



Energy Knowledge Transfer To The Next Generation – Project “Energie und I”

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Area 2.3 - Microgrids and Smart energy Communities
 Area 3 - Sustainable Supply and Value Chains

Introduction

The “Energie und I” project aims to educate the next generation about renewable energy sources and their utilization in five different primary and secondary schools in Lower Austria. By linking research, education and business institutions, the project takes a holistic approach. Activities address all gender and cultural backgrounds. It breaks down traditional role models and creates an understanding of possible future careers in STEM. This poster provides an overview of the project’s work package “Energy supply today and in a digital future” and its three consecutive workshops.

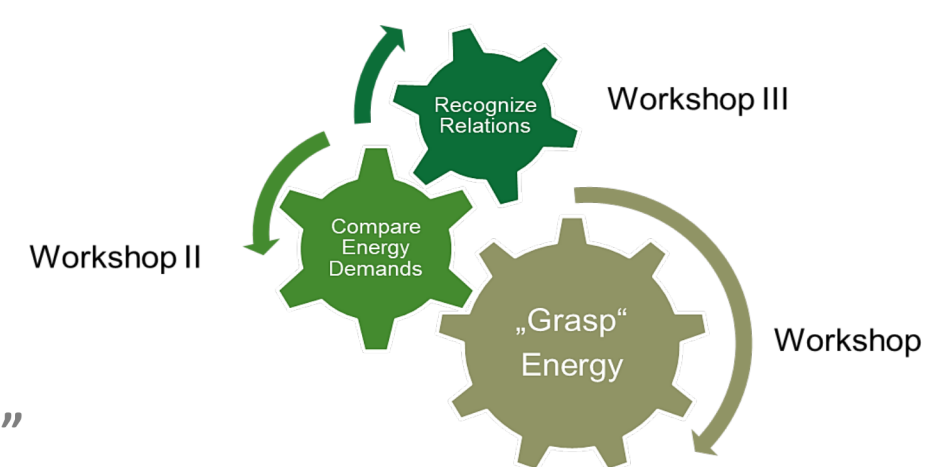


Fig. 1: Workshop concept “Energy und I”

Methodology

To engage students for the topic of renewable energy and its importance in the future of our energy system, the following methods were applied during the workshops:

- Familiarization (students, presenters) & ask-anything policy
- Classic knowledge transfer via short lectures
- Gamification and exercises
- Digital surveys and inputs (e.g. via Slido)
- Performance of experiments
- Assigning tasks and group work

Workshop 1 “grasp energy”

Students were taught basics of energy (types of energy, sources, generation, distribution) with the focus on renewable energy. An experiment with a digital energy meter gave a sense of energy consumption. Finally, the students were given the task to monitor their individual energy consumption by using the Energy-Check template in their daily routine.

Tab.1: Exemplary illustration of the “Energy-Check”

Date & Time of Day	Activity / Type of consumption	Duration in Minutes	Energy Type: Electricity, Heating, Mobility, Others	[Optional] Power of Equipment, etc.	Comment Device / Activity, etc.
02.03.2024					
Morning	Brushing teeth	3	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	10	Electric toothbrush
Mid Morning	Studying (digital)	120	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	120	Notebook
Noon	Cooking	30	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2.000	Gas stove
Afternoon	Shopping	60	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	52.000	Car (diesel engine)
Evening	Taking a shower	15	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	20.000	Shower (gas boiler)

Workshop 2 “compare energy demands”

The content of the second workshop is summarized below:

- Short lecture on the benefits of energy conservation
- Presentation of the evaluation results of the Energy-Check through illustrative examples
- Group work on energy sources/distribution and energy conservation to reflect the individual daily energy use

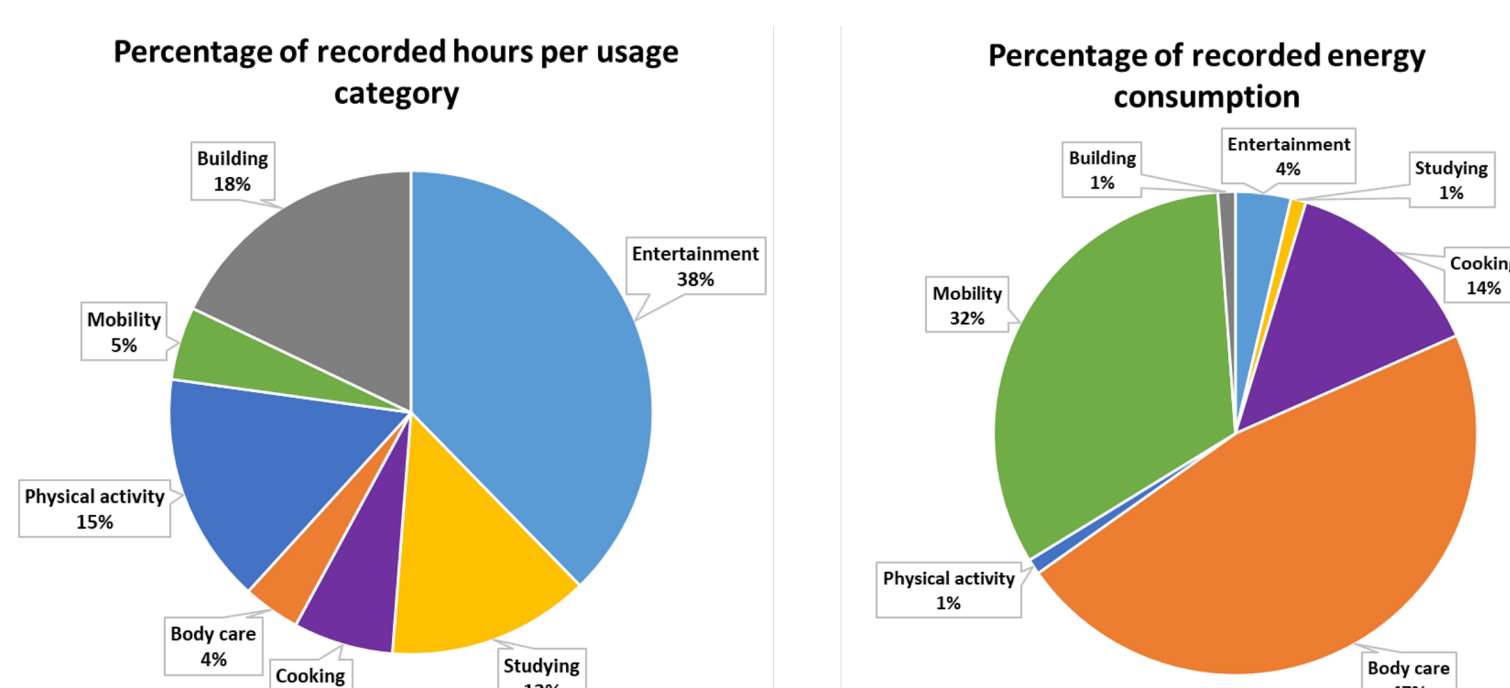


Fig. 2: Results of the Energy-Check in a middle school class in terms of recorded hours and energy demand per category



Fig. 3: Elementary school students at Workshop 2

Workshop 3 “recognize relations”

The third workshop started with a reflection on personal energy conservation potentials. It focused on conducting experiments in secondary schools in order to apply the previously learned knowledge. The following topics were covered in experiments:

- Solar energy generation, use and metering
- Biogas generation from domestic waste
- Green hydrogen production and H₂ powered transportation

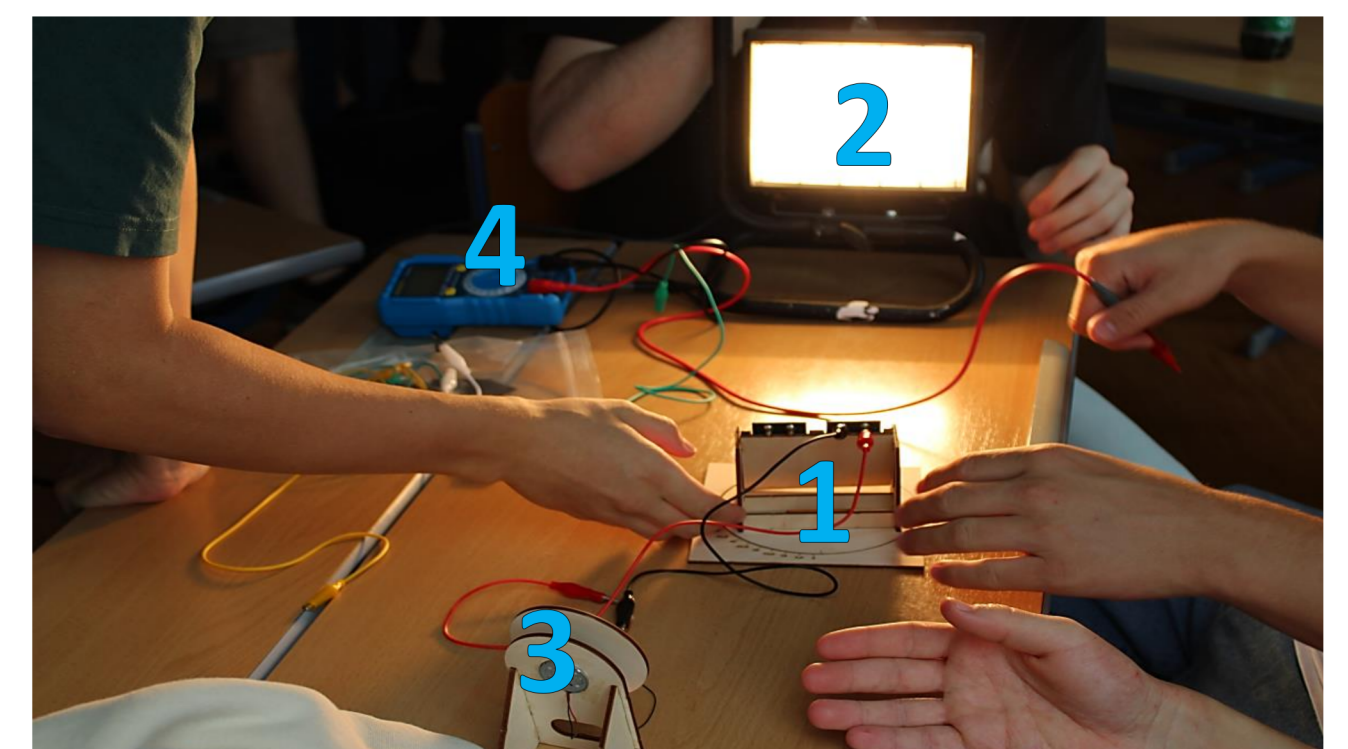


Fig. 4: Experiment consisting of photovoltaic cells (1) with light source (2), electric motor (3) and multimeter (4)

Communication activities

- A project website: <https://www.energieundi.at/> (in German)
- Press releases and news articles
- Workshop in a secondary school: AI in scientific work

Outlook for the second project year

- Workshops on the topics of the electric circuit (primary school) and fuel cells (secondary school)
- Programming with Scratch
- Escape Room
- Excursions to biomass heating plants
- Lectures for secondary schools and the general public (sustainable aviation fuels, biogas)
- Knowledge transfer/trainings with teachers
- Extended press releases and project updates (website)
- Joint closing event in June 2025

Acknowledgement

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