

We are the makers – IoT Learning Scenario Smart Bottle

1. Title of the Scenario	<i>Smart Bottle</i>
2. Target group	Secondary school and vocational school students between 14-17 years old
3. Duration	This scenario can be divided in 3 different sessions each lasting 1 or 1:30 teaching hours
4. Learning needs	Basic knowledge of makecode
5. Expected learning outcomes	<p>Understanding the importance of the water in these fields:</p> <ul style="list-style-type: none"> – Philosophy: Talete and why his argument was different from oriental doctrines and Greek poets. – Biology: the importance of water for life. – Social use: water footprint, poverty, pollution and, health. – Amnesia: why do we forget things? And ways for helping us in order to remember to drink – IoT: students will learn how to build a smart bottle, which reminds them to drink, and tracks how many sips they have had.
6. Methodologies	<p>Lesson 1: Participatory lesson with presentation. Water is "archè". Explain why philosophy was born in Greece and with Talete.</p> <p>Lesson 2: Participatory Lesson with presentation. Water is our responsibility. Try to elicit a debate around the role of pollution and injustice in the world.</p> <p>Lesson 3: Brief intro with slides and learning by doing methodology: How water occurs in cells, brain, and memory. Why do we forget? Build an external help like a smart bottle: each group writes a code to obtain a smart bottle that reminds students to drink.</p>
7. Place / Environment	Classroom, Lab
8. Tools / Materials / Resources	Projector or interactive whiteboard, computers, microbit, bottle

<p>9. Step by step description of the activity / content</p>	<p>Lesson 1: presentation Water in Philosophy, Talete, his argumentation, and why we say that philosophy has started in Greece and with Talete. Lesson 2: presentation Water on Earth: The teacher shows some graphs: The percentage of drinking water on the planet, and the percentage of different access to water by peoples. A debate about pollution and poverty. Water Footprint: The teacher explains what "water footprint" means and asks students how much water is required for producing foods, objects... After that, the teacher shows a video about this topic, and a few charts about the correct amount of waters, behind our processes and consumption. Lesson 3: presentation and coding Water in biology: water is fundamental for life: cells and brain's activities. So water is useful for memory itself, but what is the Memory (cognitivism)? What is oblivion? And why do we forget? There are different types of Amnesia: because of a trauma, in childhood, and one type of amnesia which occurs in the prospective memory. How to remember to complete a task in the future: external help or internal? Smart bottles are external helps which alerts to drink. Learning by doing: each group of students write a code, and create a smart bottle which should alert when they have to drink more.</p>
<p>10. Feedback</p>	<p>1 and 2 sessions end by debate - What is philosophy? - What is our role on the planet? We are not only a drop in the ocean, our footprint, our impact equates to much more. The last session is built on the effective capability of solving a problem of memory, writing a code for a smart bottle</p>
<p>11. Assessment & Evaluation</p>	<p>Lesson 1 : - Questionnaire. Lesson 2 : - Assess the participation in the debate. Lesson 3 : - Quality of the smart bottle programmed. Evaluation of the teamwork. A final test about what students have learned.</p>