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

No smoke without a fire - (Un)desirable Combustion

Teacher Notes

Chemistry in Context - the “philosophy” of the programme

The ideas behind Chemistry in Context have these three leading ideas:

- the context
- the basic concepts of content knowledge
- methods of classroom work

The context is an overarching principle of the programme. It means a situation of students´ live which leads to scientific / chemical questions. The context remains over the hole unit like an arch and guides classroom work and learning.

Developer: **Martin Lindner, based on Materials from Chemistry in Context. Idea: Ilka Parchmann, unit developed by groups of Teachers in Lower Saxonia and Bavaria**
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The five basic concepts reduce the chemical content knowledge to five points:

- Particle concept of matter
- Structure - Quality
- Donator - Acceptor
- Chemical Equilibrium
- Energy

Methods of classroom work

The teaching of units is organized in four phases:

- Encountering phase
- Curiosity and planning phase
- Formulating phase
- Networking and intensifying phase

All phases are designed in rich methodologic variation, to involve the students into planning and conducting the experiments.

Guiding question of the unit “Combustion”

>>What is burned, is gone, destroyed, missing.<< - That is a widely held common belief. At the same time, however, there is a discussion about exhaust fumes and the products of combustion. What happens then with the >>fuel<<? Couldn’t a method be developed for combustion without exhaust fumes and without the undesirable consequences?

Goals

The lesson unit about combustion and its consequences will

- introduce the concept of chemical reactions using the everyday activity combustion
- introduce the atomic theory in a meaningful connection;
- give insight to the discussion in the media about climate change and the increase in the level of CO2 in the atmosphere;
- impart factually based judgmental competency and show the importance of knowledge about chemistry when participating in societal discussions and for structuring one’s own individual life.

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