**LESSON PLAN**

Metals and non-metals

**Lesson structure**

This lesson plan details the second 70 minute lesson in a short unit of four lessons. In the first lesson, the teacher introduces the topic of material science and conducts hands-on activities. In the second lesson, described here, the teacher introduces the concept of metals and non-metals. The teacher uses a range of pedagogies and hardware, including an interactive whiteboard (IWB), to start the lesson.

The teacher demonstrates the *Metal Munchers* learning object on the IWB. Students break into groups and use the learning object to identify objects as metals. The students develop explanations of their choices. In the third lesson, the teacher provides students with time to further develop their explanations. The teacher asks probing questions to assist students with their explanations. The teacher introduces key scientific terms and assists students to link the scientific term to their original explanation. The students then begin work on their digital poster. In the fourth lesson, the students complete work on the digital posters and add them to the class online project space.

<table>
<thead>
<tr>
<th>Timing</th>
<th>Activity</th>
<th>Pedagogy</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson 2</td>
<td></td>
<td></td>
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<tr>
<td>10 min</td>
<td>Introduction to the lesson.</td>
<td>Whole class discussion</td>
<td>IWB displaying the A-Z chart.</td>
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<tr>
<td>15 min</td>
<td>Students take turns to choose an object and place it in the metal or the non-metal pile.</td>
<td>Whole class activity</td>
<td>No digital technology, a range of metallic and non-metallic objects.</td>
</tr>
<tr>
<td>10 min</td>
<td>Introduction to the learning object <em>Metal Munchers</em> by the teacher, followed by activity where one student controls the learning object on the IWB with the rest of the class assisting.</td>
<td>Teacher-led and whole class activity</td>
<td>IWB and learning object.</td>
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<tr>
<td>30 min</td>
<td>Formation of small groups by teacher and students moving to computers. Students work on the learning object in their groups.</td>
<td>Cooperative learning in groups</td>
<td>Computers and digital learning objects.</td>
</tr>
<tr>
<td>5 min</td>
<td>Debriefing discussion about metals and non-metals.</td>
<td>Whole class discussion</td>
<td>nil</td>
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</tbody>
</table>

Note the number of different activities and pedagogical strategies in the lesson: continual variety of activities makes the lesson more interesting and productive for both students and the teacher.
Online resources
- Learning object *Metal Munchers* from the eContent repository
- Digital poster software such as Glogster

Other resources
- IWB and connected computer, with appropriate software
- Page depicting the letters A–Z
- Computers, 1 per 2 or 3 students
- Range of objects, some metals, some non-metals and some objects that have both metal and non-metal parts.

Safety considerations/materials
- Choose items without sharp edges
- Cyber safety: refer to the exemplar and Cybersmart.

Backup plan
Downloading the learning object to the school's server will ensure access if the internet is down or running slowly. You should also trial the software prior to the lesson to ensure it is working and that you are familiar with it.

Assessment ideas
Students will construct a digital poster during Lesson 4 of this unit. This poster will describe the students’ understanding of the concept of metals and non-metals.

Differentiated instruction
Consider options to use technology to assist students with individual learning needs. For the current exemplar one student can use a digital recording device to record their predictions, observations and explanations, and then transcribe the recording later. The student can use the recording device while other students write or type their answers. This strategy permits all students to complete the activity within the set time.