

Cupcakes

Teacher manual

2 lessons, 120 minutes, age 13-15



Utrecht University

Learning aims

- The student can describe that sustainability issues are complex, multi-faceted and open ended
- The student can describe the connection of themselves with the problem

Lesson overview

Times are an indication

time	Teacher and students
5 min	Entry, short explanation
20	Dividing roles, questions 1, 2, 3, and 4
10	Question 5 (A3 sheet)
30	Baking cupcakes
15	Making a storyboard
15	Filming
15	Uploading and watching other movies
10	Questions 6 and 7 and evaluation

This lesson is aimed at the Find out phase of Socio-scientific inquiry-based learning (SSIBL). It is not part of, but certainly linked to the developed lesson series about sustainability competences, developed by teachers and science education researchers from the region of Utrecht, the Netherlands. These include a lesson about the fashion industry, collecting smartphones for recycling, and a lesson series about a sustainable school canteen.

Overview teaching and learning activities

**** Introduction by teacher*

5 min

Students enter the classroom (a classroom with ovens and baking supplies are needed for this lesson!). The students sit down in groups (divide them yourself, or let them decide for themselves). The teacher explains the idea of the lesson.

We will make **cupcakes** today! During this, we will have a look at how sustainable the ingredients are. Each group has their own specific additional ingredient that they're going to investigate (cacao, vanilla, blueberries, or honey). At the end of the lesson, you will summarize your findings in a short **movie** with your device (tablet/smartphone/laptop). This movie has a maximum duration of 60 seconds!

Then, shortly discuss the **division of roles** (page 2). Also make sure to stress that everyone helps all the time, but the roles are meant to make someone responsible for overseeing that specific process.

**** Dividing the roles and research part (questions 1, 2, 3, and 4)*

20 min

The students now start their **research** part. Each group gets 10 A5-size cards with information about their ingredient (information cards provided in separate file). Each group has another main ingredient, some groups might have the same one if there are more than four groups (which is likely).

The students **divide their roles** for the lesson, and then answer **questions 1, 2, 3, and 4** based on this division. They can use the website www.distance.to for question 1, for estimating distances, or they can use the 'measure distance' option of apps such as GoogleMaps.

For the end of this phase, it is advisable to start **preheating the ovens** to 175°C, so the cupcakes can go into the oven as soon as possible.

**** Summary on A3 sheet (question 5)*

10 min

After the research part is finished, the students summarize what they've found on the **spare A3-sheet**, which includes sections on 'people', 'planet', and 'prosperity' for their ingredient (**question 5**). These '**3 Ps**' are also shortly introduced in the student materials (page 5), but perhaps student might still have difficulties with deciding which information goes where. Potentially this might require some teacher assistance.

Students will make good use of the information they've placed on this A3-sheet for the storyboard and the video they'll make during the last part of the lesson. It is therefore highly recommended they spend enough time on this task.

*** *Baking cupcakes*

30 min

When they've finished the A3-sheet, the students can start **baking the cupcakes**. The recipe can be found on a separate A4-sheet, and differs per group (their unique ingredient). All the necessary ingredients should be present in the classroom, as well as the equipment and the appliances. **Remind the students** that they might want to shoot some **short shots of making the cupcake** to include in their movie!

*** *Constructing a storyboard*

15 min

Students will receive a **scheme** to construct their **storyboard** on a separate sheet. On this sheet they'll sketch what information should be present in their movie, and they make a first draft of their story. Also make sure to stress that the movies will be watched by other students and that they should be handed in to the teacher at the end of the lesson.

*** *Shooting the movie*

15 min

Guide the students when they're **shooting the movie**. Perhaps also use other locations than the classroom if applicable.

*** *Watching the movies*

15 min

Of each group, the **movie producer** will take the device on which the movie is shot and goes round the other groups to **show the final product**. Simultaneously, a movie producer from another group visits the persons that were left behind, in such a way that **each group sees at least one movie of each special ingredient**. It will probably take too much time to watch each movie with the whole group, but if this is something that can be done easily and quickly you might consider this too.

Of each group, the people who remain at the table and who watch the other movies will write down for each ingredient **how sustainable** they think these ingredients are. When the movie producer returns, they explain their findings to them. In such a way, each student gets an overview of the sustainability of all special ingredients.

*** *Feedback questions (6 and 7) and evaluation questions (8, 9, and 10)*

10 min

Now, the students answer the final questions for themselves (**6-10**). **6 and 7** are about their own sustainable choice and inspecting a food label, questions **8, 9, and 10** are evaluative and they concern the whole lesson.

At the end of the lesson stress again that students send their movies to the teacher.

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