



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



UNIVERSITY OF TARTU



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Should we do more to save Cultural Monuments from Corrosion ?

A grade 8-9 science (chemistry) module on
 corrosion of bronze and reactivity series of metals



Abstract:

Many sculptures around the world have a special significance in history and form an important part of our cultural heritage to be passed on to future generations. Unfortunately many sculptures today are showing signs of decay. Many bronze statues have lost valuable detail and in places, are beginning to look like a sieve with many holes. What is the problem with these bronze statues ? Can we do anything to save this important cultural heritage ? Can science come to the rescue ?

| Sections included | | |
|-------------------|--|---|
| 1. | Student activities (for 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 |
| 4. | Teacher's notes | Gives background information |

Developer: Andrei Zhegin and Irina Titova. Published in Supplementary Teaching Materials (eds). Jack Holbrook and Miia Rannikmae, ICASE, 1997. Edited by: Jack Holbrook
 Institution: International Council of Associations for Science Education (ICASE)
 Country: UK



Overall Objectives/Competencies: The students are expected to:

- Decide whether sufficient is being done to save cultural monuments noting advances in modern science.
- Solving the problem of how to save and protect bronze sculptures.
- Cooperating as a member of a group in devising experimental and in carrying out decision making
- Communicating orally and in written format utilising sound science related to an understanding of the corrosion of metals.
- Develop the reactivity series for metals and include in the table hydrogen and carbon.
- Use the reactivity table to explain observations when two metals are put together in the presence of an electrolyte.

Curriculum content: Corrosion, reactivity series

Kind of activity: Experimental work to derive the electrochemical series, discussion on the socio-scientific issue of whether sufficient is being undertaken to save cultural monuments.

Anticipated time: 4 Lessons

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 society 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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