

# THERMODYNAMICS

## 3<sup>rd</sup> Lesson Plan (Scenario)

**Lesson title:** Thermodynamics

**Subject:** Physics

**Level:** Secondary School

**Suggested time:** 3 x 45 minutes

**Equipment needed:**

- Computers
- Video projector
- Internet connection

### Lesson 3 (45 minutes)

**Teaching Unit:** A gallery of multimedia examples from thermodynamics

**Teaching Methods:** discussion, instruction, collaboration work, research collaboration over the Web

**Teaching Methodologies:** ex-cathedra learning, exploratory learning

**Learning Tools:** forum, Web Collaboration Tools (e.g. Google Docs), Internet resources

**Equipment:** computer classroom, projector, internet connection

**Lesson Objectives:**

Functional:

- students develop their ability of Web-based research
- students develop their ability of cooperation and collaboration work
- students develop their ability of critical thinking and analysis
- students document their work and systematically build a collaborative documents

Educational:

- students upgrade their knowledge in thermodynamics

**Sequence of Lesson Stages:**

1. Motivation
2. Introduction to the topic
3. Setting up the collaboration tools
4. Researching using Internet
5. Collaborative formation of the final document

Teacher's Activities	Student's Activities
<b>1. Motivation</b> The teacher presents collaboration using forum and collaborating way of documenting (e.g. Google Docs).	Students listen and watch the Web presentation.
<b>2. Introduction to the topic</b> The topic is announced: <i>Today we will create a collaborative document with multimedia elements (pictures, video, animation...) from the field of thermodynamics.</i> The teacher shows an interesting example on the Web. The teacher announces collaborative preparation of a joint document.	While listening to the initial motivation, students prepare for the work.

<p><b>3. Setting up the collaboration tools</b></p> <p>The teacher sets up a new topic on the forum. The teacher uses forum to answer the student's questions.</p>	<p>Students collaborate. They use forum to coordinate their work, identify thematic groups and their coordination (group leaders).</p>
<p><b>4. Researching using Internet</b></p> <p>The teacher uses forum to answer the question, give consultations and support.</p>	<p>Students individually search for interesting pages on the Web, using search engines (e.g. Google) and browsing interesting and promising Web pages. They use term in thermodynamics (they learned in the previous two hours) as keywords in the search. They can use some additional keywords, such as <i>video, animation, simulation, picture, illustration, lecture, tutorial...</i></p>
<p><b>5. Collaborative formation of the final document</b></p> <p>The teacher uses forum to answer the question, give consultations and support. At the end, the teacher comments on the prepared document and goes through it together with the students.</p>	<p>Students compose a collaborative document (using Google Docs, for example) which includes links to interesting Web pages and the comment on these Web pages and their content. The document has to be well structured and capture all presented topics on thermodynamics.</p>