



**Adult Education and Training (AET)  
Site-Based Assessment  
Portfolio of Evidence**

**Natural Sciences:** **NQF Level 1**  
**Total:** **50 marks**  
**Duration:** **One (1) week**  
**Task 1:** **Practical Investigation**

**Learner Information**

**Name** : \_\_\_\_\_  
**Surname** : \_\_\_\_\_  
**Identity/**  
**Passport Number** : \_\_\_\_\_  
**Employee Number** : \_\_\_\_\_  
**Company** : \_\_\_\_\_  
**Centre** : \_\_\_\_\_  
**Date** : \_\_\_\_\_

**Declaration**

*I declare that this portfolio of evidence is my own work:* \_\_\_\_\_

**Signature**



**INSTRUCTIONS**

1. This task consists of **TWO ACTIVITIES**.
2. This investigation is based on a theme: **LIFE AND LIVING**.
3. The title of the investigation: **THE EFFECT OF VARYING THE CONCENTRATION OF WATER SOLUTION VERSUS OSMOTIC ACTIVITY BETWEEN POTATO SLICE AND THE SOLUTION**.
4. The task should be completed over a period of **ONE WEEK**.
5. The task is divided into **SIX PARTS (A TO F)**.
  - a. **Parts A – D (Activity 1)** must be done in groups/teams of TWO to FOUR learners. You can select teams or be appointed to a team.
  - b. **Parts E and F (Activity 2)** must be completed by learners individually.
6. Write neatly and legibly.





**ACTIVITY 1: GROUP WORK**

**Read the case study below for the purposes of this task:**

**Osmosis**

Osmosis is the process by which water is transported into and out of cells. The movement of water into the cells is called endosmosis and cells lose water by exosmosis. Water moves from a region of low solute concentration to a region of high solute concentration through a selectively permeable membrane. Osmosis is a passive transport, which means it does not require energy to be applied.

*(Adapted from sciencing.com)*

**PART A – HYPOTHESIS**

As a team/group, formulate the investigative question and the hypothesis for your investigation based on the above case study.

Write or note this in your note pad(s).

**PART B – GATHERING OF APPARATUS OR MATERIALS**

**INSTRUCTION:** Each team/group must gather and bring in the following to proceed with the investigation. Decide among yourselves who will bring which item.

1. Two small cereal/porridge bowls of equal size and shape
2. Two plastic or paper cups of equal size and shape
3. Two saucers
4. One raw potato
5. Salt
6. Plastic knife
7. Plastic tablespoon
8. Water





**PART C – PROCEDURE AND OBSERVATION**

**INSTRUCTIONS:** The Facilitator will provide guidance in conducting the experiment. Learners should write down the steps they have followed to conduct the investigation in their note pads.

Steps to be followed by learners in their groups:

1. Pour equal amounts of water in each cup. In one cup, pour two full tablespoons of salt and stir until all the salt dissolves.
2. Use the knife to cut two thick equal sized slices of potato and remove the potato skin from each slice.
3. Place each slice of potato in each bowl so it leans against the side of the bowl in an upright position.
4. Separately, place the bowls on two clean A4 sized papers and label each paper as **“Bowl 1 - Pure Water”** and **“Bowl 2 - Salt Water”**.
5. Take the cup with pure water and pour the water in the bowl labelled as “Pure Water”. The water should just rise halfway up the side of the potato slice.
6. Pour salt water in the bowl labelled as “Salt Water”. Again, the solution should just rise halfway up the side of the potato slice.
7. Allow the slices of potato to sit for 2 hours and observe any possible change that may take place in each bowl.

**PART D – ANALYSE THE RESULTS AND DRAW THE CONCLUSION.**

After 2 hours, remove the slices from each bowl and place them in separate saucers. Compare the following in each slice.

- Texture of each slice
- Colour of each slice
- Mass or weight of each slice
- Structure of each slice



**ACTIVITY 2: REPORT – INDIVIDUAL WORK****PART E – REPORT WRITING**

Based on the activities in Activity 1, complete the report below:

1. Identify the investigative question.

---

---

---

(2)

2. Provide a hypothesis for the experiment.

---

---

---

---

---

---

(3)

3. List the apparatus or materials used in the experiment.

---

---

---

---

---

---

---

(4)





(5)

(9)

6. Compare and analyse the results in the saucers and outline the different textures, colours, weight and structures of the potato slices.

---

---

---

---

---

---

(6)

7. Discuss in your conclusion below whether the hypothesis was confirmed or not. Explain the reasons why the potato slices were different in shape, colour and texture. And provide reasons for the effects of pure water and salt water on potatoes based on the experiment.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

---

(11)

**Total marks for Part E**

(40)



**PART F**

1. What is meant by “**selectively permeable membrane**”?

---

---

(2)

2. In which bowl did endosmosis take place?

---

(1)

3. Why did the potato slice in salt water change its colour?

---

---

(2)

4. Which bowl is the independent variable? Explain why this is so.

---

---

---

---

(3)

5. Identify the following as either *Active* or *Passive* Membrane.

5.1 Cell wall

---

(1)

5.2 Cell membrane

---

(1)

**Total marks for Part F**

**(10)**

**GRAND TOTAL MARKS FOR TASK 1**

**[50]**





**Total for Task 1: 50 Marks**

<b>Task</b>	<b>Parts</b>	<b>Maximum Mark</b>	<b>Learner's Mark</b>	<b>Moderated Mark</b>
<b>Task 1</b>	<b>Part E</b>	<b>40</b>		
	<b>Part F</b>	<b>10</b>		
	<b>Total: Task 1</b>	<b>50</b>		

