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

<table>
<thead>
<tr>
<th>Aerobic</th>
<th>Respiration</th>
<th>Product</th>
<th>Carbon dioxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windpipe</td>
<td>Bronchus</td>
<td>Bronchiole</td>
<td>Air sac/alveolus</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>Cancer</td>
<td>Bronchitis</td>
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</tr>
</tbody>
</table>

KEY CONCEPTS IN THE LESSON (OBJECTIVES)

<table>
<thead>
<tr>
<th>What students must know or be able to do</th>
<th>What students should know or be able to do</th>
<th>What students could know or be able to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be able to recall the structure of the lungs and how our lungs are affected by smoking</td>
<td>To describe the process of aerobic respiration using a word equation</td>
<td>To describe in detail how oxygen is taken into the lungs and how carbon dioxide is excreted</td>
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<td>To describe the effect of exercise on breathing</td>
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SEQUENCE OF LESSON

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

1. DIFFERENTIATE BY CONTENT (In what ways can I vary the content of what I am teaching?)
(A) Complexity of content: (concrete, symbolic, abstract)

<table>
<thead>
<tr>
<th>Concrete</th>
<th>Symbolic</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real materials associated with respiration, e.g. equipment for experiments</td>
<td>Newspaper articles / personal experiences relating to respiration and smoking</td>
<td>Appreciation of the significance of oxygen in our daily lives</td>
</tr>
<tr>
<td></td>
<td>Illustrations, images of lungs, damaged lungs</td>
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</tr>
</tbody>
</table>

(B) Variety of resources

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

(C) Variety of learning environments

Classroom, school laboratory, computer room/library in school (as indicated above)

2. DIFFERENTIATE BY PROCESS (How will I teach the lesson?)

Sequence of lesson as laid out above

- Introduction – using concrete or symbolic material or a general class discussion along with Respiration 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 Ranking Game to facilitate discussion

3. DIFFERENTIATE BY OUTCOME / PRODUCT

(How will the student demonstrate understanding?)
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](http://www.kidshealth.org), [www.juniorscience.ie](http://www.juniorscience.ie), [www.smokefreeatwork.ie](http://www.smokefreeatwork.ie), [www.scoilnet.ie](http://www.scoilnet.ie), and [www.skool.ie](http://www.skool.ie)
- For advice on enhancing curricular access through the use of mobile ICT, see [www.laptopsinitiative.ie](http://www.laptopsinitiative.ie)
- Cross-curricular links: SPHE, Mathematics