Microorganisms
Teacher Guide

Student learning outcome (SLO):

• Microorganisms	• Kinds of microorganisms
• Diseases caused by microorganisms	• Role of microorganisms in decomposition
• Transmission of diseases into humans by microorganisms	• Preventive measures to protect from these infections
• Advantage and disadvantages of microorganisms.	

Overview:

The main purpose of this lesson is to reinforce the impact of microorganisms on human life and their role in environment.

Introduction:

Video can be shown to explain microorganisms.

https://www.youtube.com/watch?v=JZjzQhFG6Ec	

Keywords:

Viruses, bacteria, protozoa, fungi, unicellular, multicellular, communicable, non-communicable, pasteurization, decomposition, hygiene, vaccination.

Activities:

1. Explain students what are microorganisms and what are their different types.
2. Make a display of the **"different groups of microorganisms"** with examples and the key characteristics of each group.
3. Work in groups of two. Collect pictures of each class of **"microorganisms"** with their characteristics. Prepare a report and present it in front of your class.

	Kingdom	Number of cells	Ways of getting food	Ways to reproduce	Kinds
Virus					
Bacteria					
Fungi					

4. Bring posters of different diseases in class room. Ask the students to observe them and make precautionary measures to prevent these diseases.
5. Working in group ask the students to **"observe two types of diseases"**. Describe differences between communicable and non-communicable diseases. And explain how they are spread from one person to another.
6. Explain the role of microorganism i.e. bacteria and fungi in the decomposition of dead organic matter. Conduct discussion, so that students can understand the importance of decomposition, by using given questions:

- What happens to organisms after death?
- What happens with leaves fallen from trees?
- What would happen if decomposition stops?

7. Suppose a bacteria grows by doubling every second. If there was 1 bacterium to start with, how many bacteria would there be after 1 minute.

Material required:

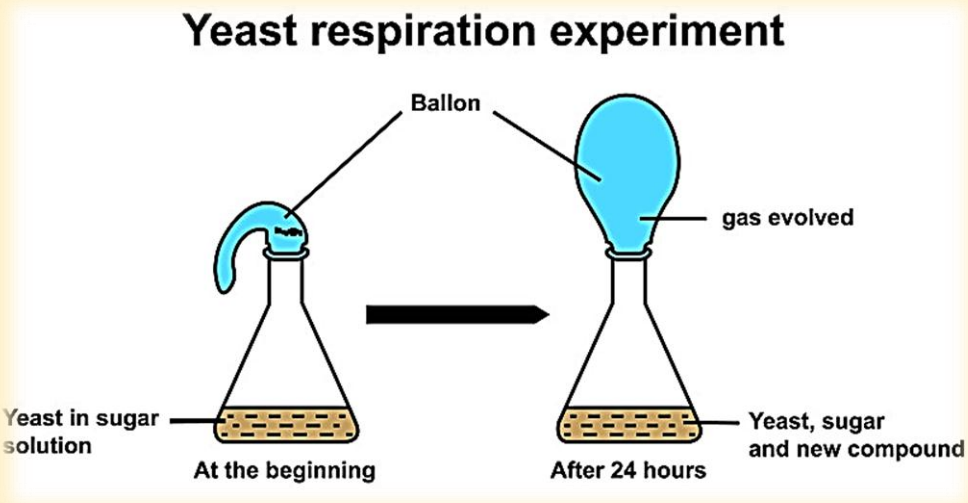
i.	Teaspoon	ii.	Rubber band	iii.	Balloons
iv.	Marker	v.	Yeast	vi.	Sugar
vii.	Transparent bottles of half litre (3)			viii.	Warm water

Procedure:

i. Take four transparent plastic bottles and label them as I, II, III and IV.

ii. Add a teaspoon of yeast in each bottle as per given table. Do not add sugar in the first bottle.

Bottle	Amount of sugar (teaspoons)
I.	0
II.	1
III.	2



iii. Pour half cup of hot water in each bottle. Immediately, put a balloon at the mouth of each bottle and bind it strongly with rubber band.

iv. Shake each bottle strongly so that its contents can mix.

v. Leave all the bottles in this condition for twenty minutes.

vi. Then observe:

   a. Which balloon gets inflated the most?

   b. In which bottle, was the most carbon dioxide gas produced?

Essential questions:

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. What are microorganisms?
2. Are viruses harmful or beneficial?
3. What is decomposition?
4. What difference between unicellular and multi cellular organisms?
5. What should we do to save ourselves from diseases?
6. Ask students to make a flowchart showing different microorganisms.