



User Manual

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**L-Università
ta' Malta**



**PLACEHOLDER
INTERACTIVE**

1. Introduction: What is the CURIO digital toolkit?

The CURIO digital toolkit provides a playful virtual space in which students between the ages of 8-11 are able to interact with STEM subjects in an engaging and playful way, allowing them to not only observe and read about STEM-related phenomena but to ask, interact and experiment with them. This will assist in countering the perception that STEM education is reserved for the select few. The CURIO digital toolkit can be used for any scientific topic within the Learning Outcomes Framework (LOF) or any syllabus.

In CURIO, students restore curiosity to a fictional galaxy besieged by the Haze of Confusion, the game's antagonist. The Haze sweeps across the galaxy, draining the planets' inhabitants of their enthusiasm for a particular topic. Students play individually but are sorted into three teams (blue, red and yellow). By visiting the planets and asking the inhabitants questions, the students help them regain interest in their topic. Eventually, students will face the Haze and answer multiple-choice questions in order to defeat it. Once the students save the galaxy from the Haze, they can spend points earned during play to decorate their spaceship.

These are the phases of the game:

1. Voting for a target location.
2. Seeing the outcome of the vote.
3. Landing on the planet and asking questions.
4. Waiting for the teacher to evaluate the submitted questions.
5. Seeing the outcome of asked questions for the planet's inhabitant.

The application offers control over the game and provides the functionality necessary to host a game session. The application was developed as a single executable file that is installed on the teacher's computer (supporting Windows, Mac, or Linux), while the functionality of CURIO can be conceptually split between student side and teacher side.

The executable opens the teacher interface but also starts a local webserver as a background task (invisible to the user). That server hosts a Unity3D WebGL application that students can access by connecting to the webserver on the teacher's computer. For this to work, all student computers must be on the same network as the computer of the teacher. None of the machines require access to the Internet.

Once students access the Unity3D application, their browser (on the chosen device) becomes the student side application. This connects to the teacher interface for any communication about game states. As long as the teacher keeps their interface open, the game is accessible to students. By closing the teacher interface, the server is shut down as well, making the student side of the application unavailable.

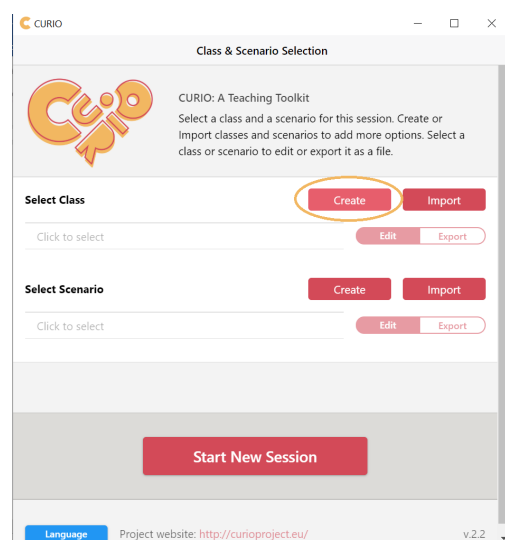
Operating the game on Android or iOS will require a version built specifically for the respective operating system. Installation of such an application will have to happen for each device individually. A mixture of devices within the same game session is technically possible but may require more preparation by teachers.

1.1 Downloading the CURIO digital toolkit on your laptop/digital device

The file can be downloaded on the teacher's device. Currently it exists as an .exe file. This needs to be extracted for the CURIO digital toolkit to run. Students do not need to download anything and do not need an internet connection to play the game.

1.2 Create Class

After successfully downloading the .exe file on the teacher's computer, the next step is to set up a class list.



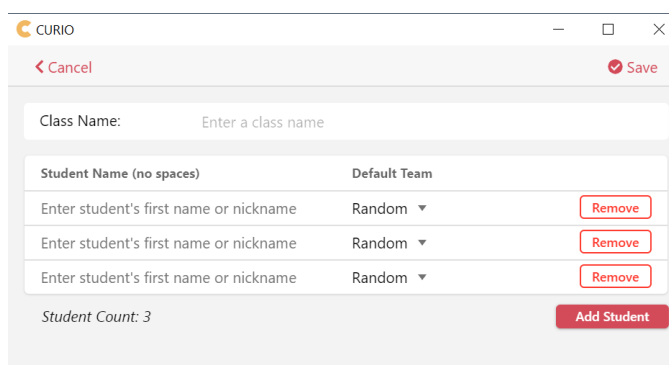
1. Create class

- Click on the 'Create' button and insert a label for the class. This can be found under 'Select Class' as can be seen on the right.
- New classes cannot use the same name.
- Class lists can also be imported, if there is no class with the same name.
- Class lists can also be exported to a file for safe keeping by clicking on the **Export** button which is next to the Edit button.

2. Adding student names

When creating a new class, you will see a new screen with three empty name slots.

- Add names in the empty rows. A minimum of three students is needed as students play in three teams.
- To remove a name, click on the **Remove** button on the right-hand side of the row.
- To add more students, click on the **Add Student** button on the bottom right-hand side of the task window.
- When you're done adding names, click on the **Save** button at the top right hand corner of the task window to save changes.



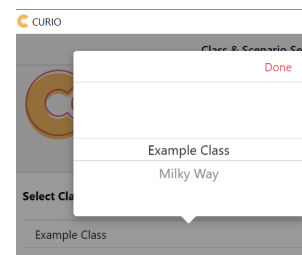
3. Students can be grouped into 3 teams

- Each team needs to have at least one student.
- Teams can either be present from the dropdown menu or be left at random. The toolkit will automatically divide students in teams of roughly equal size when random is chosen.

The screenshot shows the 'CURIO' 'Add Student' dialog box. It has a 'Class Name' field with the placeholder 'Enter a class name'. Below it is a table with two columns: 'Student Name (no spaces)' and 'Default Team'. There are three rows for adding students, each with a text input field and a dropdown menu for the team. The first dropdown is set to 'Random', and the others are set to 'Team 1', 'Team 2', and 'Team 3'. Each row has a 'Remove' button. At the bottom, there is a 'Student Count: 3' label and an 'Add Student' button. The dialog also has 'Cancel' and 'Save' buttons at the top.

4. Editing an existing class

- To edit an existing class, select it and click on the **Edit** button



- Classes can be deleted from the edit screen.

The screenshot shows the 'CURIO' 'Edit Class' dialog box. The 'Class Name' field contains 'Milky Way'. Below the field is a message: 'You are editing an existing class. To delete it from the application click the 'Delete' button.' A red circle highlights the 'Delete' button. There is also a 'Remove' button for the student 'Michael' in the table below. The dialog has 'Cancel', 'Save', and 'Delete' buttons.

- A popup window will appear to make sure that you want to delete. If you are sure press the OK button.

The screenshot shows the 'CURIO' 'Edit Class' dialog box with a confirmation popup. The popup is titled 'CURIO' and asks: 'Are you sure you want to remove this class? This cannot be undone!'. It has 'Cancel' and 'OK' buttons. The background dialog shows the 'Class Name' field with 'Example Class' and a table of students with 'Remove' buttons. The 'Delete' button is also visible.

1.3 Create Scenario

- When creating a new scenario, one empty sub-topic entry will be available.

- You need set a main topic for the scenario and input at least one sub-topic for the scenario. Click on

Add Sub-Topic

to add more sub-topics

and **Remove Sub-Topic** to remove sub-topics.

- Each sub-topic requires a multiple-choice question related to the sub-topic, a correct answer to the question and at least one wrong answer to the question.
- The correct answer is used to inform the students during the game. It should therefore be formulated in a way that is understandable without the question. E.g. Q: “Where do we (humans) get our energy from?” A: “We get our energy from food”, rather than A: “Food”

Remember to click on the **Save** button at the top right-hand corner.

2. Playing the game



Every CURIO session consists of 3 parts:

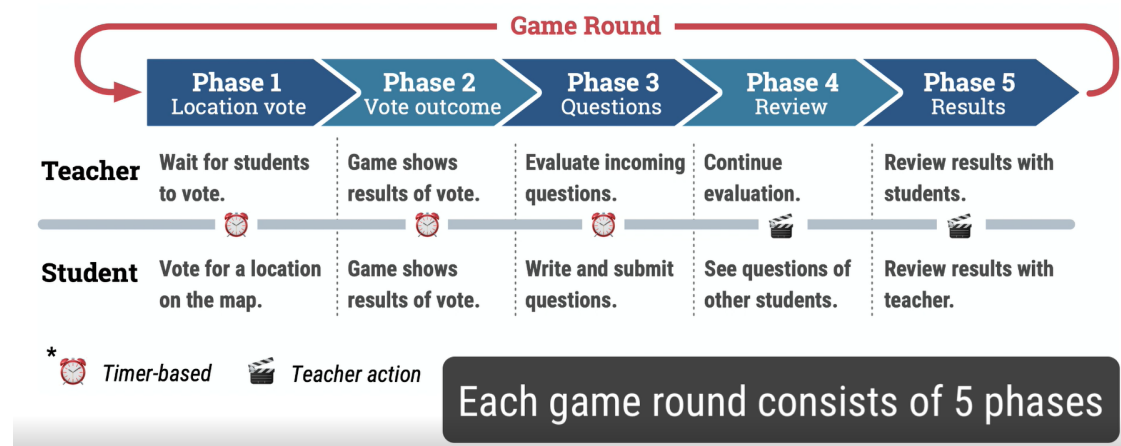
- 1) Beginning
- 2) Multiple Game Rounds
- 3) Endgame

Beginning

The beginning introduces students to the game environment.

Multiple Game Rounds

Students can then proceed to multiple game rounds. Each game round consists of 5 phases:

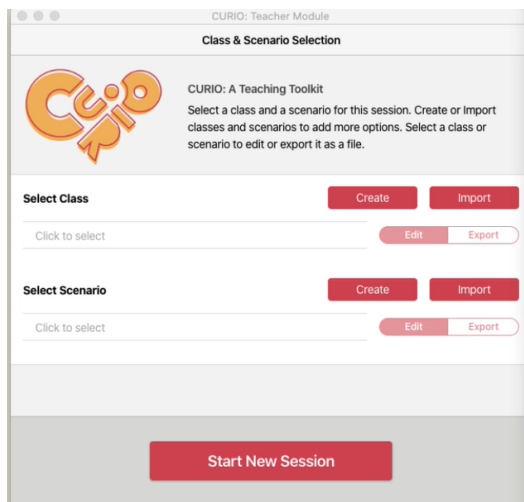


Endgame

The end game consists of 4 phases.

After the conclusion of the game, students can collaboratively decorate the spaceship in the game.

2.1 Beginning a Scenario



The image on the left represents what the teacher is able to see (the teacher's interface). In order to begin a scenario, you must

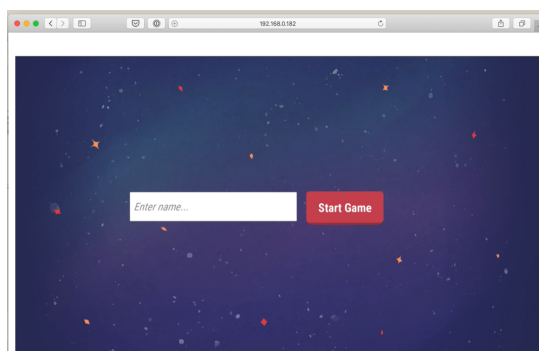
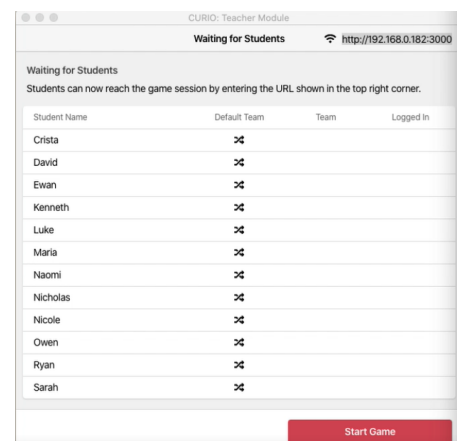
- Click on the 'Select Class' and choose a class.
- Click on 'Select Scenario' and choose a scenario.
- Click on 'Start New Session'.

Teachers can also pre-assign teams.

The teacher's interface will then look like this. Once every student is logged in, click on .

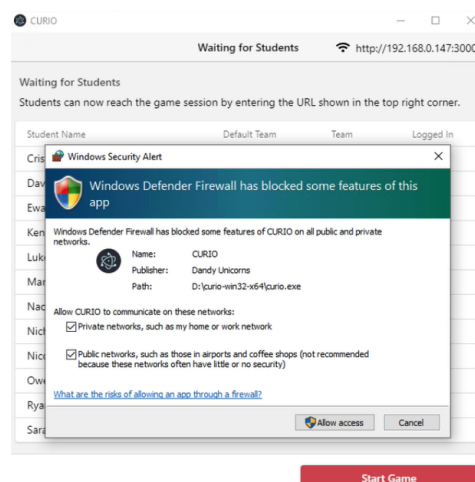
The URL on the top right of the screenshot on the right is copied and students are asked to type it into the browser address bar.

From the system settings teachers can also name their computer so as to create an easier address.



Students enter their name as written in the class list. Names are not case sensitive on the student side.

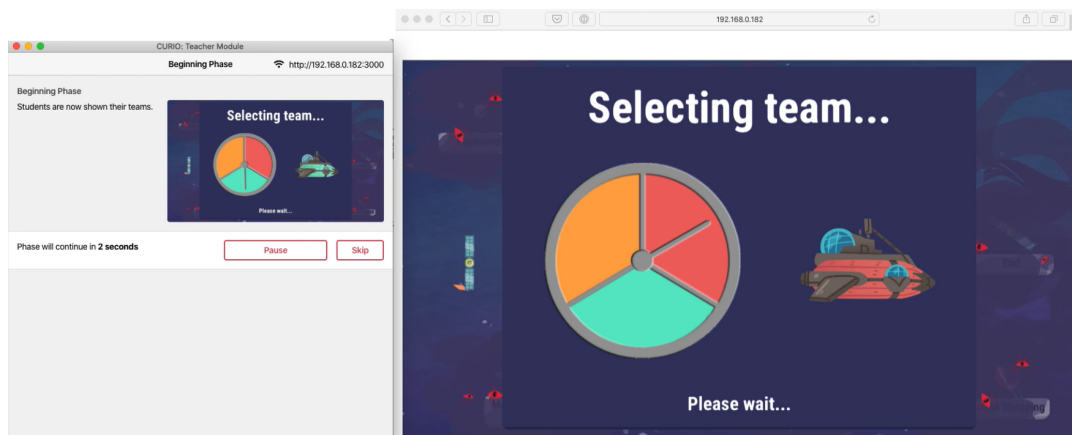
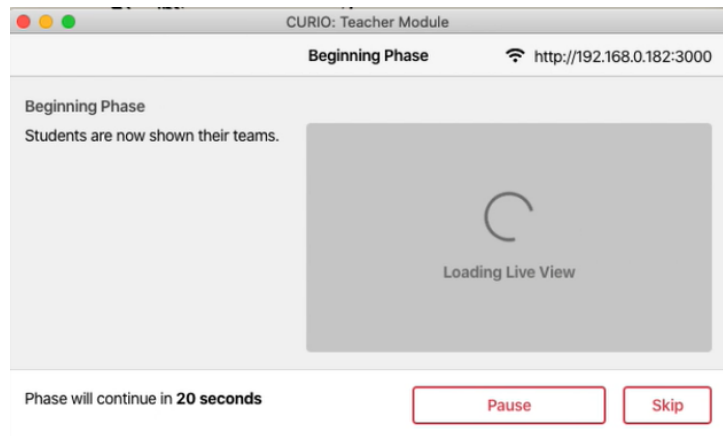
N.B. On the first run you will get a Windows Firewall pop-up as shown on the right. Allow access for private and public networks.



Teachers can see a snapshot of what students see. It updates every few seconds, showing the display of a randomly selected student.

Most game phases have an automatic timer.

Teachers have the option to pause this timer for discussions or skip to the next phase.



Students are shown which of the three teams they are part of.

Now the scenario has begun!

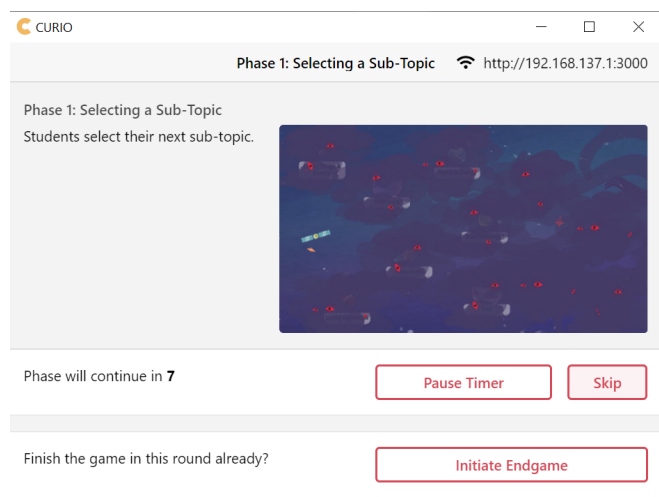
2.2 Multiple Game Rounds – Phases of a scenario

Every scenario round consists of 5 phases.

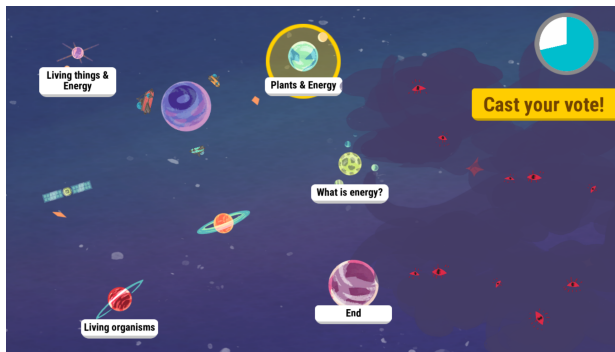
➔ In **Phase 1**, students vote on the next sub-topic to visit.

In this phase, teachers can go directly to the end of the game.

Ideally, teachers should not do that, or only do it after a few rounds.



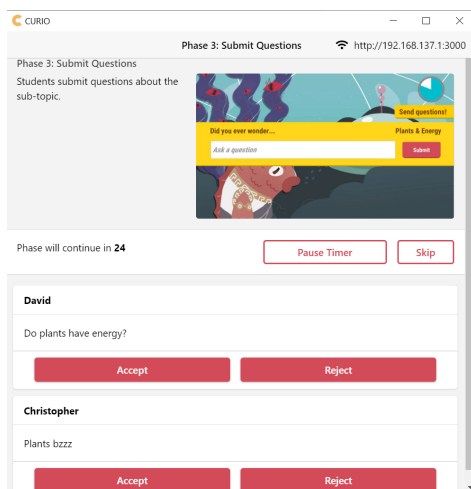
On teacher screen



→ In **Phase 2**, the sub-topic with the most votes is picked.

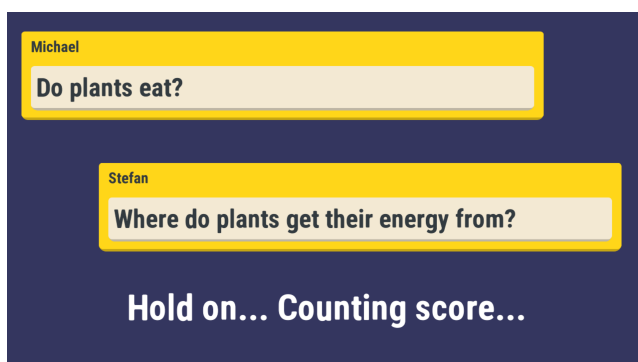
→ In **Phase 3**, students are asked to submit interesting questions about the sub-topic.

- Students can see a reminder of the sub-topic and use the input to submit questions. Very short inputs cannot be submitted.



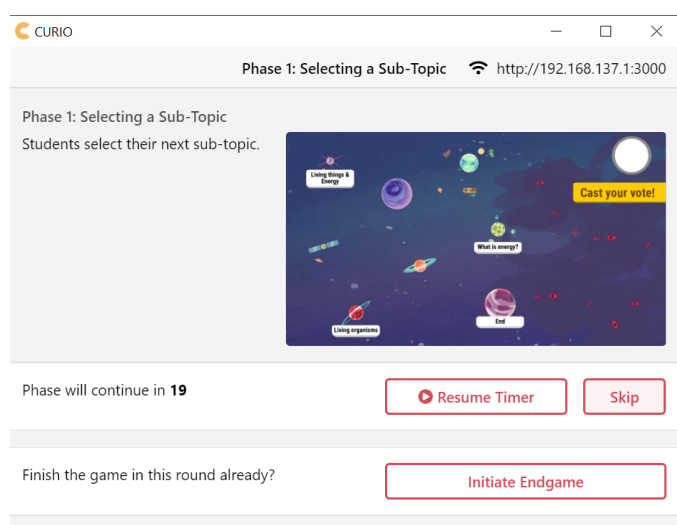
- Meanwhile, the teacher received a question from another student.
- Teacher can accept or reject questions as they come in.
- New questions are loaded once all current ones have been evaluated.
- Teachers can also **Skip** to the next phase if they want to continue early.

→ In **Phase 4**, the teachers can take time to evaluate the questions.



- While the teacher is busy, students see accepted questions

→ In **Phase 5**, students learn something about the sub-topic.



- Notice the difference in graphics and responses. Here the teacher can integrate some short activities about the sub-topic. For e.g. teacher can use a card game to show different examples of producers.
- A team needs at least 2 questions approved to make inhabitants happy.

Now a new round starts with Phase 1 starting from a new position.

- Students can vote for any sub-topic that they have not visited before.
- Once they reach the end location, the scenario concludes.

2.3 Ending a Scenario

A scenario ends when students reach the end location or when the teacher initiates the end in **Phase 1**.

The end of the game has its own **Endgame phases**.

- **Endgame 1**: students catch up to the antagonist
- **Endgame 2**: students have to recall information from their journey
- **Endgame 3**: students attack the antagonist. If the majority of a team answered correctly, their attack is shown larger

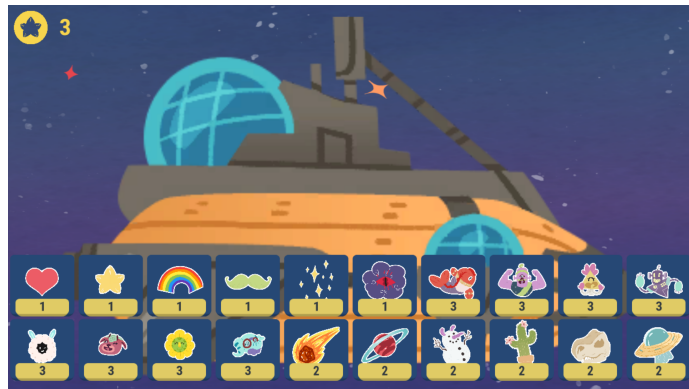
Endgame 2 & 3 repeat three times in total before the final conclusion

Over the 3 endgame rounds, students get 3 questions out of the sub-topics they have visited. These are selected at random.

If students visited less than 3 sub-topics during the game, they will receive questions that they have not encountered before.

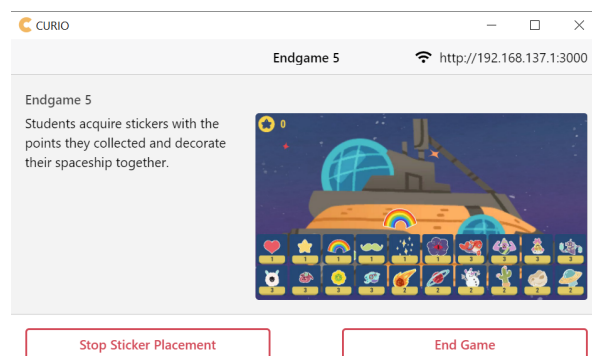
N.B. Game sessions should therefore feature at least 3 sub-topics.

- After the last round in Endgame 3 the game automatically progresses to Endgame 4.
- In **Endgame 4** the Haze disappears from the galaxy.
- In **Endgame 5** students collectively place stickers on their spaceship.



[Teachers can stop new sticker placement before ending the game.]

- This gives students time to take a screenshot of the final result.
- Once the teacher ends the game, it stops for all students.



3. Conclusion

CURIO fits the role of a supportive teaching game. Its strength lies with proper supervision and lacks educational value without the presence of a teacher that can pick up on the questions that students ask as part of the game. This digital toolkit is meant to be an add-on to assist with inspiring curiosity between the ages of 8-11.