

TOPIC 2.4:	Respiration (Learning outcomes by syllabus reference: OB9, OB10 and OB12)
HOW MANY LESSONS?	3 – 4 lessons

KEY WORDS / TERMS TO BE TAUGHT			
Aerobic	Respiration	Product	Carbon dioxide
Windpipe	Bronchus	Bronchiole	Air sac/alveolus
Diaphragm	Cancer	Bronchitis	

KEY CONCEPTS IN THE LESSON (OBJECTIVES)		
<i>What students must know or be able to do</i>	<i>What students should know or be able to do</i>	<i>What students could know or be able to do</i>
To be able to recall the structure of the lungs and how our lungs are affected by smoking To describe the effect of exercise on breathing	To describe the process of aerobic respiration using a word equation	To describe in detail how oxygen is taken into the lungs and how carbon dioxide is excreted

SEQUENCE OF LESSON
<p>1. Introduce the concept of respiration. Allow students to relate personal experiences of respiration and energy usage. This could be facilitated by using the <i>Respiration Introduction</i> PowerPoint and encouraging student input during the presentation.</p> <p>2. Students investigate the products of aerobic respiration. For resources, guidance and support related to facilitating student investigations, see www.juniorscience.ie</p> <p>3. <i>Respiration Worksheet</i> to reinforce basic content</p> <p>4. Review – whole class discussion. Possibility of using <i>Ranking Game</i> to facilitate student understanding</p> <p>5. Further class work/homework and extension activities as required.</p>

1. DIFFERENTIATE BY CONTENT (In what ways can I vary the content of what I am teaching?)

<i>(A) Complexity of content: (concrete, symbolic, abstract)</i>		
<i>Concrete</i>	<i>Symbolic</i>	<i>Abstract</i>
Real materials associated with respiration, e.g. equipment for experiments	Newspaper articles / personal experiences relating to respiration and smoking Illustrations, images of lungs, damaged lungs	Appreciation of the significance of oxygen in our daily lives
<i>(B) Variety of resources</i>		
As listed above. Also potential use of the Internet and/or school or community library for further exploration of material related to respiration and smoking		
<i>(C) Variety of learning environments</i>		
Classroom, school laboratory, computer room/ library in school (as indicated above)		

2. DIFFERENTIATE BY PROCESS (How will I teach the lesson?)
<p>Sequence of lesson as laid out above</p> <ul style="list-style-type: none"> ➤ Introduction – using concrete or symbolic material or a general class discussion along with <i>Respiration</i> PowerPoint ➤ Teacher may demonstrate use of apparatus to the class, emphasising safety. Students may take notes on demonstrations using written or pictorial records. ➤ Possible use of <i>Ranking Game</i> to facilitate discussion

3. DIFFERENTIATE BY OUTCOME / PRODUCT (How will the student demonstrate understanding?)
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See *Worksheets, Classroom Activities and Experiments* sections of this resource pack.

- Student input during PowerPoint presentation
- Students may take notes during teacher demonstrations.
- Students may work in pairs to complete *Respiration Worksheet*.
- Whole class review work completed at end of class.
- Homework: See textbook for suitable questions. Specify time to be allocated to this work at home.

FINALLY - ANY OTHER POSSIBILITIES FOR THIS LESSON?

- Collage of scenes showing respiration or the effects of smoking
- Dramatisation e.g. possible use of role play to emphasize the impact of smoking on lungs and people's lives
- Other written activities – What my body does with oxygen
- Visiting speaker on the effects of smoking
- Internet search for material on smoking
- Suggested Internet links include www.kidshealth.org,
www.juniorscience.ie, www.smokefreeatwork.ie, www.scoilnet.ie
and www.skool.ie
- For advice on enhancing curricular access through the use of mobile ICT, see www.laptopsinitiative.ie
- Cross-curricular links: SPHE, Mathematics