

SCIENTIX LESSON PLAN

Title

HYGIENE IN THE SCHOOL ENVIRONMENT

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Subject

Biology, Mathematics, Informatics, Economics

Aim of the lesson

By the end of the lesson, students should be able to:

- Understand the importance of hygiene rules
- Develop their cooperation skills
- Use a digital presentation (Power Point)
- Prepare biological cultivations of microorganisms at the air laminar
- Calculate the price per unit of products
- Apply basic hygiene rules in real life.

Age of students

15-17 years old

Time

Preparation time: 1 hour

Teaching time: 3 lessons x 45 minutes

Teaching material

Offline:

Petri plates
Agar medium
Parafilm
Board
Access to computer
Projector
Gloves
Power Point
Pen and paper
Calculator
Air laminar
Detergents



21st century skills

How the lesson plan corresponds to 21st century skills. To find out more: <http://www.p21.org/our-work/p21-framework>

This lesson plan will enhance among the students the following skills, defined as 21st century skills:

- **Collaboration**
- **Critical Thinking**
- **Communication**
- **Creativity**

Moreover, the students learn how to design an experiment, how to observe and collect data, abilities that will develop their decision-making skills of collecting and using data.

Lesson Plan

Name of activity	Procedure	Time
1st lesson		
Brainstorming about microorganisms	The teacher applies the technic of brainstorming in order to motivate his/her students to express their opinions and previous knowledge about microorganisms and the importance of their existence.	8 min
Grouping and growth promotion of microorganisms	Students are grouped in groups of 4 or 5. Each group is asked to: <ul style="list-style-type: none"> ● Work at the air laminar and put the growth material (agar medium) into 5 plates. ● Decide which 5 objects of its school environment are believed to be the most contaminated of microorganisms, while they are expecting the agar medium to solidify. Then, they are asked to: <ul style="list-style-type: none"> ● Bring together the objects with the agar medium, so that the microorganisms can be transferred from the objects to the agar medium which is in the plates. Finally, they close the plates with parafilm. 	30 min
Discussion and preparation for the next lesson	At the last session of the lesson, the teacher: <ul style="list-style-type: none"> ● Begins a discussion about the results that the students are expecting to find and make a list of their choices. ● Asks each group to bring 3 hand detergents from the local supermarket that they believe they are the most effective in hands hygiene and record their prices. 	7 min
2nd lesson		
Observation of cultivations	Each group, <ul style="list-style-type: none"> ● Observes its cultivations (from the previous lesson) ● Ranks them from the most contaminated to the least ● Make a comparison between the list from the previous lesson and the results of their observation. 	9 min
Growth promotion	After that, the groups are asked to: <ul style="list-style-type: none"> ● Repeat the procedure of preparing the growth material at the air laminar, but at this time they have to leave at agar medium their 	30 min

Name of activity	Procedure	Time
	<p>fingerprints.</p> <p>In each group, all members leave their fingerprints:</p> <ul style="list-style-type: none"> • one member without having washed his hands, • another one having washed his hands with the detergent that already exists in the school WC, • and each of the other three members with the detergents that the group had chosen. Finally, they close the plates with parafilm. 	
Discussion and preparation for the next lesson	<p>At the last session of the lesson, the teacher:</p> <ul style="list-style-type: none"> • Begins a discussion about the procedure and the expectation of their experiment • Also explains them what they have to do in the next lesson. 	6 min
3rd lesson		
Observation of cultivations	<p>Each group:</p> <ul style="list-style-type: none"> • Observes its cultivations (from the 2nd lesson) • Decides which detergent is the most effective in combating the microorganisms. 	7 min
Best value for money choice	<p>What they need to do next:</p> <ul style="list-style-type: none"> • Choose which group's most effective detergent has the best value for money. To do so, they have to calculate the price per litre. 	8 min
Powerpoint preparation	<p>Each group:</p> <ul style="list-style-type: none"> • Prepares a digital presentation (2-3 Power Point slides) about what they have learned, if it has been useful and if this new knowledge has changed their way of life. 	15 min
Powerpoint presentation	<ul style="list-style-type: none"> • Oral presentation of their digital presentation • Finally, they communicate to the school principal the most effective detergent and propose to use it. 	15 min

Assessment

There is an **initial assessment** at the first lesson's first activity (brainstorming) about their previous knowledge.

In addition, there is a **formative evaluation** during the lessons (preparation and study of microorganisms cultivations).

In the end, there is a **final assessment** based on the preparation and oral presentation of the Power Point about what they have learned, in order to certify if it has been useful and if this new knowledge has changed their way of life.

Student feedback

The students will be able to give the teacher their feedback through the last activities of each lesson (discussion, preparation and presentation of the digital presentation).

The students will be invited to reflect about their own learning process. They will discuss with the teacher and their colleagues about their cooperation, as well as the tools and the labs used.

They can be asked about:

- Was it fun// interesting// easy etc.?
- What went right and what didn't go wrong?
- What you could have done better?
- Do you think you have learned enough and how could you improve that?
- How could you make the lesson more interesting?

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