Mini Motorways | Mini Metro

Previous compulsory steps / Prior students' knowledge	Knowing how to use haptic controls on mobile devices.
Learning objectives	- Learning how to manage the resources the game offers to the player on a regular basis. - Learning to adapt to the unknown and to build a strategy according to the resources available.
Subjects	Geography, Citizenship, Social Sciences
Recommended Age	(10 – 14) or (15 - 18)
Material needed	Phone, tablet or projector
Sequence duration	60 - 90 minutes
Individual or group activity	Group activity
Skills developed (after learning objectives)	Critical thinking, research, empathy

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Price range of the game	<10€
Tips for inclusion	**If you choose to play the game:** **Mini Metro**: Some of the game's options may help in different ways. The game can be stressful for some players when there are overcrowded stations. You can adjust the difficulty level or choose the Endless game mode to avoid that. Pausing the game while planning strategies is very useful so you can do it more calmly. Also, you can skip the transition between levels to avoid motion sickness. Although the videos are available in English, you can add the subtitles in a variety of languages to adapt the content to your local language.
Tips for shortening the duration of the sequence	The sequence is already about 1 hour, but if you would like to shorten it a bit more, you can incorporate some of the questions from Step 5 into Step 4 or skip the student presentations in Step 3 and go straight into the group discussion in Steps 4 and 5.

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Step by step: how to implement the sequence

- **Step 1 – Getting familiar with the games (10 minutes)**

In this sequence, we will explore two video games: Mini Metro and Mini Motorways. Both games come from the indie gaming culture. That is, they were not created by a big game studio. They are minimalist strategy-simulation games. Mini Metro is about designing a metro map for a growing city, while Mini Motorways is about drawing the roads leading to a growing city.

Here is a short description of the games, which you may adapt for your students:

Mini Metro

Mini Metro is a minimalist subway simulation game focused on designing efficient subway networks. The player must constantly redesign their line layout to meet the needs of a rapidly growing city. The player must draw lines between stations and set the subway trains in motion. As new stations open, the player needs to redraw the lines to make them efficient. In addition, players get limited resources, so it is up to them to decide where and how to use these resources to keep their cities moving.

Mini Motorways

This game is focused on drawing the roads that lead to a growing city. The player must build a network of roads, one by one, to create a bustling metropolis. The player must also continuously redesign the city to keep the traffic flowing, as well as carefully managing upgrades to ensure the city keeps running.

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- **Step 2 – Exploring mobility in contemporary cities (25 minutes)**

In this step, we will explore the concept of the construction of contemporary cities displayed in 2 different games. We will focus on the growth process of cities and the infrastructures that they need in order to facilitate the mobility of their citizens.

We suggest splitting students into two smaller groups, where each group will focus on one game at the beginning and then come together for a discussion. However, you may organize the activity without splitting the students into groups if you wish.

Once the students are split into groups, show each group videos related to one of the video games.

Mini Metro:

- Video for students: Mini Metro Mobile Teaser
- Video for teachers' preparation (deep dive into the game): Nerd3 FW- Mini Metro

Mini Motorways:

- Video for students: Mini Motorways Trailer
- Video for teachers' preparation: Mini Motorways Gameplay Video

Next, ask the students to focus on the following questions and to prepare a short introductory presentation for the whole group:

  - What elements of urbanism do you observe in the game? (architecture, buildings, the environment, natural geography such as rivers, seas, and mountains, etc.).

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- Which elements are necessary for organizing a city? Which elements may make it more difficult to organize a city?
- Think about what elements need to be considered to build a transport network in a city, and how these elements affect how people move around the city.

- **Step 3 – Each group presents what they saw in the videos (10 minutes)**

Each group should give a short presentation explaining what they saw in their videos and highlighting the answers to the questions above. Following these presentations, show the short trailers of both video games to the whole group. Give a task to the groups to pay attention to the game they did not watch before and look for the elements that the other group mentioned in their presentation.

- **Step 4 – Guided discussion and shared reflection, reaching conclusions (15 minutes)**

At this point, you can further explore the topics and concepts mentioned by your students as a discussion among the whole group. Of course, the discussion will depend on your students' presentations and the main concepts and challenges they noticed, but we suggest focusing on the pros and cons of public and private transportation in cities. It may be particularly interesting to discuss environmental concerns and spatial inequalities in order to highlight the effects of car traffic and subway transport, as well as how these different modes of transport are organized and who has access to them.

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Here are some possible questions to guide the discussion:

- What questions do these games raise in your minds about the organization of cities in general? About the city where you live?
- How do you think cities will change in the future? What roles will public transportation and roadways play then?
- Who has access to these different types of transportation now, and who will have access in the future?
- What kinds of pros and cons do these transport types have for the environment? For the community of local residents? For visitors to the city?
- How do you think the transport network must adapt to cities growing or expanding over time? How must it adapt to cities that shrink over time?

- **Step 5 – Reflection at the end of the game (30 minutes)**

End the lesson with some time for personal and/or group reflection. You can do this by printing a city map of the game in DINA3 and discussing different topics with students, including:

- How would you evaluate the decisions that each player has made, according to mobility, environment and livability issues?
- How would you improve the mobility network to make it more effective and more environmentally friendly?

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