

INTEGRATED SCIENCE FORM 1

TOPIC : CELLS

1. Lesson description and knowledge of class profile

Pre-requisites :

- **confidence in using microscope safely and effectively**
- **basic knowledge of cell components**
- **rules for biological drawing**
- **working in a group**
- **safety rules in lab**
- **handling basic lab equipment**

My class uses technical reasoning at a Use First level

I will engage them by brainstorming the plant we are going to analyse

I will therefore provide hands-on opportunities:

- to develop the technique needed to produce a slide out of common plant material- reconstruct the demonstrated technique- **synthesis**- technical; sequence
- to observe structures in a plant cell using a microscope (**evaluation**- precision)
- to make a labelled diagram of the cells observed (**analysis**-technical and precision)

I will also provide opportunities for students to consolidate previously learnt material:

- using a microscope (sequence)
- drawing skills (technical and precision)
- naming and giving function of plant cell structures(precision)

Zach and Miguel have underdeveloped literacy skills and need a word bank. Omar Elouni will also benefit from the word bank as his hyperkinetic trait decreases focusing in writing tasks (but not in other hands-on tasks).

Materials needed:

Lab equipment

KS3 SCIENCE book

Steps for microscope use

Handout- ***Looking at Plant Cells***

LESSON OBJECTIVES

At the end of this lesson most students will be able to:

1. List the steps needed to produce a slide
2. Make a slide out of plant tissue
3. Use the microscope to locate and recognize cells on prepared slide*
4. Explain the functions of materials used in the procedure*
5. Work effectively in a group
6. Draw plant cells from observations and label main parts

*Some students will need help in localizing the cells and in explaining function of equipment

Success criteria:

- Slide completed in established time with least hitches- effective group work
- Cells would be visible, as well as cell components- slide is constructed well
- Diagrams are neat, in sharpened pencil, clear labels, magnification and title- following rules for drawing.

LESSON PLAN

Step	Description	time	
Introduction	<p>Teacher splits class into groups. Inform stds that time will be kept.</p> <p>Teacher lists learning intentions</p> <p>Teacher engages students by introducing the material being used – onion bulb as a collection of cells – organ; equipment supplied on benches</p> <p>Students fill in first part of handout to get them focused on activity</p> <p><u>Extension:</u> Ask higher ability students to arrange steps microscope use on board for all to refer to.</p>	5 min	<p><i>sequence</i></p> <p><i>Technical/precision</i></p> <p><i>Precision</i></p> <p><i>Sequence</i></p>
Main activity	<p>(A) Demonstration of slide preparation - outline success criteria and <i>task decoding</i></p> <p>(B) Students prepare slide themselves <i>(sequence, technical, precision)</i> Students observe and draw a collection of cells <i>(technical, precision)</i> <i>Provide steps to use microscope and rules for drawing.</i> <i>Task decoding appropriate</i></p> <p><u>Extension:</u> Students annotate their diagram in class or as a HW activity using previously learnt knowledge or by researching in text book</p>	<p>5min</p> <p>10 min</p> <p>10min</p>	<p><i>sequence, technical, precision</i></p> <p><i>stds who are highly sequential refer to handout with steps</i></p> <p><i>precision</i></p>
Closure	Whole class – discussion of conclusion of experiment and feedback on session. Teacher recalls learning intentions.	10min	<i>Confluence, Sequence</i>

LOOKING AT PLANT CELLS

Plants are made up of millions of tiny building blocks called _____. You are going to prepare a _____ of onion _____. Then you will observe the specimen under the _____.

Apparatus:

Safety precautions:

Method:

1. Cut a small piece of onion lengthwise and peel off the inner layer which is just one layer of cells.
2. Put this thin piece of onion on the slide and add a drop of water.
3. Place the cover slip over the sample and gently press it down to remove air bubbles.
4. Add some drops of iodine on one side of the slide and use a tissue paper to draw the iodine through the specimen.
5. Examine your prepared specimen under the microscope. Make a clear, labelled diagram of a group of 3 onion cells in the space overleaf, as accurately as you can.

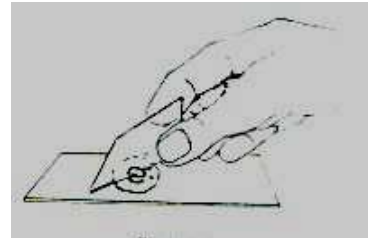
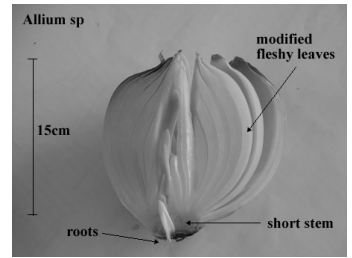


Diagram of group of onion cells.

Magnification : X ____

Conclusions:

- Which parts of the onion cell did you see?

- Why do you think we added the iodine? What does it do?

- Onion cells do not have chloroplasts. Suggest why.

Steps for using a microscope safely
&
Drawing in science

CHOOSE THE LOWEST POWER
OBJECTIVE LENS AND CLICK IT INTO
POSITION

PLACE THE SLIDE ON THE STAGE

When finished, raise the tube, click
the low power lens into position and
remove the slide.

TURN THE LIGHTSOURCE ON

Using the coarse focus, lower the objective lens down as far as it will go *without touching the slide!* Look at the slide and lens from the side when doing this.



EXAMINE YOUR SPECIMEN AND MAKE A DETAILED DRAWING IN PENCIL.

REMEMBER TO WRITE THE TOTAL MAGNIFICATION YOU ARE USING NEXT TO YOUR DRAWING

The proper way to use a monocular microscope is to look through the

eyepiece with one eye and keep the other eye open (this helps avoid eye strain). If you have to close one eye when looking into the microscope, it's ok.

If you cannot focus on your specimen, repeat steps with the higher power objective lens in place. DO NOT ALLOW THE LENS TO TOUCH THE SLIDE!

Slowly turn the coarse focus so that the objective lens goes *up* (away from the slide). Continue until the image comes into focus. Use the fine focus to focus the specimen.

