Teaching –learning module compiled by the PARSEL consortium
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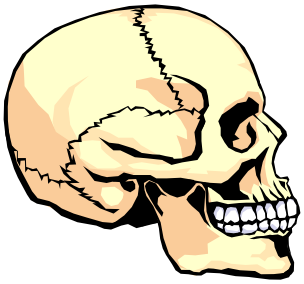
Popularity and Relevance of Science Education for scientific Literacy

# Do you need chemistry in order to be a good bone surgeon?

A grade 10-12 science (chemistry) module on
Oxidation and Reduction




## Abstract:

This set of lessons is the open lesson for learning oxidation-reduction. Students will be introduced to the importance of learning the properties of different metals, and differences between them. The subject begins with a reading comprehension, in which the problem is introduced. This exercise is followed by a guided inquiry laboratory that investigates the relative activity of different metal. The students learn the concept of electrochemical series.

Here we present the first part of the whole unite, in which the driven question is introduced to the students.


| Sections included | | |
|---|---|---|
| 1. | Student activities (for the students) | Describes the scenario in more detail and the tasks the students should perform |
| 2. | Teaching guide | Suggests a teaching approach |
| 3. | Assessment | Gives suggested formative assessment strategies |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| 4. | Teacher notes | States the theoretical physics and gives the expected calculations |

**Overall Objectives/Competencies:** The students are expected to:

* understand the goals and rationale of the unit of oxidation-reduction.
* build the electrochemical series.
* read an article critically.
* perform a virtual experiment
* collect data
* explain the results
* make a group discussion and a class discussion

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**Curriculum content:** Mechanical strength, toxicity, density, chemical stability and the electrochemical series.

**Kind of activity:** Critical reading and group activity, guided inquiry virtual laboratory**.**

**Anticipated time:** 4 lessons

**Prior Learning:** Electronic structure of the atom.

This unique teaching-learning material is intended to guide the teacher towards promoting students' scientific literacy by recognising learning in 4 domains – intellectual development, the process and nature of science, personal development and social development.

Its uniqueness extends to an approach to science lessons which is designed to be popular and relevant. For this the approach is intentionally from real life phenomenon to science and attempts to specifically meet student learning needs.

This uniqueness is specifically exhibited by:

1. a society related and issue-based title (supported in the student guide by a scenario);
2. student-centred emphasis on scientific problem solving, encompassing the learning of a range of educational and scientific goals;
3. including socio-scientific decision making to relate the science acquired to societal needs for responsible citizenship.

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