Gold Seal Lesson:

Copernicus Education Gateway

Author(s): Doris Quick			*Lesson Title: Confusion Over Diffusion*			
Grade Span			***ICLE Application Model***			
K-4	***5-8***	***9-12***	***A***	***B***	***C***	***D***
		X			***X***	

Instructional Focus:

Science as Inquiry
Students demonstrate knowledge and skills necessary to perform scientific inquiry.

Unifying Concepts and Processes
Students recognize patterns and processes, making connections in terms of systems and subsystems that explain the interrelationships of the natural and designed world.

Science as Inquiry
Students demonstrate knowledge and skills necessary to perform scientific inquiry.

Communication
Students communicate and apply scientific concepts

Performance Task

In this task you will investigate the concept of diffusion and construct an understanding of how it helps a cell regulates what enters and leaves it. For this investigation, you will need the following: dilute iodine potassium iodide (12KI), rubber bands, a starch solution, 250 ml beaker, dialysis tubing, and water.

After securing your materials, perform the investigation using these directions:

1. Securely tie one end of a 15cm piece of dialysis tubing.
2. Open the tube and carefully pour some of the starch solution into the tube.
3. Place the tubing containing the starch solution into the 12KI solution contained in the 250 ml beaker and secure the top of the tubing to the beaker with a rubber band.
4. Allow the tubing to remain in the 12KI solution for ten minutes and then remove.
5. Shake the contents of the tubing and record your observations.

Based upon your observations in the investigation, write a report explaining the concept *diffusion* and relating it to how living cells regulate what enters and leaves them.

ICLE Essential Skills

Know and apply the principles of scientific inquiry. *(Implicit in this statement are the processes of prediction, estimation, developing hypotheses, drawing conclusions, evaluation, and following ethical principles and professional procedures.) (Not Ranked)*
Identify the cell as a common unit between living things; understand cell structure and the functions they perform. S9
Use writing as a tool for learning in formats such as learning logs, laboratory reports, note-taking, journals and portfolios. E40

Scoring Guide:

4 The student is able to independently complete the investigation and accurately describes his/her results. He/she demonstrates an understanding of diffusion and relates it to how cells regulate what enters and leaves them.

3 The student needs some coaching to complete the investigation. The description of his/her results is somewhat vague. The student lacks a complete understanding of diffusion and cannot clearly relate it to cell regulation.

2 The student has difficulty completing the investigation even with coaching. He/she has limited understanding of diffusion and can not relate it to cell regulation.

1 The student is unable to complete the task. He/she has no understanding of diffusion and cannot relate it to cell regulation.

Keywords

English Language Arts	Mathematics	Science
Reading	**Algebra**	**Earth Science**
Writing ***Technical Writing***	**Geometry**	**Life Science** ***Osmosis*** ***Diffusion*** ***Scientific Inquiry***
Communications	**Statistics**	**Chemistry**
Literature	**Calculus**	**Physics**
Other	**Trigonometry**	**Other**
	Other	