

IO 1+2

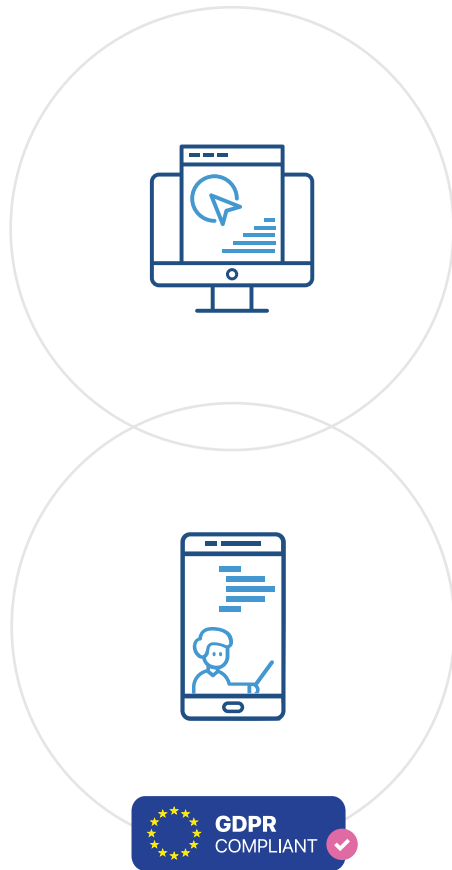
Portal & App

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



<colette/>

Technical Components



The Portal

... serves as an authoring tool to create tasks and paths. Monitoring is included when using the digital classroom (see later), where you can see the progress of your students. Also, the handbook is linked on the portal, giving guidance for educators.

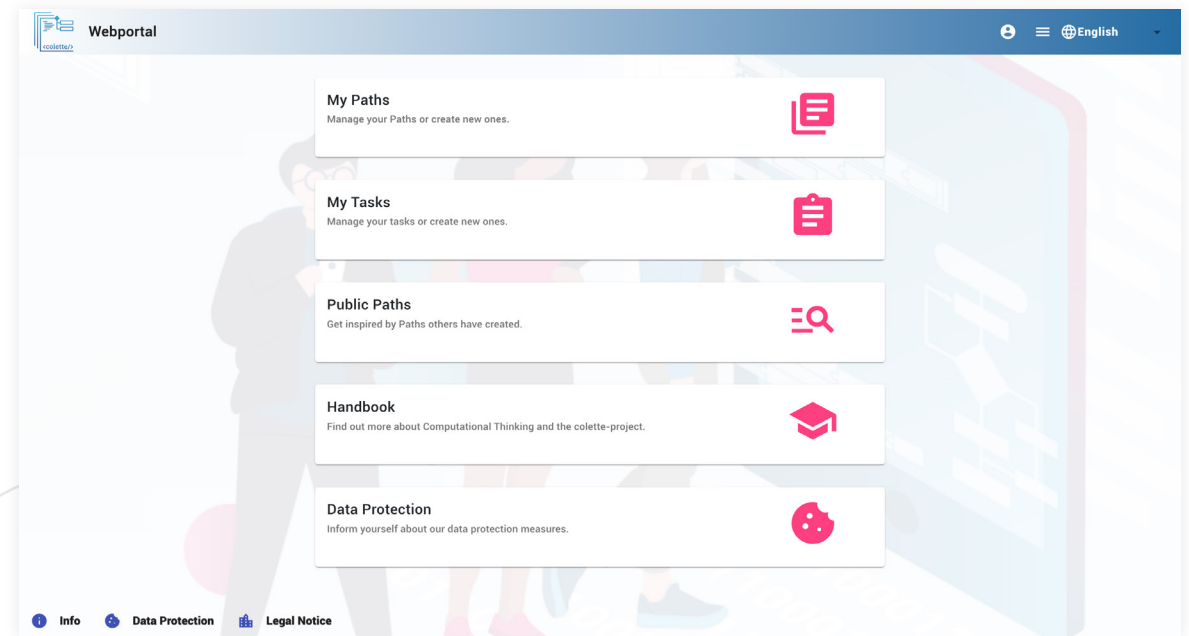
The App

... is used by students to work on the tasks educators have created in the portal. The students can use AR-previews, a task image and hints containing text, image or video content. Using the digital classroom enables students to get live feedback from their teacher and request help using the chat if and when needed.

The Portal

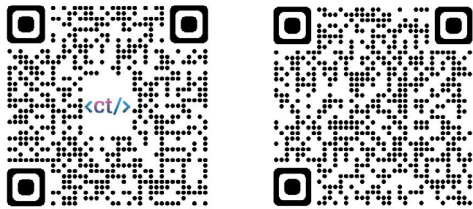
The portal serves as an authoring and monitoring tool for teachers, where they can create tasks and paths by modifying task families (blue prints for tasks), and provide them to the students via an alphanumeric code. When using the digital classroom feature, teachers can monitor their students' progress and interact with them through the <colette/>-system.

portal.colette-project.eu



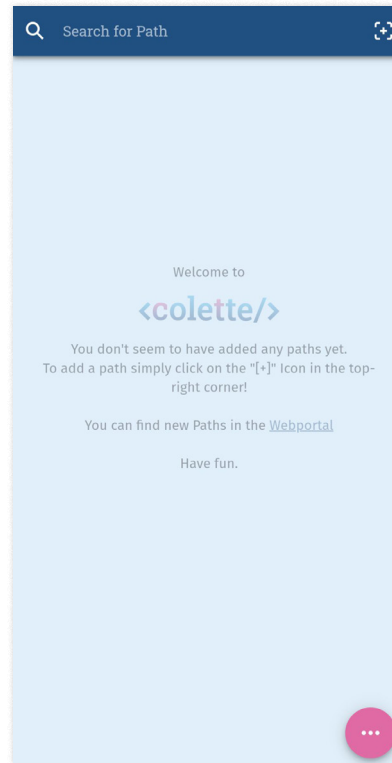
The App

The app is the students' side of the <colette/>-system. Here, the paths created by the teachers can be added, worked on, and solved in. It features an integrated AR-view, and a chat functionality when using the digital classroom feature.



<https://apps.apple.com/de/app/colette-project/id1611022520>

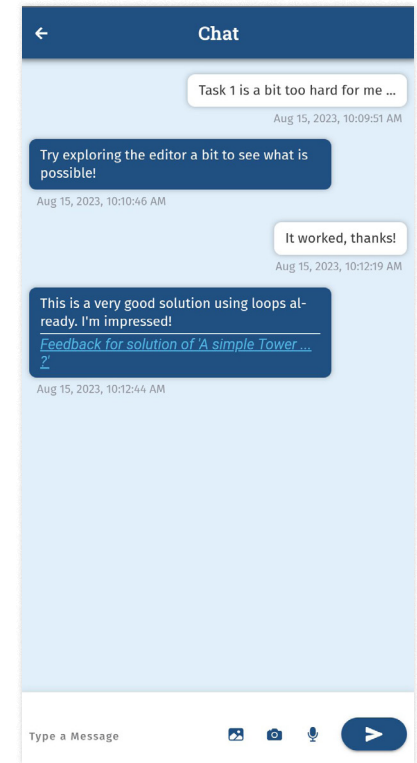
<https://play.google.com/store/apps/details?id=de.autentek.colette&gl=US>



- start screen



- viewing a codes' result in AR



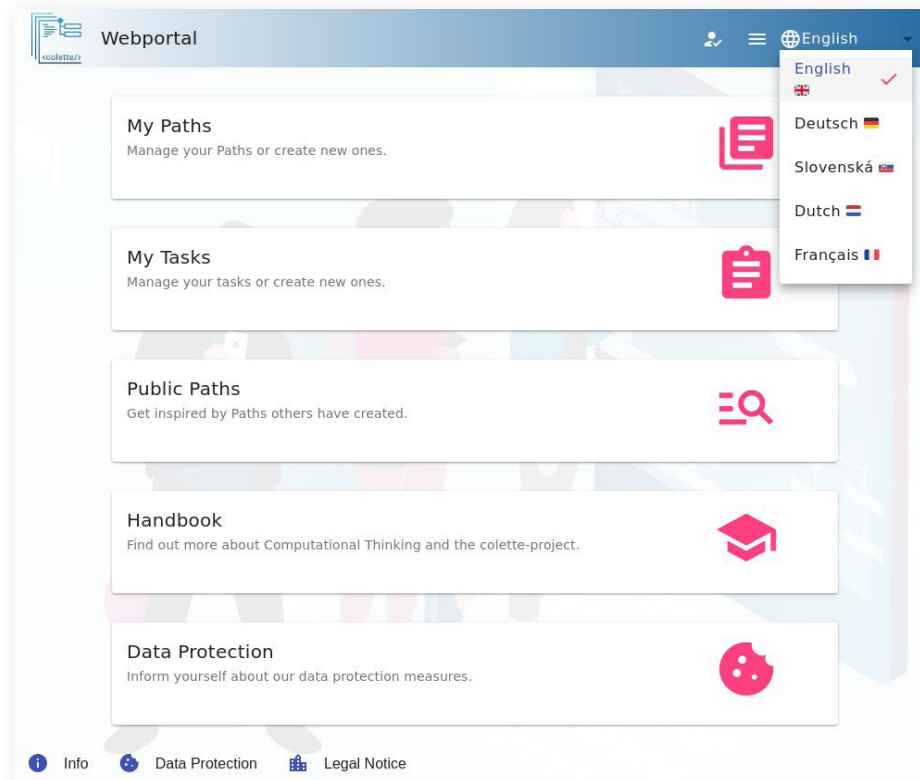
- digital classroom chat functionality

Multilingual Content & Interface

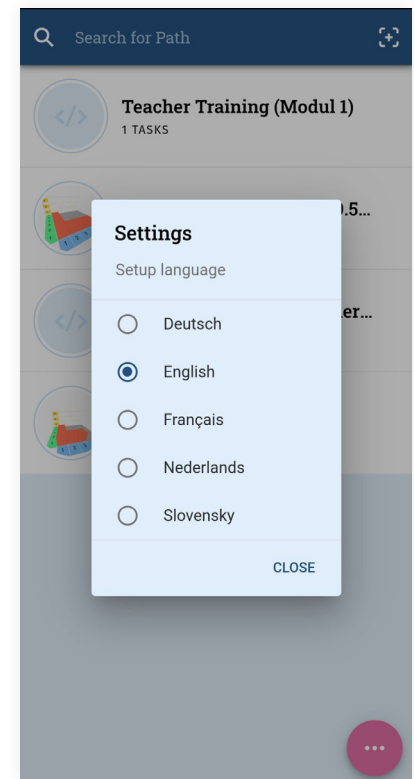
Both the portal and the mobile app are localised in the languages English, German, Slovak, Dutch and French. Switching the languages is easily accessible in the portal and in the app.

A selection of high quality best practice paths and tasks have been provided and are publicly available in all those languages.

 [Best Practice Paths](#)

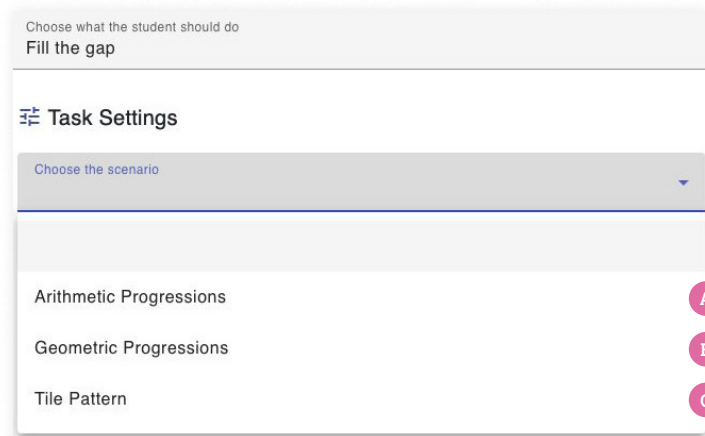


– Switching language in the portal



– Switching language in the app

A <colette/> – task

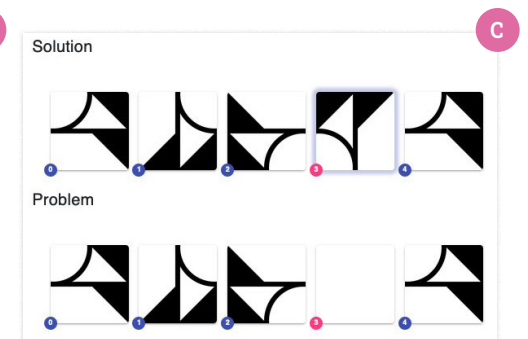
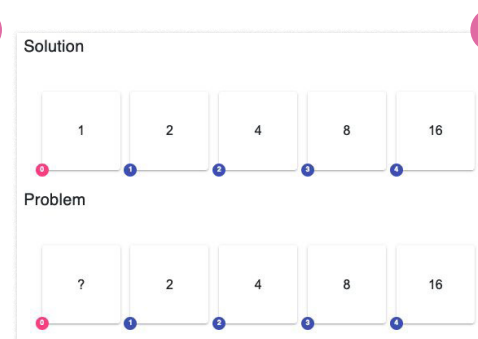


<colette/>-tasks are tasks that are derived from a task family. A task family is a set of tasks that can be easily modified to generate multiple, similar tasks with varying settings.

As an example, we might have a task about patterns (task family), that may be represented by number progressions or tiles.

1. We can choose different settings when creating a task. Here, a “fill the gap” task can be created with different progressions or patterns.

2. The same task family has multiple variations, addressing different skills and difficulties



A <colette/> – path

Paths are sequences of tasks!

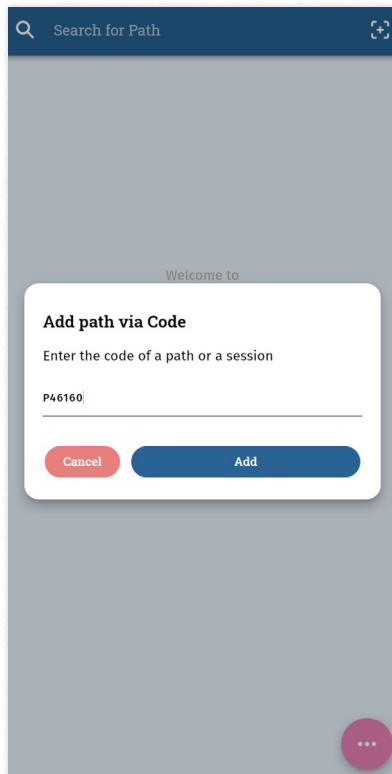
Combining tasks to a learning path allows educators to guide their students to a certain learning goal.

The screenshot displays a 'Tasks in path' interface with three tasks listed:

- Task 1:** 'Patterns simple 1' (Patterns - Arithmetic Progressions, Fill the gap). The task description is 'Find the missing value and complete the pattern.' It includes tags for 'Algorithmic Thinking', 'Lower secondary grades', and 'Abstraction'. There are expandable sections for 'Hints' and 'Picture'.
- Task 2:** 'Patterns simple 2' (Patterns - Geometric Progressions, Fill the gap).
- Task 3:** 'patterns simple 3' (Patterns - Tile Pattern, Fill the gap).

– The portal view of a path with multiple tasks

Focus on Simplicity

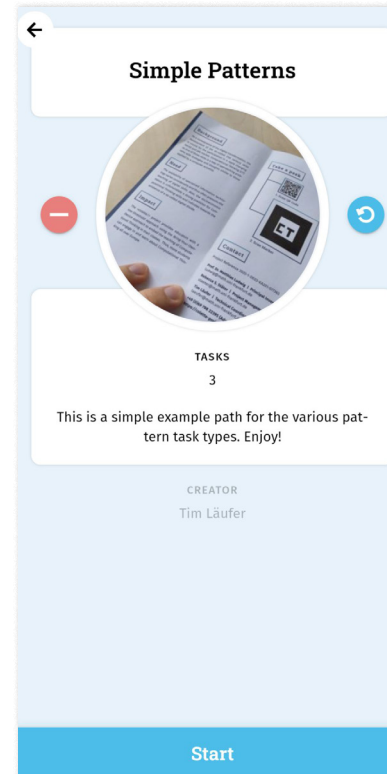


– Entering the Code in the app

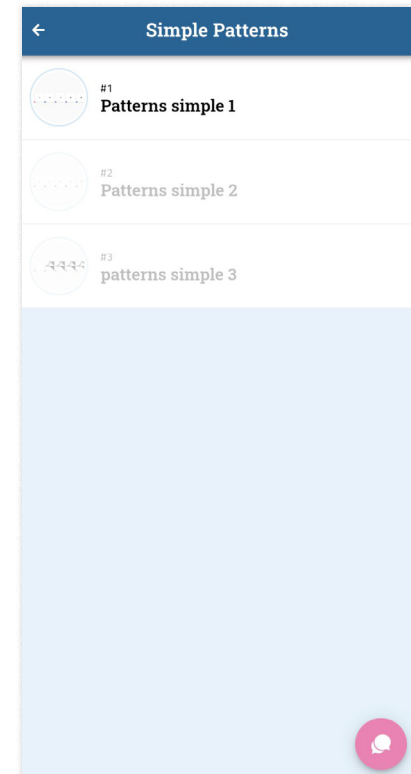
<colette/> is designed to facilitate teaching Computational Thinking. Hence, the user interface is designed in an easy-to-understand manner with guidance along the way. Students gain access to a path by entering the path or session codes given by their teachers.

Feel free to try out the path **P40262** to see the „Building Cubes“ tasks in action. To let a drone fly use the path **P46348**. For both it is helpful to use a printed [AR-marker](#).

For a not coding-based path, try out **P98267** to see the „patterns“ tasks in action!



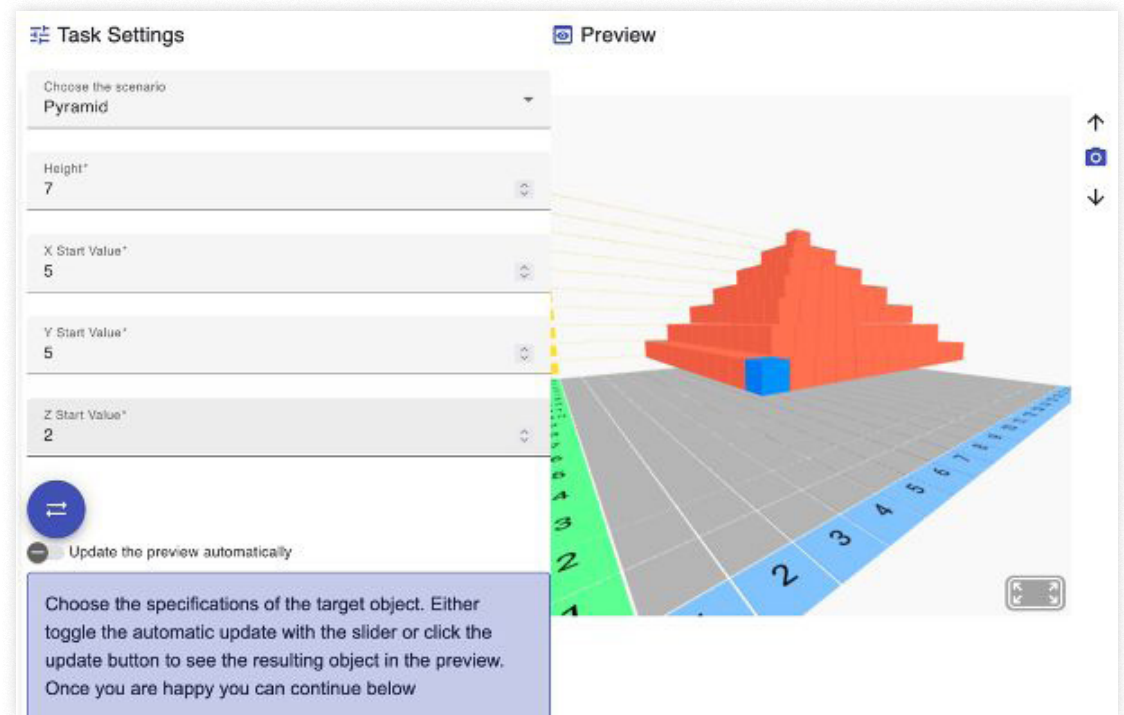
– Viewing a path in the app



– Viewing the tasks of a path

No coding needed to build coding-based tasks

When creating a coding-based task, the creator does not need to have any coding experience. Thanks to the settings that can be adjusted easily the actual coding happens in the portal.



- The settings of this task

- The preview of the result that the students are to create

Block-based Coding

Using the in-app editor for block-based coding, coding itself is made easier accessible.

Coding blocks can be fetched by dragging them out of the list revealed by clicking on a category in the category bar, which is split into four different categories for easier navigation.

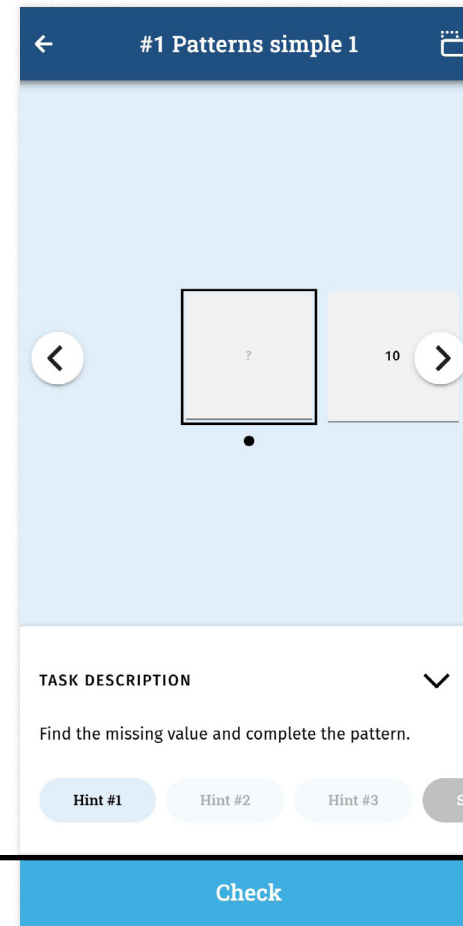
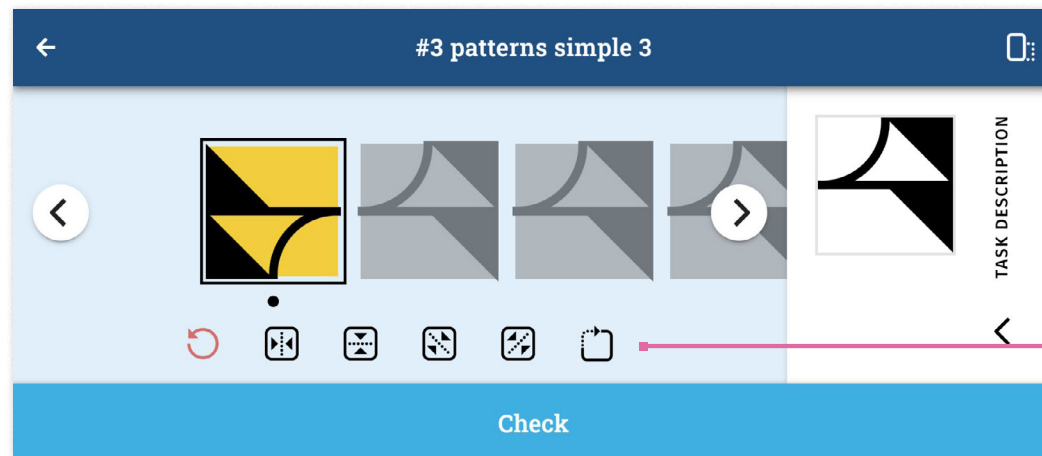
The screenshot shows a mobile application interface for block-based coding. The top bar is dark blue with a back arrow, the title "#1 A simple Tower ... ?", and a task image icon. Below the title is a category bar with four tabs: "Controls" (selected), "Maths", "Cubes", and "Variables". The main coding area contains several blocks: a green "repeat 1 times" block with a "do" block containing a blue "count with i from 1 to 1" block, a blue "1 + 1" block, a yellow "Initialise cubes" block, a green "count with i from 1 to 7 by 1" block, and a purple "do" block containing a "Set a block at x: 3 y: 2 z: i" block. At the bottom of the coding area are "Undo" and "Redo" arrows and a trash bin icon. Below the coding area is a "TASK DESCRIPTION" section with a collapse icon, containing the text "Build a tower of height 7. Place the blue cube at X=2, Y=2, Z=1." Below the description are three "Hint" buttons (Hint #1, Hint #2, Hint #3) and a "Skip Task" button. At the very bottom are two buttons: "Test" and "Check".

Annotations on the right side of the screenshot:

- Task image
- Category dropdown area
- Zoom controls
- Coding space
- Bin for unnecessary / wrong code
- Undo/Redo
- Description collapse
- Description and hints
- Test code using AR-Preview | Submit code for validation

Pattern-based Tasks

Pattern-based tasks come in two variations, number-based and tile-based. Tile-based patterns expect you to fill the highlighted gaps with a tile from the insertable tiles using drag and drop and rotate buttons. In number-based patterns you just fill in the numbers into the gaps of a sequence.



Change Orientation

Editable tile / Preset tile

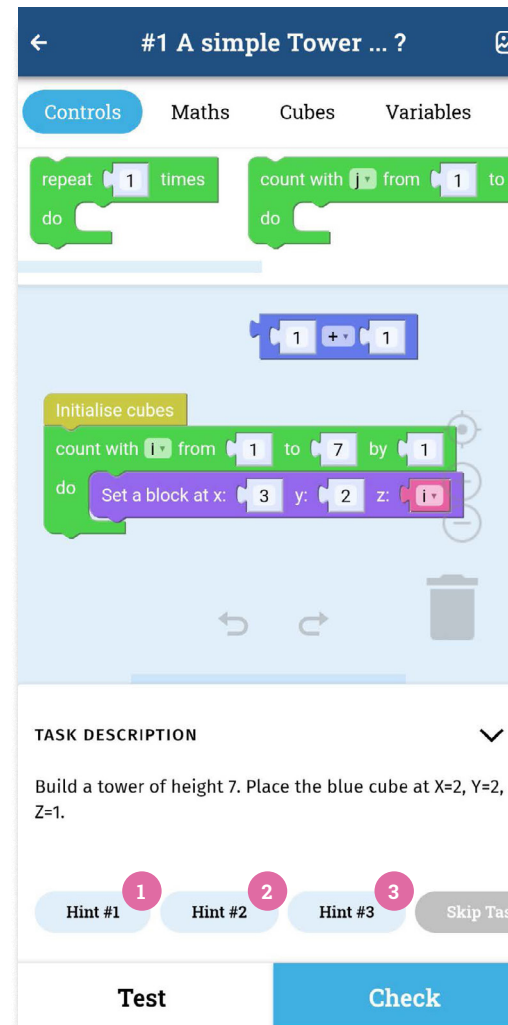
Collapse / Expand description

Insertable tiles

Transformation Buttons

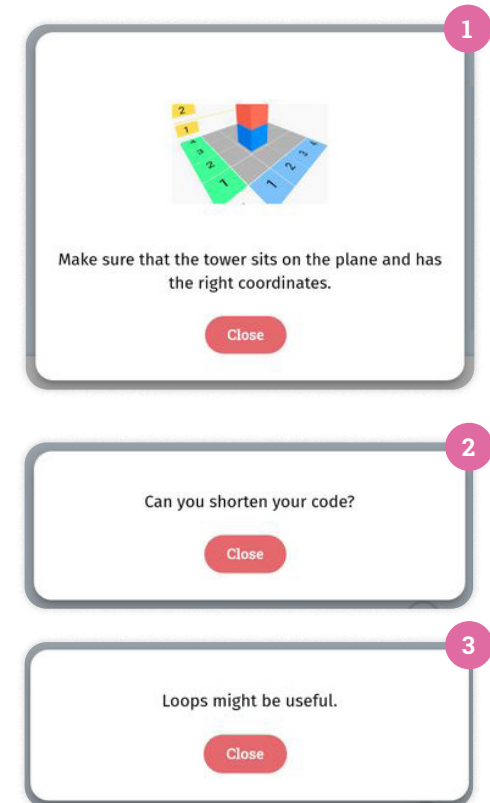
Tiered Hints & Differentiation

Tiered hints support the students allowing self-directed learning and differentiation. Pictures and videos are supported in hints as well.



The screenshot shows a programming interface for a task titled "#1 A simple Tower ...?". The interface includes tabs for "Controls", "Maths", "Cubes", and "Variables". The code area contains the following blocks:

- A "repeat" block set to 1 time, containing a "do" block.
- A "count with" block set to start at 1 and end at 1, containing a "do" block.
- A "do" block containing a "Set a block at x: 3 y: 2 z: i" block.
- A "TASK DESCRIPTION" section with a downward arrow, containing the text: "Build a tower of height 7. Place the blue cube at X=2, Y=2, Z=1."
- A navigation bar at the bottom with buttons for "Hint #1", "Hint #2", "Hint #3", and "Skip Task".
- At the very bottom, there are "Test" and "Check" buttons.



The hints are presented in three separate pop-up boxes, each with a red circular marker in the top right corner:

- Hint 1:** Contains an image of a 3D coordinate system with a tower of cubes. The text reads: "Make sure that the tower sits on the plane and has the right coordinates." Below the text is a red "Close" button.
- Hint 2:** Contains the text: "Can you shorten your code?" Below the text is a red "Close" button.
- Hint 3:** Contains the text: "Loops might be useful." Below the text is a red "Close" button.

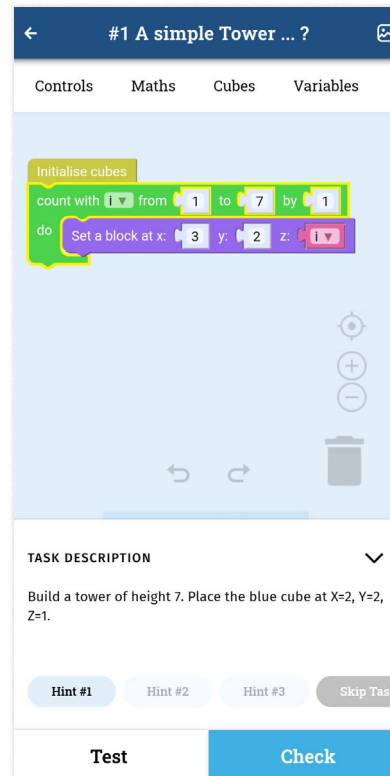
Hints open in a pop-up

In-App Feedback through Testing

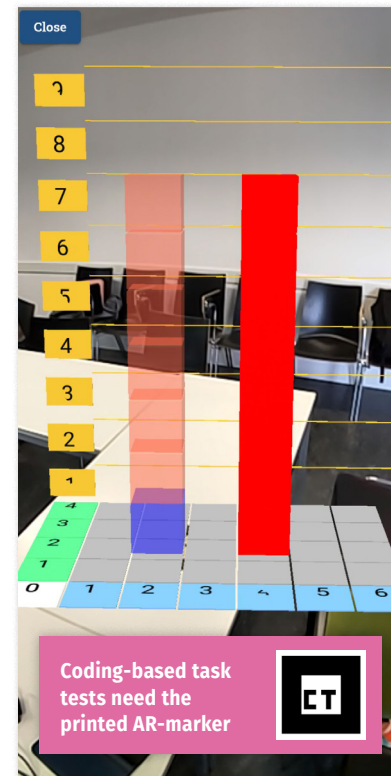
For coding-based tasks we use a block-based programming language, allowing a low-threshold approach for coding-novices to algorithmic thinking.

Testing (“Test”) a code shows the Augmented Reality (AR) view. The built-in AR-view allows students to debug their codes by themselves in a motivating and engaging way.

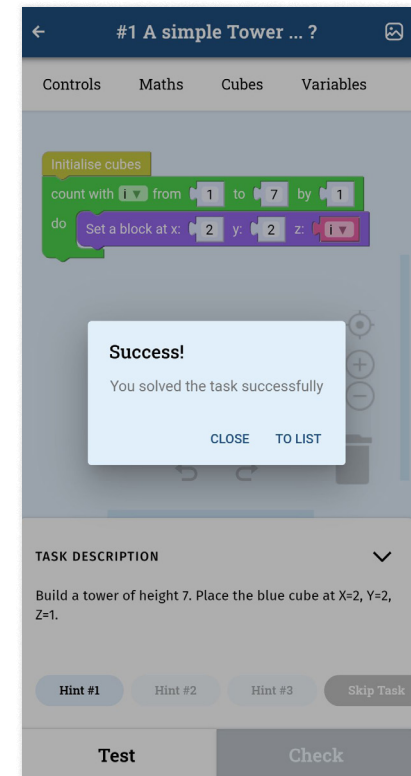
When checking a task (“Check”) it submits the code to the portal for validation. The students receive direct feedback.



– The editor of a coding-based task



– “Ghost” blocks, show where the blocks should be. Here we see that the code needs to be corrected.



– After fixing the code we can “check” it, and get immediate feedback.

Introduction

The digital classroom feature in <colette/> allows a detailed monitoring of the students' progress over a fixed period of time.

In the overview, all joined students and their current progress, as well as their last event, are presented.

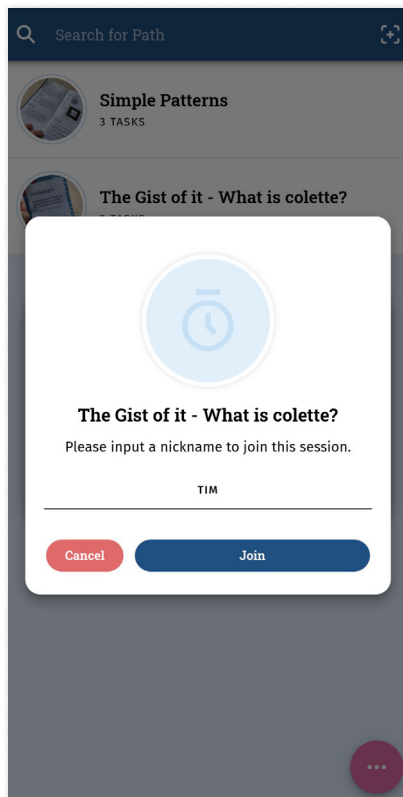
A Enter this code instead of a path code in the app to join the session!

The screenshot shows a session overview with the following data:

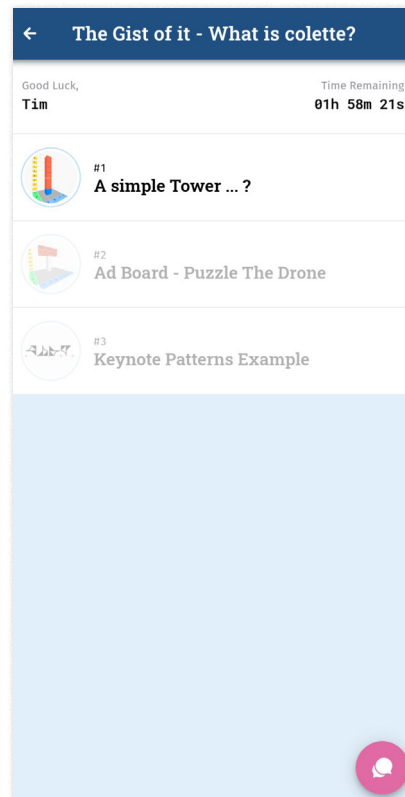
Student	Progress	Last Event
alisa	Started (Blue dot)	TASK enter
Anne-Marie	Completed (Green dot)	Task leave
Harita	Completed (Green dot)	Task leave
Julie	Completed (Green dot)	Session left
Tim	Completed (Green dot)	Session left

- The overview of a session in the portal. The colours in the progress indicate the state of the corresponding task. Blue means the task has been started, green means that it has been completed.

App Side

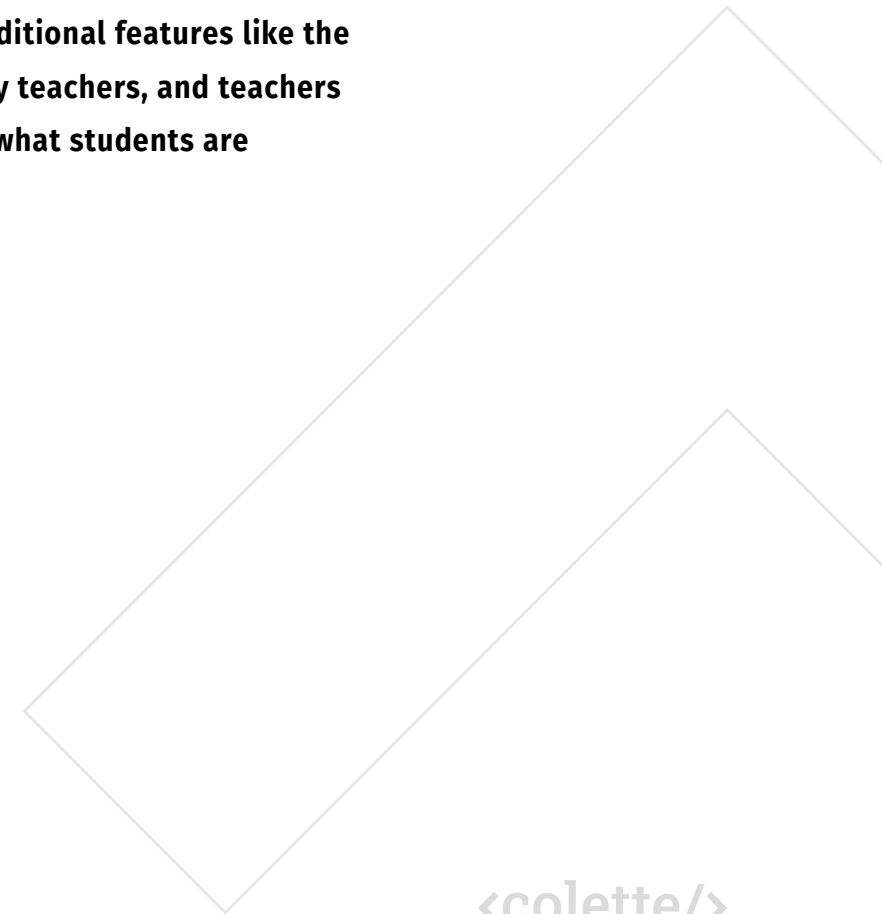


– When joining a digital classroom session, the student has to enter a name. They can also choose a pseudonym!



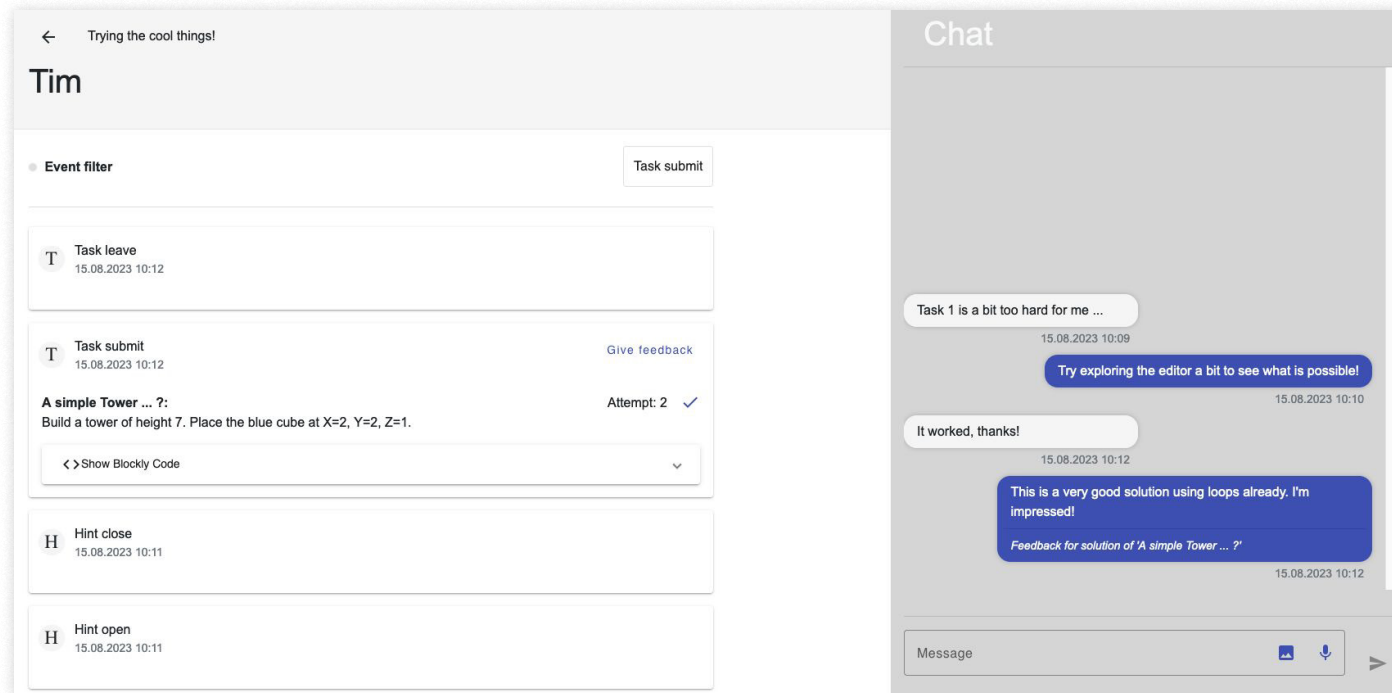
– In the session, the student can see the remaining time and the tasks to work at.

A classroom code (shown in the portal) is entered just like a path code inside the app. The digital classroom enables additional features like the chat, feedback by teachers, and teachers see in real-time what students are working at.

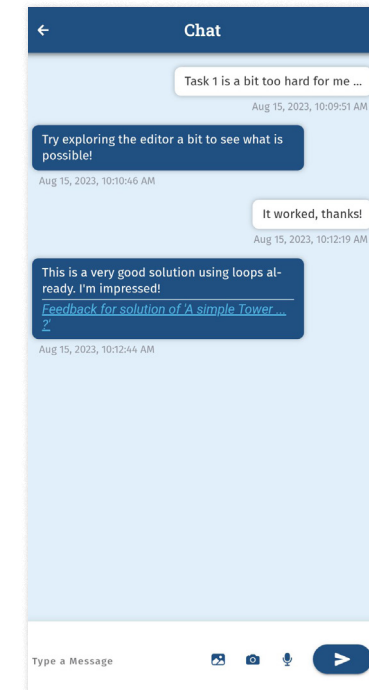


Detailed Progress Monitoring

The portals' view on one student shows the events and the chat, giving valuable information on the students' progress and solving attempts, providing insight to the teacher.



- The chat allows direct interaction even during remote teaching.

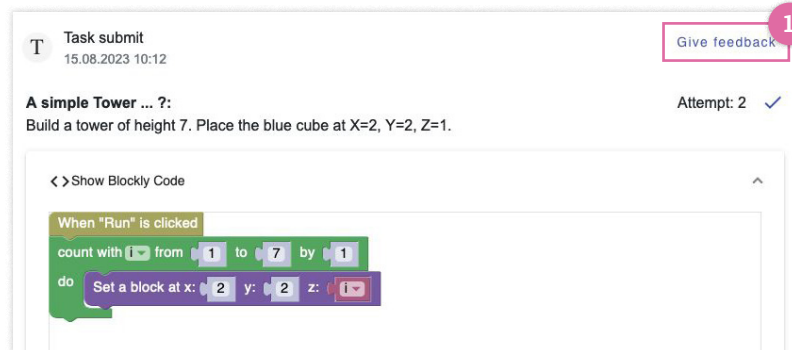


- The chat view in the app

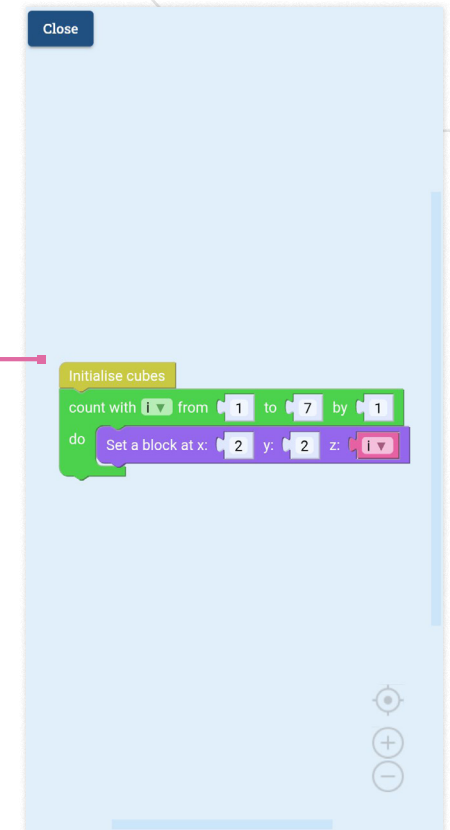
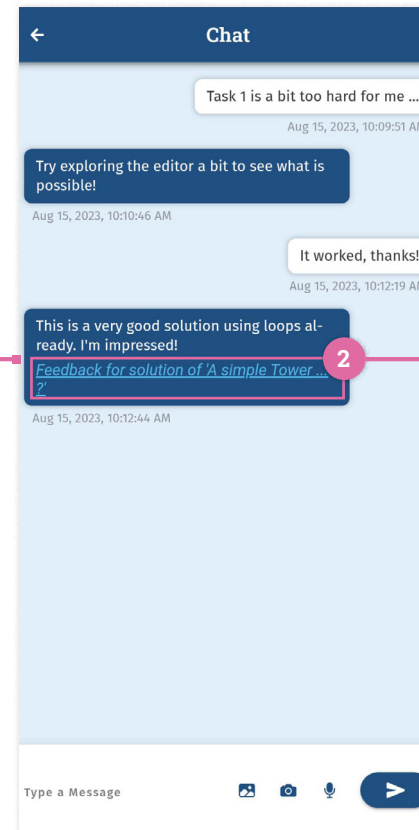
Direct Feedback

The teacher has access to a detailed view of the students' current solution and other students' attempts. Giving immediate feedback is possible and relayed to the student directly.

Inside the app, the student can view the referenced solution, allowing a shared reflection of the solution together with the teacher.



Giving feedback attaches the solutions' data onto the next chat message



IO 1+2: Portal & App

 colette-project.eu portal.colette-project.eu

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