The fifty/fifty-Project in Berlin

Energy Audit – Pupils examine their School

Independent Institute for Environmental Concerns (UfU) e.V.

Climate Change & Education

Environmental Education

Energy saving and renewable energy sources

Noise Pollution

Prevention measures against leisure noise

Consultation of noise-concerned citizens

Landscape Ecology

Sustainable use of Waters

Research on Bio-Indicators

Environmental Law & Public Participation

Research on the practice of the Citizens-Movement

Moderation of Environmental Problems

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Focuses of the Dep. Climate Change & Education

- Energy saving and use of renewable energy sources at schools
- Climatic protection projects with children and youth at Kinder gardens, youth hostels, leisure homes)
- Connection of educational and practical measures of the ecological school management
- Production of training aids and information brochures
- Teacher advanced training
- Energy counseling

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Preconditions for a School to start an energy-saving Project

- Interest for ecologic behaviour
- Preparedness, to do something
- Financial incentive,
  i.e. gratification if there is a success
- Professional care and consulting

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Was does UfU offer?

- Consulting of schools and school administration
- Workshops and seminars
- Preparation of von teaching materials
- Internet presentation und mailing list about energy saving in schools
  fifty-fifty@liste.ufu.de
- Support service und consulting on-the-spot

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Fifty/fifty – system of incentives

- **What is fifty/fifty?**
  - **Savings by user behaviour, i.e. it is not about energy saving investments**
  - **50% of the saved money is paid to the schools for free disposition**
- **fifty/fifty in Berlin**
  - **Implementation of the system of incentives in the different boroughs since the school year 1996/97**
  - **Participation of so far 220 schools**
  - **Savings of more than 600.000 € per year**

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Energy saving measures by user behaviour

- Everyday life
  - Light only when and where it is needed
  - Wright use of thermostat valves
  - Aeration by short and wide opening of the windows
- Use of technical facilities
  - Reasonable (control of the) corridors lighting
  - Lowering the room temperature at night, at weekends and at holidays
- Cooperation with the school administration
  - Necessary repairs
  - Optimisation of automatic control
  - Suggestions for investments

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Saving potential of a school of average size

- Savings of 10 - 15 %
  - **100 MWh warmth**
  - **10.000 kWh electric current**
  - **40 t CO_2**
  - **5.000 Euro**

or:
Savings of 80 – 90 %

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Umsetzung an den Schulen - Analyse

- Formation of an „Energy Team“ by participation of all groups of users
- Getting to know the energy situation of the school building
  - **Energy round tour**
  - **Measurements regarding the use of energy**
- Tracking of energy saving potentials
- Creation of a catalogue of measures for energy saving

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Energy Round Tour I

- Energy supply
  - **Heating system**
  - **Witch parts of the school may be heated separately?**
  - **Electric meter**
- Outside the school, attic, façade, roof
  - **Where energy is use ore wasted?**

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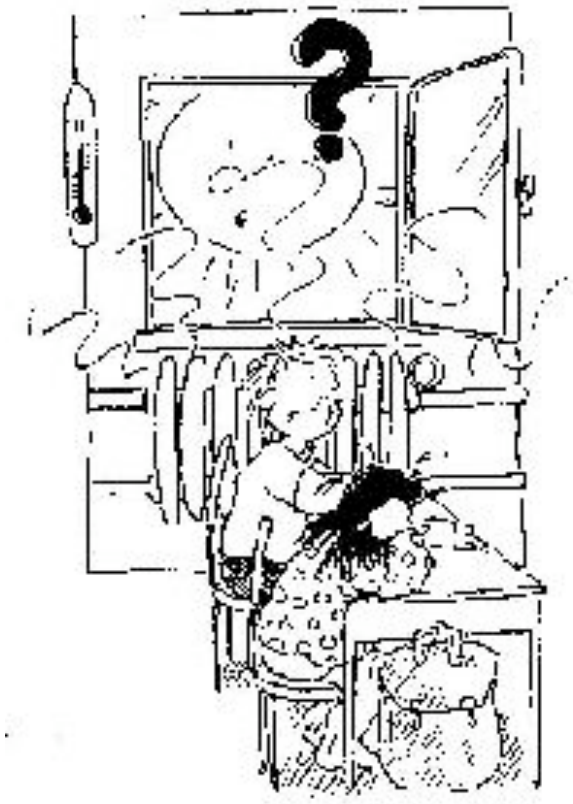
Energy Round Tour II

- Classrooms
  - **Temperature**
  - **Thermostat valve**
  - **Open Windows**
  - **Lighting**
  - **Tape recorder, refrigerators and other electric devices**
- Corridors and staircases
  - **Temperature**
  - **Automatic lighting**



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Measurements regarding the use of energy

- Measurement of the lighting
- Lights (counting, power)
- Other electrical device (consumer load)
- Temporal temperature gradient, temperature lowering at night and weekend
- Areal temperature gradient (participation of at least 20 pupils)

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Energy measuring

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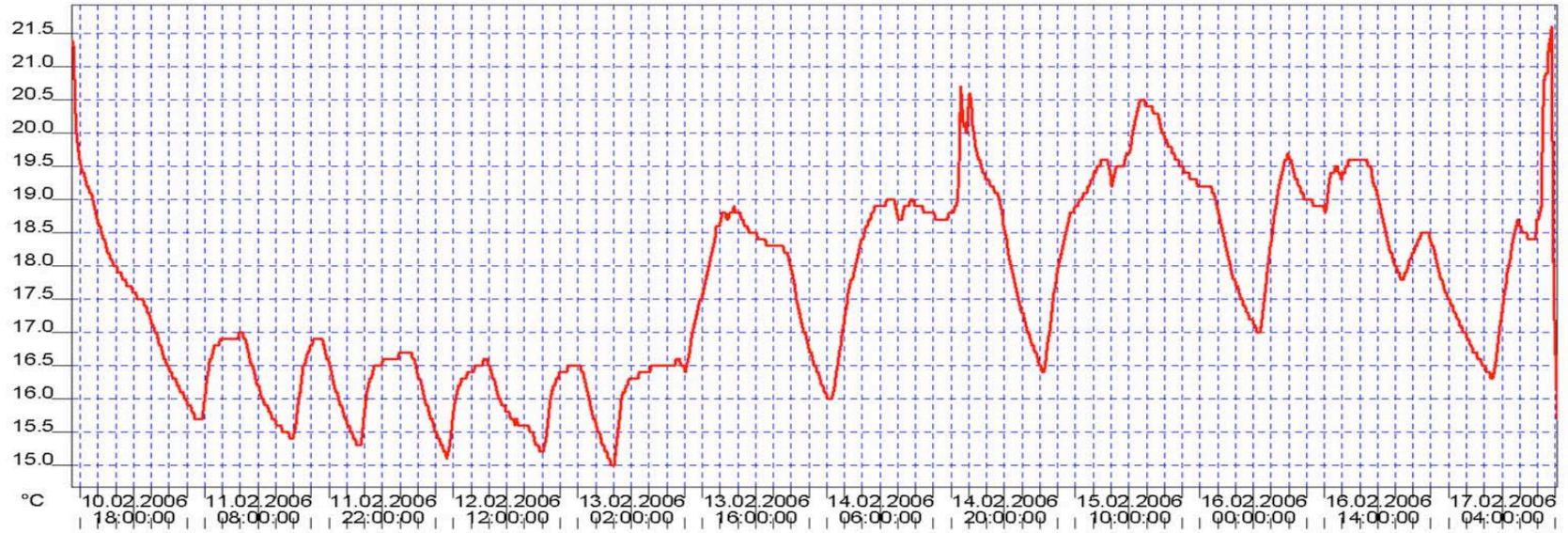
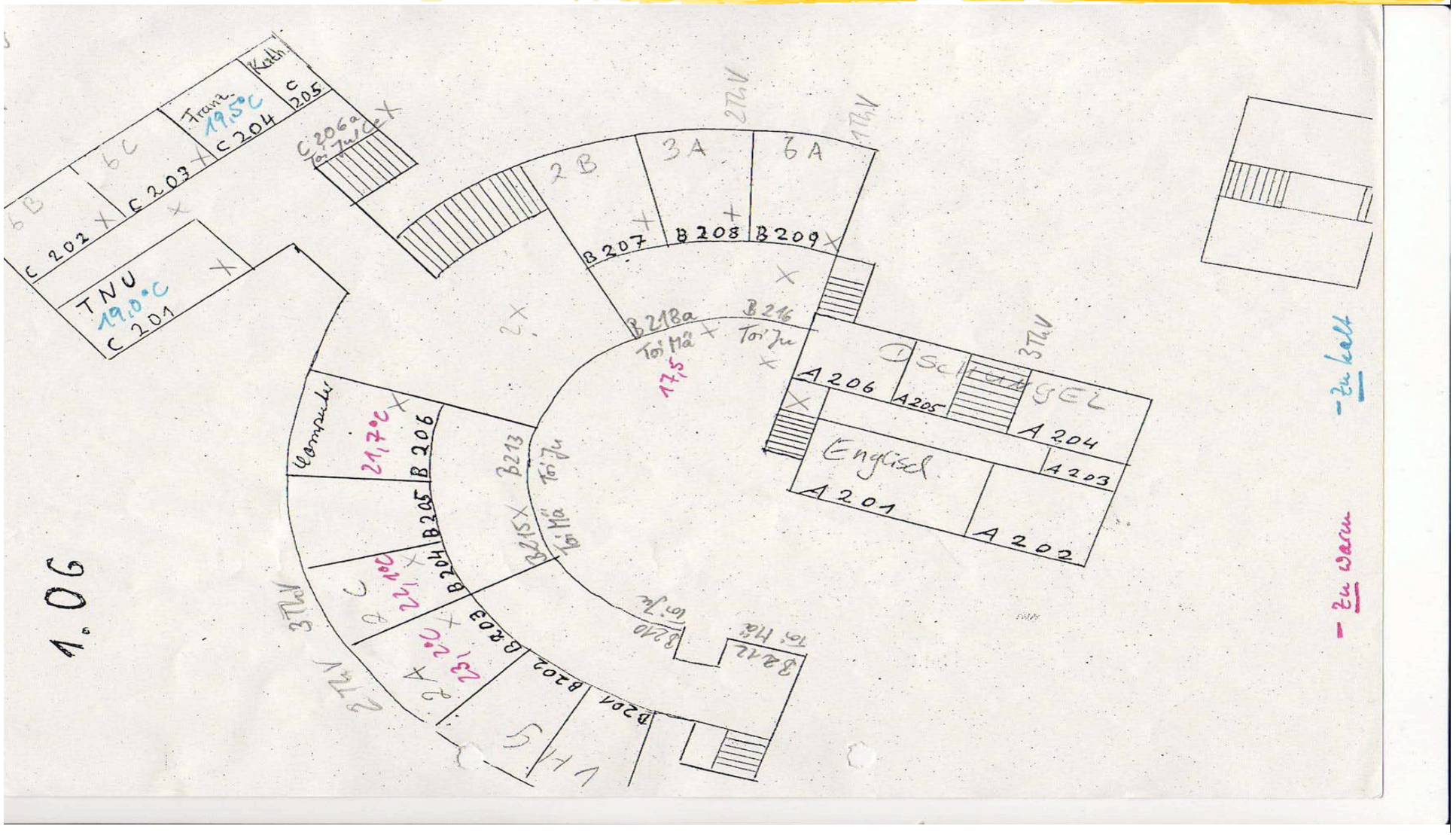
Temporal temperature gradient

Charlotte Salomon GS	Bedingungen			20.02.2006	Seite 1/1	
Startzeit:10.02.2006 11:05:00		Min:	Max:	Mit:	UG	OG
Endezeit:17.02.2006 10:15:00	K:1 [°C] Channel 1	15.00	21.60	17.64	-30.00	70.00
Kanäle:1 (1)						
Meßpunkte:1004						
K1: SN 37450573						
Genauigkeit:	K1: Acc:+/- 0.8 [-30..-20] +/- 0.5 [-20..40] +/- 0.8 [40..70] °C					



Areal temperature gradient



Measures for saving energy

- Realisation of energy saving measures by the energy team and the caretaker
  - **Adjustment of the heating system**
  - **Adjustment of lighting in corridors and staircases**
- Information of the school public (pupils and teachers)
  - **Posters about energy consumption, energy saving measures and saving achievements**
  - **Info sheets regarding all day behaviour**
  - **Marking of light switches**
- Other measures
  - **Realisation of energy saving weeks**
  - **Training of pupils in charge of energy saving in the classes**

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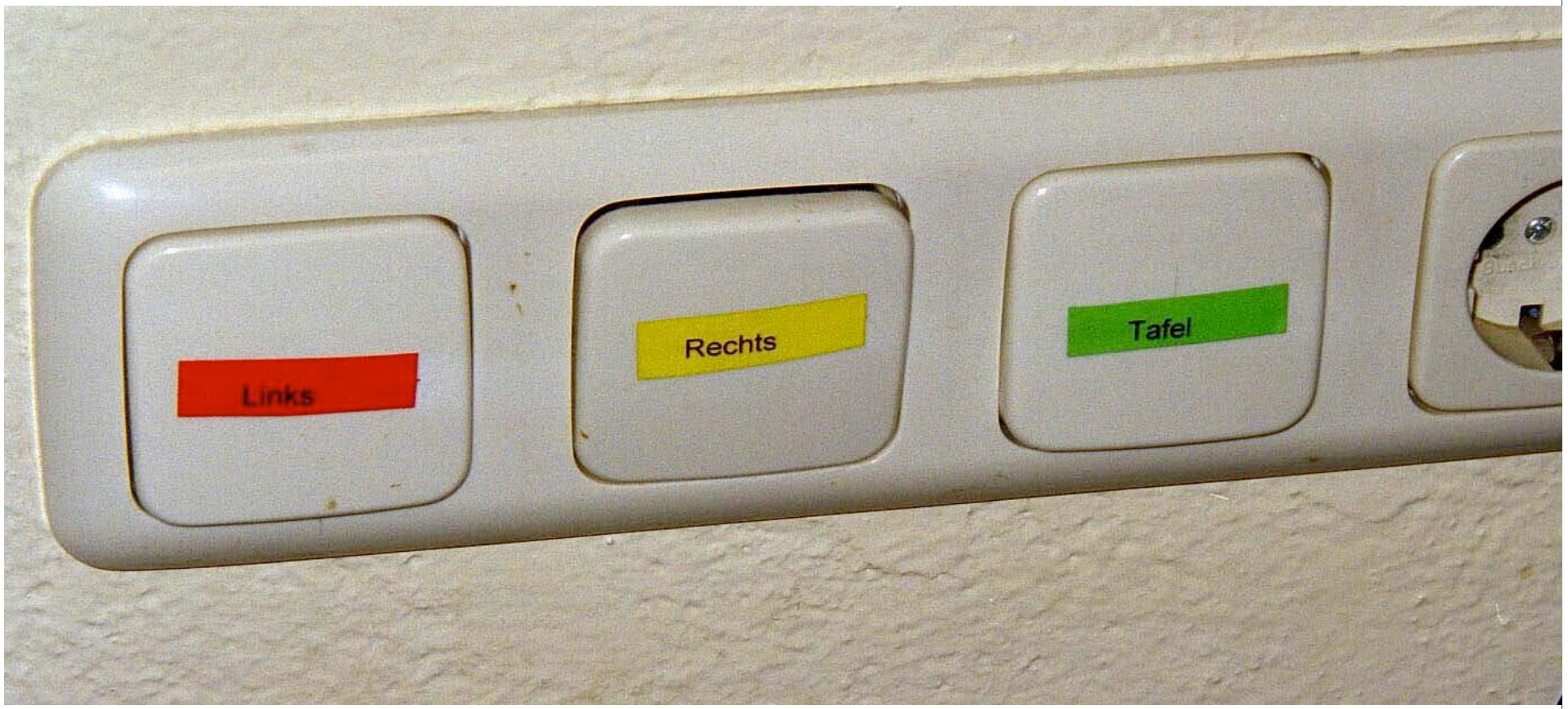
Marking of light switches



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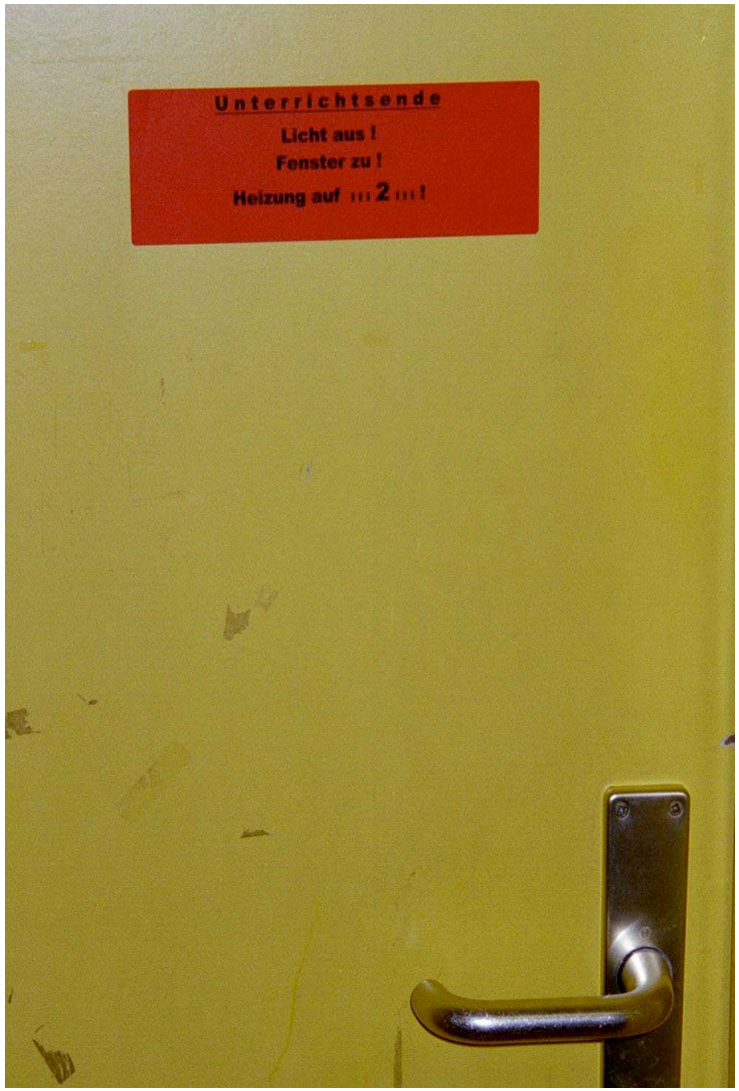
Info at the class room door



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Posters to the school public

Energy saving measure / Electric Current

Energy-team and caretaker	All pupils and teachers	School ad-ministration
Marking of the light switches Information sheets and wall newspapers Lighting regulation in corridors and stairways Switch-off of devices which are not necessary (refrigerators, boilers) Putting redundant lamps out of operation	Switch on the light only if necessary (f.i. using only the lighting of the wall-site or of the blackboard) Switch of the lighting in longer breaks Renouncement of stand-by at electric devices, such as video player and kopier	Purchase of energy saving devices and lamps. New and sensible regulation for the lighting (if necessary)

Energy saving measure / Heat

Energy-team and caretaker	All pupils and teachers	School ad-ministration
Lowering the temperature of the building Starting the night-lowering as early as possible Lowering the temperature during holidays Sealing off the gaps of the windows	Shock airing with all windows Using the thermostat valve in a right manner Do not put anything in front of the radiators Closing windows and doors after the lessons Keeping the doors to the stairs shut, otherwise the warm air will stream upwards Renouncement of hot water for washing hands	Maintenance of the heating system Arrangement of a modern control of the heating system Purchasing of a modern heating system, if the old one has bad efficiency

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