

## Survive an alien abduction by mastering automation

Previous compulsory steps / Prior students' knowledge	None
Learning objectives	Practicing problem-solving and teamwork in the face of frustration
Subjects	Programming
Recommended Age	All
Material needed	PCs that can run the game
Sequence duration	60 minutes
Individual or group activity	Group activity
Skills developed	Collaboration & teamwork, communication, creativity, learning to learn, problem solving, planning
Price range of the game	0 if you contact the developers using <a href="https://www.zachtronics.com/zachademics/">https://www.zachtronics.com/zachademics/</a>
Similar games to use with the approach of the sequence	Any Zachtronics puzzle games

Tips for shorter duration	To make this sequence shorter you can play some levels beforehand and screenshot the answers or check <a href="#">this webpage with all solutions</a> . Let your students play the tutorial to learn the controls. But if they spend too much time on a puzzle, you can show the class the solution or ask students to explain how they did it. This can let you move to more complex levels faster.
Tips to make the sequences more accessible or inclusive	The game is only available in English. There is not much scenario and text to read, but you should explain the basics to your students (controls, goal of a level) if they can't understand by themselves with the game text and audio.

## Step by step: how to implement the sequence



Figure 1: Conveyor belts in Infinifactory (source: <https://scientificgamer.com/thoughts-infinifactory/>)

In this sequence, students are going to play Infinifactory. The game is a sandbox automation game where players play a human abducted by aliens to be used as a worker in their great construction plan. The scenario unfolds as you progress through levels and discover the dead bodies of your predecessors. There is a special “Infinifactory for Schools” version that only runs on Windows and strips out everything that could be considered offensive in the game.

Infinifactory is challenging, frustrating, and hopefully rewarding. The sandbox aspect means that you are left on your own to figure things out. You will need to spend a lot of time thinking, testing, and revising to progress through the game. On the other hand, it's exciting when the lightbulb finally lights up and your solution results in the correct final product.

This makes it a good game for a single player within a group, inside the classroom. Being in a group can make frustration easier to handle and forces emotional regulation. It can also teach teamwork and communication, as it is easier to be creative when thinking together since the game requires students to explain explaining their intended solutions.

### Getting the game for free

Read the information on this webpage: <https://www.zachtronics.com/zachademics/>. It presents the games developed by this editor and explains how to get several free copies for public schools and educational non-profit organizations.

- **Step 1: Discovering the game in groups (15 minutes)**

Gather your students in groups of 3 or 4. Have them start the game and go through a level with them. Explain the goal of the game and its general mechanics. Ask them to go through several initial levels that serve as tutorials. If they are stuck, check their issues, and ask the class whether anyone can help. Everyone learns from one another's problems.

- **Step 2: Progressing towards more challenging levels (25 minutes)**

Ask your students to go through more challenging levels and to pay attention to the scoring metrics at the end of the levels. Students should pass the controls around in their groups every 5 minutes. You can take note of their score on the board to create a small leader board. This creates a light competition among the different teams of students. It encourages students to find better solutions and to realize that completing/finishing a level is not the end!

To encourage cooperation in the classroom, you can add a rule to score extra points: students who help other teams win 1 “cooperation point” each time they successfully support their peers in a task. Add them to the overall score or count them separately. As cooperation points might be difficult to follow, do not hesitate to distribute 10 cards among your students — any cards will do, for instance, classic playing cards —, and tell each student to reward supporters from other teams by giving them one card which will count as 1 cooperation point.

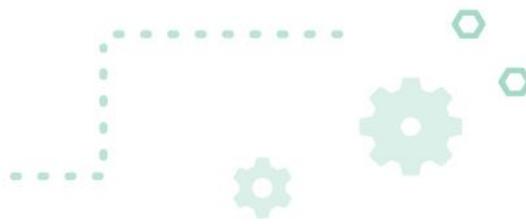
- **Step 3: Debrief (20 minutes)**

To debrief, you can ask your students the following questions:

- Did they feel frustrated during the session?
- Why?
- Was it because of the game, or was it because of communication issues within their team?
- Did they feel like they wanted to quit?
- Have they ever felt this in the classroom?
- Did they put any strategies in place to overcome such frustration? Did they learn something by listening to others' problems or by helping them solve them?

In the second part of the debrief, you can delve into how playing this game could highlight important “learning to learn” skills for students.

Start with an example: in the software development area, a well-known phenomenon happens – sometimes, by simply asking a question and explaining your problem to someone else, you find the solution on your own. Ask your students if it happened to them? Did helping others help them? Did it make them feel proud when they supported their peers?



## Getting the game:

<https://www.commonsemmedia.org/game-reviews/infinifactory>

<https://store.steampowered.com/app/300570/Infinifactory/>

## References:

Matte, C. (2015). Infinifactory. commonsemmedia.org Retrieved from <https://www.commonsemmedia.org/game-reviews/infinifactory>

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