



## 1. Class Discussion Stock Exchange debate Geography

<b>Name of the Company:</b> Grammar School 9. class (22 students)
<b>Name of the used active learning method</b>  Class discussion, stock exchange debate  Subject: Geography  Topic: Fossils energy resources  Task: Illustration of the mining, utilisation and store of the fossils, making a world map.  Lesson procedures: students debate like stockbrokers, the students position in the debate is determined by the datas on their own cards.
<b>Description of the method</b>  A class discussion is a joyful, personal, various method that is the most effective in smaller groups and develops the critical and logical thinking. The class debate facilitates the understanding of the others and develops empathy and the communication and cooperative and role play skills.  Pedagogical purposes: presenting of the fossils energy resources, broadening of the student's topographic knowledge cooperation.  Aids: notebook, internet access, interactive board, bluetech, little index cards, scissors, poster board, world map.
<b>Application steps (How do you apply this method in a science course)</b>  1. Preparation: making the student cards, arrangement of the desks: empty space in the middle of the classroom, symbolising stock exchange market.

2. Choosing the cards. (5 min)
3. Task: class discussion trying to find the right order of the market datas. (10 min)
4. Projecting the world map on the interactive desk, marking the market datas, separating the different types of fossils with the student cards on the map. **The black colour means the production (mining), the red colour means the utilisation, the blue colour means the store rates.** Questions: Which are the most significant coal mining countries? The students the put appropriate datas with blueteck on the map. Result: illustration of the mining, utilisation and store of the fossils on the map. (15 min)
5. Task: Write four sentences including the conclusions. (5 min)
6. And make groups of four, read out your sentences to your group mates, then try to highlight the gist of the conclusions together. Finally make a poster presenting your results.(10 min)
7. Choose a speaker who interprets your thoughts based on your poster, and others have to make notes.
8. Homework: what would you suggest to the countries in trouble to do in a shorter or longer term?

<p><b>Coal store</b></p> <p><b>USA 246 643 million tonnes</b></p>	<p><b>Coal store</b></p> <p><b>Russia 157 010 million tonnes</b></p>
<p><b>Coal store</b></p> <p><b>China 114 500 million tonnes</b></p>	<p><b>Coal store</b></p> <p><b>India 92 445 million tonnes</b></p>
<p><b>Coal store</b></p> <p><b>Australia 78 500 million tonnes</b></p>	<p><b>Coal mining</b></p> <p><b>China 2380 million tonnes</b></p>
<p><b>Coal mining</b></p> <p><b>USA 1053 million tonnes</b></p>	<p><b>Coal mining</b></p> <p><b>India 447 million tonnes</b></p>

<p><b>Coal mining</b></p> <p>Australia 373 million tonne</p>	<p><b>Coal mining</b></p> <p>Russia 309 million tonne</p>
<p><b>Coal utilisation</b></p> <p>China 2010 million tonnes</p>	<p><b>Coal utilisation</b></p> <p>USA 1017 million tonnes</p>
<p><b>Coal utilisation</b></p> <p>India 581 million tonnes</p>	<p><b>Coal utilisation</b></p> <p>Russia 239 million tonnes</p>
<p><b>Coal utilisation</b></p> <p>Germany 245 million tonnes</p>	<p><b>Oil store</b></p> <p>Saudi Arabia 266 800 million barell</p>
<p><b>Oil store</b></p> <p>Canada 178 600 million barell</p>	<p><b>Oil store</b></p> <p>Iran 138 400 million barell</p>
<p><b>Oil store</b></p> <p>Iraq 115 000 million barell</p>	<p><b>Oil store</b></p> <p>Kuwait 104 000 million barell</p>
<p><b>Oil mining</b></p> <p>Saudi Arabia 10,250 million barell /day</p>	<p><b>Oil mining</b></p> <p>Russia 9,876 million barell/day</p>
<p><b>Oil mining</b></p> <p>USA 8,457 million barell/day</p>	<p><b>Oil mining</b></p> <p>Iran 4,033 million barell/day</p>
<p><b>Oil mining</b></p> <p>China 3,725 million barell/day</p>	<p><b>Oil utilisation</b></p> <p>USA 20,68 million barell/day</p>
<p><b>Oil utilisation</b></p> <p>China 7,578 million barell/day</p>	<p><b>Oil utilisation</b></p> <p>Japan 5 million barell/day</p>
<p><b>Oil utilisation</b></p> <p>Russia 2,858 million barell/day</p>	<p><b>Oil utilisation</b></p> <p>Germany 2,6 million barell/day</p>

<p><b>Natural gas store</b></p> <p>Russia 44 650 billion steres</p>	<p><b>Natural gas store</b></p> <p>Iran 26 850 billion steres</p>
<p><b>Natural gas store</b></p> <p>Qatar 25 630 billion steres</p>	<p><b>Natural gas store</b></p> <p>Saudi Arabia 7176 billion steres</p>
<p><b>Natural gas store</b></p> <p>United Arab Emirates 6071 billion steres</p>	<p><b>Natural gas mining</b></p> <p>Russia 654 billion steres</p>
<p><b>Natural gas mining</b></p> <p>USA 545 billion steres</p>	<p><b>Natural gas mining</b></p> <p>Canada 187 billion steres</p>
<p><b>Natural gas mining</b></p> <p>Iran 112 billion steres</p>	<p><b>Natural gas mining</b></p> <p>Norway 99 billion steres</p>
<p><b>Natural gas utilisation</b></p> <p>Russia 481 billion steres</p>	<p><b>Natural gas utilisation</b></p> <p>Iran 112 billion steres</p>
<p><b>Natural gas utilisation</b></p> <p>Japan 100 billion steres</p>	<p><b>Natural gas utilisation</b></p> <p>USA 653 billion steres</p>
<p><b>Natural gas utilisation</b></p> <p>Germany 97 billion steres</p>	

## 2. Learning Cell Information Technology

<b>Name of the Company:</b> Grammar School 11. class (20 students)
<b>Name of the used active learning method</b>  Learning cell
<b>Description of the method</b>  A learning cell is an effective way for a pair of students to study and learn together. A learning cell is a process of learning where two students alternate asking and answering questions on commonly read materials, they discuss the question. During this time, the teacher is going around the class from group to group giving feedback and answering questions.  Subject: Information technology  Topic: history of the maths and usage of information technology, IT competency, interdisciplinary studies.  Purpose: getting to know the life and scientific importance of these mathematicians, cooperative learning, development of inductive and deductive thinking, associative skills, pair work, self-evaluation.  Aids: computer, internet, cards, projector.
<b>Application steps (How do you apply this method in a science course)</b>  I. Make pairs. (10x2 students) Choose a card. (Students choosing the same scientist make one pair.) Euklides, Hippocrates, Pythagoras, Thales, Zeno of Elea  II. Individual work: search information and form the text. (IT-literacy)  Description of the task:  1.) Find information on the scientist and form the text, letter type: Bookman Old Style. 2.) Write your name and the date in the running title. 3.) Put an Enter after the name of the scientist. 4.) Please form the name bold and size 14 point, adjust it in the middle.

5.) Adjust the following row also in the middle, and put an Enter in the end!

6.) Divide the text into paragraphs.

7.) Form the text justified.

8.) Find a picture of the scientist on the net.

9.) Adjust the picture in the right upper corner of the document.

III. Pair work: discuss the text and picture findings, and edit the final text, choose the speaker, introduce the scientist.

IV. Checking, evaluation.

### 3. Collaborative Learning Group Maths

**Name of the Company:**

Vocational school, 9. class (24 students)

**Name of the used active learning method**

Collaborative learning group, division of the class into different levelled groups

**Description of the method**

A collaborative learning group is a successful way to learn different material for different classes. It is where you assign students in groups of 3-6 people and they are given an assignment or task to work on together. The students solve the problems together. The teacher has to make sure that the students in the group choose a leader to keep them on track with the process. This is a good example of active learning because it causes the students to review the work that is being required at an earlier time to participate.

Subject: Mathematics

Topic: addition, extraction, multiplication, division, extract the square.

Purpose: development of calculating skills, estimating, self-checking.

**Application steps (How do you apply this method in a science course)**

1. Making tree groups based on previous diagnose so the students work in tree homogeny groups.

The groups are separated in accordance with the intellectual abilities of the students:

A group: ability last.

B group: middle level.

C group: the best ability.

2. The students of each group have their own seats. They check the homework based on the key.

3. The groups are given different levelled exercises.

4. The students solve the problems together and write down the solutions in their own exercise book.

5. Self-correction based on the key.

6. Each group chooses a speaker who summarises the answers to the questions.

## 4. Reaction to a video Biology

<b>Name of the Company:</b> Grammar School 11. class (20 student)
<b>Name of the used active learning method</b>  Reaction to a video
<b>Description of the method</b>  Reaction to a video is an example of active learning because most students love to watch movies. The video helps the student to understand what they are learning. The teacher has to make sure that the video relates to the topic that they are studying at the moment. It is important to include a few questions before starting the video so they will pay more attention and notice where to focus at during the video. It is useful to divide the students either into groups or pairs so that they may discuss what they learned and write a review or reaction to the movie.  Subject: Biology  Topic: Genetically Modified foods  Purpose: enjoyable learning, communication skills, focusing on the substance, social corporation.
<b>Application steps (How do you apply this method in a science course)</b>  <ol style="list-style-type: none"><li>1. Making groups of five.</li><li>2. Asking some questions concerning GM, brainstorming, collecting some ideas on the topic.</li><li>3. Each group chooses a card with an aspect: definition, advantages and disadvantages of GMO, and public reactions to GM.</li><li>4. Watching the video: Genetically Modified Foods Interview (<a href="http://www.youtube.com/watch?v=d5LKufiGNKg&amp;feature=related">http://www.youtube.com/watch?v=d5LKufiGNKg&amp;feature=related</a>)</li><li>5. While watching the video every student makes notes.</li><li>6. The groups sum up the information written down, and choose a speaker.</li><li>7. The speakers presents the conclusion of the groups to the others who all take notes.</li><li>8. After listening to all the presentations every group creates a new perspective.</li><li>9. Finally each group presents their own opinions on GM.</li></ol>

## 5. Individual presentations discovering learning Physics Astronomy

<b>Name of the Company:</b>  Grammar School 12. class
<b>Name of the used active learning method</b>  Individual presentations, discovering learning
<b>Description of the method</b>  The student gains scientific knowledge individually and makes a presentation (ppt) based on the instructions and aspects given by the teacher. Finally the student presents his/her new knowledge to the classmates.  Individual student: individual  Subject: Physics  Purpose: gathering scientific information, focusing on the substance, definition of scientific facts, development of inductive and deductive thinking, associative skills.  Topic: Astronomy, the „Big Bang theory”.  Aids: computer, internet, projector.
<b>Application steps (How do you apply this method in a science course)</b>  <ol style="list-style-type: none"><li>I. Teacher instruction: giving the topic and the aspects.</li><li>1. The „Big Bang theory” definition.</li><li>2. Finding experimental evidences: enlargement of the universe, red shift, background radiation, Hubble’s law.</li><li>3. Problems: elemental parts on the beginning of the explosion, lack of black substance, black hole.</li><li>4. Illustration searching pictures, depicting the objects of the universe: stars, red giants, white dwarves, supernovae, neutron stars, pulsars, quasars, galaxies, galaxy systems.</li><li>5. List of linkers.</li><li>6. Questions to the topic, what I don’t understand.</li></ol>

7. The space exploration methods and devices.

8. The perspectives of the research.

II. Working the presentation out.

III. Interpreting the presentation.