

## Create the proper habitats for different animal species

Previous compulsory steps / Prior students' knowledge	For students: Basic knowledge of biology (i.e., up to the current curricular level of the participants).  For educators: Familiarisation with the game, its mechanics, and the biological concepts it uses.
Learning objectives	To learn about the habitats of different animal species and the biological bases of varied living beings. To identify and characterise physical, chemical, biological, and geological systems from models in order to communicate and predict the behaviour of natural phenomena. To make decisions under scientific criteria which will allow students to anticipate, avoid, or minimise exposure to natural risks. To select, configure, and program an activity based on a set of tasks that must be performed.
Subjects	Science, Biology
Recommended Age	15 - 18
Material needed	Computers
Sequence duration	60 to 90 minutes
Individual or group activity	Individual (could also be done in pairs)

Skills developed	Critical thinking, Creativity, Learning to learn
Price range of the game	0 to 45 €
Similar games to use with the approach of the sequence	<ul style="list-style-type: none"> <li>• Zoo Tycoon (1 or 2). These are older versions of Planet Zoo.</li> <li>• Thrive (open source). In this case, the learning object would be the biology of cells in relation to their environment. Players create the cells, not the habitat.</li> </ul>

## Step by step: how to implement the sequence

- **Step 1: Familiarising students with the game and relevant biological concepts (20 - 30 minutes)**

In this sequence, we will explore a video game that uses biology knowledge to reinforce curricular concepts from the subject. If you choose to use Planet Zoo or Zoo Tycoon, you should focus on the animals' habitats. However, in other games, such as Thrive (open source), players can focus on developing living cells with all their component parts, which must be created in such a way that they can survive and reproduce in certain environments.

After an explanation of the game and its mechanics, as well as identifying the biological concepts you (the educator) would like the students to learn, you should give students time to play the game on their own. You should also emphasize the importance of students paying attention to relevant curricular concepts while they play. Students are expected not only to familiarise themselves with the game, but also

to identify some of the biological concepts, such as: the names of species, parts of cells, different climates, the components in soil and/or water, etc. In Planet Zoo, we recommend using the Sandbox mode for this exercise so that the game doesn't ask students to complete specific goals, but rather allows them to explore and observe.

- **Step 2: Discussing the first game experience (20 - 30 minutes)**

The educator will lead a discussion with the entire class on how they found the gameplay experience. The goal is to see how far the students can get in the game by themselves and how it might be possible to use the relevant biology concepts they have identified to advance further within the game.

This means answering questions like: Was it difficult for the animals or cells to survive in the game environment? If things did not go very well for the animals or cells, why do you think this happened? How did each action change the course of the game? Do we understand how changing each environmental element or part of the cell influences the progression of the game, i.e., the capacity of the animals or cells to adapt to their environments?

- **Step 3: Replay the game— with a new challenge (20 - 30 minutes)**

Once the students have learned how to progress further in the game by understanding and using the basic concepts of biology, the next step is to have them play the game again. This time, though, the educator should challenge them to reach a specific point in the game that corresponds with a concrete learning objective.

In Planet Zoo and Zoo Tycoon, we can use one of the games' pre-set scenarios— levels with their own narratives, specific conditions and challenges, and a list of goals

for the player to achieve—in order to fulfil the learning objectives. Some of the goals these may offer include adopting a certain number of species, reaching a specific level of species diversity (either animal or plant), releasing animals into the wild, etc. (The [Planet Zoo fandom page](#) has a list of all the scenarios, if you would like to explore them further ahead of time.) However, be aware that this approach will take much more time to complete than other, simpler approaches.

In the video game *Thrive*, the educator can give students more specific goals, such as creating a cell with a core or reaching the coldest environment and surviving there for a certain amount of time, and these goals will fit nicely into shorter lesson plans.

## References

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