Save and Exit	E Cancel
an navigate between the tabe to RL al	I the project information Col	or of the subject addressed in the activity: • Art, • ER, • Both.		
Project information				
Understanding ┥	Project Title	Abstract Expressionism through Educational Robotics	A Sala	
Generating	Description	in this ER artful project the students teach a robot the		
Formulating		techniques of the Politick painter while learning to program and explore abstract expressionium.		>
Creating 4	Project Category	Program robot to create Art.	Update Image	
Evaluating 4	Language	Drglah v	Choose File No file ch	osen
		-		

Figure 31. Asking the platform to show how students would see the project that is being edited.

Artful Educational Robotics to promote Computational Thinking in a Blended Learning Context		
Welcome Juan I. !		
	Project: Abstract Expressionism through Educational Robotics	
Project Tabs		
You can navigate between the tal	ps Color of the subject addressed in the activity: 🌢 Art, 🌢 ER, 🌢 Both.	
Project Information Understanding Give the problem to be solved Problem definition for Art	Description In this ER artful project the students teach a robot the techniques of the Pollock painter while learning to program and explore abstract expressionism. Category Program robot to create Art	
Problem definition for ER		

Figure 32. Project preview for students.

5.4 My projects

As shown in Figure 33, selecting "My projects" from the toolbar displays a list of the projects you have created. Alternatively, under "Share with me" you can have the list of projects that other

teachers have shared with you. Also, in the "Recycle Bin" you can view and restore projects you have deleted previously.

As also shown in Figure 33, in the list of "My Projects", similarly to the list of projects in the "Repository", filters can be applied for the "Category" of projects, the "Education Level" and the "Language" in which the projects have been developed.



Figure 33. Overview of my projects.

Figure <u>34</u> shows the information describing each of "My Projects": a representative image of the project, the title, and the date the project was created. Also, <u>Figure <u>34</u></u> shows the actions available to be carried out for each of "My projects":

- "View" the project.
- "Duplicate" to make a copy of the project.
- "Share" allows the selection of co-designers for the project by selecting them from the list of users of the platform. This action enables the collaboration of teachers from different disciplines (ER and Art) in the same project. Therefore, in each project it would be desirable to have co-designers from both disciplines.
- "Edit" the project.
- "Publish" makes the project public on the internet via a URL where anyone can view the project without being a user of the FERTILE community platform.
- "Move to Recycle Bin" to delete the project.
- "Show in repository" of the project. That is, whether or not the project has been made public in the platform community. It is worth noting that during their creation the projects are private and only their creator has access to them. Only by enabling "Show in repository" the project will appear in the list of projects in the Repository.
- "Public on the Internet". It is equivalent to the "Publish" action described above.



Figure 34. Information and actions for "My Projects".

For those projects "Share with me", the available actions, as well as the describing information, is a bit different (see Figure 35). Common information is the "Image", "Title", "Category" and "Creation date" of each project. In the case of shared projects, "Created by" and "Co-designers" are additionally displayed. The actions are limited and only View, Duplicate, and Edit are available.



Figure 35. Information and actions for projects "Shared with me".

5.5 Co-designing projects

As shown in the previous paragraphs, when a project appears in "My Projects" because the teacher is the creator of the project or when a project appears in "Shared with me" because it has been "Shared" by another teacher, the "Edit" project action is available. Thus, the "Sharing" of a project enables the possibility of being edited by multiple teachers of the platform.

IMPORTANT NOTE: Editing a project can NOT be done at the same time by several users. The FERTILE community platform does not support synchronous editing. When a project is already open for editing by another teacher, the warning message "Access to edit denied..." appears, and the platform prohibits synchronous editing of the project.

5.6 Accessing and displaying projects

FERTILE projects can be accessed and displayed using three different alternatives:

1. When reviewing the list of projects in the "Repository" you can select to display any publicly available project (Figure 36).

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FERTILE projects	Repository					FERTILE Projects	s / Repository
Repository							
🖋 Create new project	Search:	Category *	Educational Level 🝷	Language 🔹			
🗈 My projects							
Exemplars							
Classrooms							
🖋 Create Classroom	Image Title	Category	Creator	Co-designers	Creation date	Modification date	Actions
更 My Classrooms Community	Arte geométrico y pensamiento computacional.	Program robot to create Art	María Etelreda López	Lía García	2025-01-29 16:45:34	2025-02-10 17:27:42	I
🖶 Forums	"Roboteatro: Locuras mecánicas en el País de las Maravillas"	Program robot to create Art	MANUELA SUAREZ	Lía García	2025-01-27 19:01:40	2025-01-29 19:40:02	I
Teachers 📫	Reconocedor de tipos de arcos con microbit	Other+	Rosa María Cabrero	Ana Hernandez	2025-01-27 18:10:53	2025-01-27 19:28:40	ł

Figure 36. Accessing projects via the "Repository".

2. When reviewing the list of community teachers, you can select any teacher to see a list of his/her published projects. Then you can choose to display any publicly available project from the list of projects (Figure 37).

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List of Te	achers				Community (
Repository	Go to "Teache	IS			
Create new project Searce	N: Type the same or the areal				
My projects	A4768 -	Nexting Level + Language +		nuen following	
Exemples .					
Create Gaussian					
Ny Casanona Nama		Yearbing level #	Art/ER Granty	Actions	
	Karolina Miková	*	Art Horalia	a false	
~~~ / A	Ελένη Ζαλαβρά		Art Dance	Palmetry	
Mennger 🖌 🛛	Sarah Doe				
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• 1, e • •	Claude Shannon	elect a Teachers	Art freeze	a taba	•
Users 2	Juan I. Asensio-Pérez		art Spare	ender	* ******
	Yannis Dimitriadis				
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Figure 37. Accessing projects via the list of "Teachers".

3. When reviewing the list of "My Projects" you can choose to display any of your projects (Figure 38).

FERT/LE		਼ 🛪 ਕੂ ਪੂ 🔞
FERTILE projects	My projects	FERTILE Projects / My projects / My proje
<ul> <li>Repository</li> <li>Create new project</li> </ul>	My projects Shared with me	I Resycle Bin
My projects		
Exemplars		
Classrooms 🥕 Create Classroom	Search: Category	• Educational Level • Language • 🛛 🗰 🗰
T My Classrooms		
Community		
邑 Forums	Image Title Cate	rgory Co-designers Creation date Modification date Show in repository Public on the internet Actions
<ul> <li>Messages</li> <li>Teachers</li> </ul>	Abstract Expressionism through Educational Progr Robotics	am robot to create Art 2025-02-11 11:09:54 2025-02-11 11:10:04

Figure 38. Accessing projects via "My Projects".

### 5.7 Publishing projects

The idea of "publishing projects" consists of making your projects available to Teachers that are not members of the FERTILE Community Platform (i.e., they are not registered in the platform). If you publish your projects, they will be accessible by anyone using the URL provided by the platform.

IMPORTANT: please, do not confuse "Publish Projects" (a projects is available to people not registered in the platform) with "Show in repository" of the project (a project is available to all the people registered in the platform and, therefore, appears in the list of projects when you access the "Repository").

To publish a project you can go to "My Projects" and, for the project you want to "publish", click on "Actions" and select "Publish". Alternatively, you can activate the control "Public on the Internet" (see Figure 39).

ects					FERTILE Projects / My	projecta / my projecti
ojects Shared with me						I Recycle Bin
arch:	Category •	Educational Level -		Language •		<u>n</u>
go Title	Category	Creation date	Rating	Show in repository	Public on the internet	Actions
Copy of My super design	Program robot to create Art	2024-10-24 07:17:40	****			:
Anticipation through Educational Robotics	Program robot to create Art	2024-10-24 06:56:19	****			-
Robotron	Program robot to create Art	2024-10-24 06:52:17	****		View     Duplica	
The Beauty and the Robot	Program robot to create Art	2024-10-24 06:52:17	****		▲ Share	
Cybermusic	Program robot to create Art	2024-10-24 08:52:17	****		C Edit	
The greatest show robot	Program robot to create Art	2024-10-24 06:52:17	****		Copy Lin     Move to	the recycle bin
/ projects					FERTILE Projects	/ My projects / My projects
My projecta Shared with me						B Recycle Bin
Search:	Category *	Educational Le	vel •	Language 🝷	• •	~
image Title	Category	Creation date	Rating	Show in repository	Public on the internet	Actions
Copy of My super design	Program robot to create Art	2024-10-24 07:17:40	****		0	:
Anticipation through Educational Robotics	Program robot to create Art	2024-10-24 06:56:19	****			:
Robotron	Program robot to create Art	2024-10-24 06:52:17	****			:
The Beauty and the Robot	Program robot to create Art	2024-10-24 06:52:17	****			I
	Program robot to create Art	2024-10-24 06:52:17	*****			
Cybermusic	Program robot to create Art					

Figure 39. Two options for publishing a project on the Internet.

Once you have published the project, if you click on "Actions" again you will see that two new options appear: "Unpublish" and "Copy Link". The latter provides you with the link by means of

which the project can be accessed from outside the Community Platform. Finally, if you want to stop allowing external teachers to access (in a read mode only) your project, you can simply "Unpublish" it (<u>Figure 40</u>).

FERTILE Designs	My designs					Fertile Designs / My designs / <b>My de</b>
<ul> <li>Repository</li> <li>Create new design</li> </ul>	My designs	Shared with me				∎ Recycle Bin
My designs Classrooms						
<ul> <li>Create Classroom</li> <li>My Classrooms</li> </ul>	Search:		Category 👻	Educational Level 🝷	Language 🝷	
Community						<ul> <li>View</li> </ul>
📕 Forums	Image	Title	Category	Creation date	Rating	Public visi 🛛 Duplicate
Kessages	2	Copy of My super design	Program robot to c	reate Art 2023-12-04 0	8:25:33 🚖 🚖 🚖 🚖	<ul><li>Share</li><li>Edit</li></ul>
Messages	<b>8</b>	Anticipation through Educational Robotics	Program robot to c	reate Art 2023-12-01 17	12:39 🚖 🚖 🚖 🚖	Copy link
						Move to Bin

Figure 40. Options to get the link to a published project (and to unpublish it).

### 5.8 Discussion about projects

Teachers in the FERTILE CP can discuss a project with the rest of the community ("public discussion") or with the co-editors ("private discussion") as indicated in Figure 41.



Figure 41. Public and private discussions available for FERTILE projects.



Teachers can make a project available for implementation to their students through the "Classroom" functionality supported by the platform. Through "Classrooms" it is possible to provide students with instructions and resources without the need for another computing environment for the enactment of the projects. <u>Figure 42</u> illustrates the classroom creation process.

FERT!LE			::
FERTILE Designs	Create a new Classroom	2- Introduce th	e details
Repository		about the class	sroom
🖋 Create new design	Name	2nd year Primary - Delibes School - ER course	
My designs	Description	Students of this classroom have provide a superiors with 0	
Classrooms		Students of this classroom have previous experience with Scrat	well.
Create Classroom			li,
T My Classrooms	Code	4234775047	Generate Code
Community	Status		3-Generate a code
📕 Forums		Save Classroom	UUUE
👪 Teachers		4- Make the clas	
Messages		accessible to stu	idents
<ul> <li>Messages</li> <li>1- Go to "Cr</li> </ul>	reate	5-Save the classroom	
Classroom"			

Figure 42. Creating a FERTILE Classroom.

After "saving" the classroom, you can now see the QR code that would give direct access to the classroom. You can also see the NUMERICAL CODE that grants access to the classroom. However, before granting students access to the classroom, it is VERY IMPORTANT that you assign one or several of your projects to the classroom (via the "Manage classroom" action described below).

Save Classroom	
Title:2nd year Primary - Delibes School - ER course Code: 4234775047	
Description:	
Students of this classroom have previous experience with Scratch	E 2662
Manage classroom	

Figure 43. QR and numerical codes for accessing a FERTILE Classroom.

After the class has been created, as shown in <u>Figure 44</u>, you need to configure it. The available actions are:

- "Manage Classroom": to edit classroom information, assign projects to the classroom, and manage enrolled students. <u>Figure 45</u> illustrates these possibilities.
- "Copy link": to provide a direct link to students as alternative to accessing through the platform's homepage.
- QR Code: similar to the "Copy link" action, but delivering the link via a QR code..
- "Access the Classroom": allows the teacher to access the classroom and check what his/her students will see.
- "Delete".

FERT/LE						0	**		Δ 🧯
FERTILE projects	My	classrooms					Classr	ooms /	My classroo
E Repository							Manage	e classr	oom 🌣
🖋 Create new project							Copy L	ink Ø	
My projects		Title	Description	Code	Status	Numbe	Qr cod	e 🕼	
Classrooms		2nd year primary - Delibes School - ER course	Students of this classroom have previous experience with Scratch	6330606669		o	Access	the cla	assroom 1
🖉 Create Classroom							Delete	Î	
My Classrooms									
Community									



FERT/LE			: ** 🖉 💆	۲
FERTILE projects	Manage classroom: 2nd year Primary - Delibes School - ER course	Classrooms / Manage classroom / 2	2nd year Primary - Delibes School - I	ER course
Repository				
🖋 Create new project			Save Changes	
My projects	Edit Classroor	n information	Save Changes	
Exemplars	Title:			
Classrooms	2nd year Primary - Delibes School - ER course			
🖋 Create Classroom	Description:			
T My Classrooms	Students of this classroom have previous experience with Scratch			
Community			lli.	
💐 Forums	Generate a new code:		-	
🗈 Messages 🛛 🔕		Generate		
Teachers	IMPORTANT: you can assign			
Admin Options	projects to the classroom			
🕮 Users >	Manage attached projects	Manage enrolled stue	dents	
Add FAQ	Student Add/Remove	Student	Delete	
<ul> <li>Users activities</li> </ul>	Project title Forum		Detete	
🕍 Community analytics	Abstract Expressionism through Educational	Susan student_74721@student.com	Delete	
Help	Robotics	You can manage the stu	udents	
😡 Need help ?	Mondrian Robots	accessing the classroor		

Figure 45. Managing a FERTILE Classroom.

### 7. Access of students to FERTILE CLASSROOMS

As illustrated in <u>Figure 46</u>, on the FERTILE platform home page, in addition to logging in as a teacher, students are given the opportunity to access the platform.

Students can access specific "Classrooms" according to the codes created for them by the teachers. Relevant instructions for teachers are available in the "Classrooms" section where teachers create classrooms for the implementation of their projects and for setting the access codes for students.



Figure 46. Students can access FERTILE classrooms via the platform's Home Page (fertile.gsic.uva.es).

By selecting "Access a FERTILE classroom now", the screen shown in <u>Figure 47</u> appears where the student can enter (i) his/her name and (ii) the "FERTILE Class" code provided by the teacher. The first time (s)he uses the platform (s)he can give whatever name (s)he wants and the platform will generate an appropriate username for him/her. It is recommended that the student always uses the same name and enters the respective class code given by the teacher for accessing projects.

	Ho
Welcome to the "FERTILE" Platform	
Please enter your name and the code of the Classroom	
Susan	
4234775047	
Enter →	

Figure 47. Accessing a FERTILE Classroom.

On the next screen (Figure 48) the student will be able to select the project that the teacher has assigned to the specific classroom (s)he is entering.



Figure 48. Entering a project within a classroom.

By clicking on "Show" the students can see the information about the project and enact it according to the guidelines (Figure 49) and/or instructions/worksheet (Figure 50) provided by the teacher.



Figure 49. Guidelines about an activity as shown to the students.



Figure 50. Instructions/worksheet about an activity as shown to the students.

The students can also access the "Discussions" tab for exchanging messages with the teachers and the other students (WARNING: the "Discussions" tab only appears if the teacher configured this option when "Managing" his/her classroom):

Artful Educational Robotics to promote Computational Thinking in a Blended Learning Context				← Go Back	휜 Logout
Welcome Susan ! Your username is student_74721					
Show project Discussions					
		Project: Mondrian Robots			
Project Tabs					
You can navigate between the tabs   Color of the subject addressed		- · · · ·			
Add a comment	2	Add your comment			
				Comment	
Susan student_74721 Mr. Juan, I have some doubts about the activity "Simplifying" Can you help me?					
Like Reply 0 1 m	inute ago				
Juan I. Asensio-Pérez Of course!! If you remember from my explanation					
Like 0 மீ 0 minutes ago					

Figure 51. Students and teachers can interact via the "Discussions" Tab of a project.