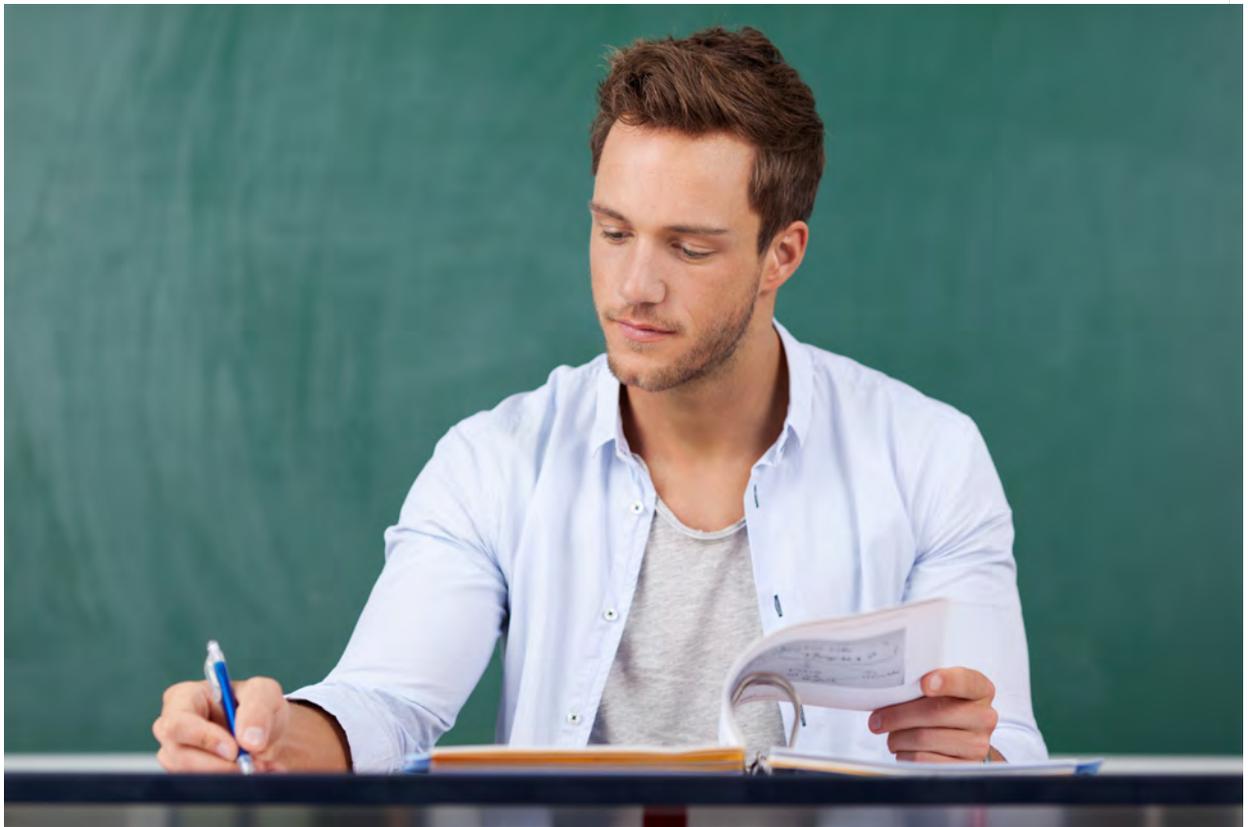


Assessment tasks

6.1 Formal assessment



Practical investigation

Yeast is used to make bread dough rise. One of the factors that influences the growth of yeast is temperature.

Requirements:

- Safety goggles
- Four identical empty cool drink bottles ($\pm 300 \text{ ml}$)
- Four identical balloons
- Four teaspoons sugar
- Masking tape
- Four packets instant yeast
- Stopwatch
- Measuring cup
- 500 ml distilled water
- Three small cooler boxes (Space for six cold drinks. The polystyrene type works well.)
- Thermometer if available
- Measuring tape

Method:

1. Blow-up each of the balloons twice so the balloons are stretched out.
2. Wash the cool drink bottles and rinse each one with a little distilled water.
3. Pour 80 ml distilled water in each of the clean bottles.
4. Pour 5 ml sugar into each of the bottles and shake carefully until the sugar is dissolved.
5. Use the cooler boxes and prepare the following in it:
 - a. An ice bath with large pieces of ice as well as smaller, broken pieces of ice in between.
 - b. A fairly warm water bath with water at a temperature of 40°C (a little warmer than bath water)
 - c. A hot water bath with water at a temperature of 80°C (nearly boiling)
Do not fill the containers too much. The bottle must still fit into it.
6. Mark each of the cooler boxes clearly.
7. Add one packet of instant yeast to each of the bottles.
8. Work as fast as possible and place a balloon over the opening of each of the bottles.



9. Tape the balloon to the bottle with the masking tape so no gas can escape.
10. Place one bottle in each of the cooler boxes and leave the last bottle to react at room temperature.
11. Use a measuring tape to measure the circumference of each balloon every 15 minutes and record it in an applicable table.
12. Check the temperature every 15 minutes. Add more ice if necessary and replace the cooled down water with warm water if necessary.
13. Take at least eight readings.

Write a practical report, and make use of the following headings:

Aim:

Hypothesis:

Method:

1. Blow-up each of the balloons twice so the balloons are stretched out.
2. Wash the cool drink bottles and rinse each one with a little distilled water.
3. Pour 80 ml distilled water in each of the clean bottles.
4. Pour 5 ml sugar into each of the bottles and shake carefully until the sugar is dissolved.
5. Use the cooler boxes and prepare the following in it:
 - a. An ice bath with large pieces of ice as well as smaller, broken pieces of ice in between.
 - b. A fairly warm water bath with water at a temperature of 40°C (a little warmer than bath water)
 - c. A hot water bath with water at a temperature of 80°C (nearly boiling)
Do not fill the containers too much. The bottle must still fit into it.
6. Mark each of the cooler boxes clearly.
7. Add one packet of instant yeast to each of the bottles.
8. Work as fast as possible and place a balloon over the opening of each of the bottles.
9. Tape the balloon to the bottle with the masking tape so no gas can escape.
10. Place one bottle in each of the cooler boxes and leave the last bottle to react at room temperature.
11. Use a measuring tape to measure the circumference of each balloon every 15 minutes and record it in an applicable table.
12. Check the temperature every 15 minutes. Add more ice if necessary and replace the cooled down water with warm water if necessary.
13. Take at least eight readings.

Results:

	Temperature	Circumference
a	Ice bath	
b	Room temperature	
c	Warm water (40°C)	
d	Warm water (80°C)	

Time (min)	Ice water	Fairly warm water (40°C)	Very warm water (80°C)	Room temperature
0				
15				
30				
45				
60				
75				
90				
105				
120				

Conclusions:

Discussions:

1. Give an advantage of a) low temperatures and b) warm temperatures for the growth of yeast.

2. Give a disadvantage of a) low temperatures and b) warm temperatures for the growth of yeast..

3. Why is it necessary to know which temperature conditions are best for yeast?

The following sources can be consulted for information:

<http://www.curriculumsupport.education.nsw.gov.au/secondary/science/assets/aifst/Experiments/Yeast%20growth.pdf>

<http://www.math.unl.edu/~jump/Center1/Labs/What%20Affects%20Yeast%20Growth.pdf>

http://www.google.co.za/imgres?imgurl=http://herbarium.usu.edu/fungi/funfacts/yeastexp_small.jpg&imgrefurl=http://herbarium.usu.edu/fungi/funfacts/Yeast_exp.htm&h=215&w=144&tbnid=A-aX8-vQ4FaekM:&zoom=1&docid=SE_BFhgk9M3rM&ei=2-BmVZq8HcqM7AadpoPwAQ&tbn=isch&ved=0CGcQMMyhCMEI

http://www.google.co.za/imgres?imgurl=http://i.ytimg.com/vi/PLG_bsJseCU/maxresdefault.jpg&imgrefurl=http://www.youtube.com/watch?v%3DPLG_bsJseCU&h=720&w=1280&tbnid=bz_bRI_