

# Teaching Material

**Attachment to the  
„Guidelines IT-Peer Education“  
produced by  
UseITsmartly Consortium  
March 2016**



Co-funded by the Intelligent Energy Europe  
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<h1>IT-Peer Training – Curriculum</h1>	<h2>Unit 1</h2>
<p><b>Qualification: „Methodical Competences“ ECVET Sheet, Level 2</b></p>	<p>Session 1,8</p>

### KNOWLEDGE

He/She knows ...

- to express their expectations on the IT-peer training and multiplication process.
- to recognise the process of the IT-peer training.
- to emphasise the aim of peer education.
- to recognise and describe his/her tasks in the IT-peer training and in the role of multiplier.
- .to describe the function of a vehicle.
- to recognise the communication-habits of young adults (social media).
- about different presentation-techniques and presentation-medias.
- to select the most important didactical methods in peer education.
- to identify the most important pedagogical approaches in peer education.
- to recognise how to address and communication with younger people in a proper way.

### SKILLS

He/She can ...

- to create their own portfolio for the IT-peer training.
- to choose the optimal presentation-techniques and proper media from a pool of teaching material and didactical methods (supported by the trainers).
- to design and use an own teaching-concept for the multiplication process.
- to work with a vehicle presented by peers, who were already involved in a “vehicle-workshop” and optionally develop a vehicle on his/her own.

### COMPETENCE

He/She acts as a facilitator and multiplier on his/her own.  
He/She monitor their own work and multiplication process.



# IT-Peer Training – Curriculum

Unit 2

**Qualification: Green Internet  
ECVET-Sheet, Level 2**

Session 2,3

**KNOWLEDGE**

- He/She knows ...
- to name the most important facts about the usage of the internet from youths around the world:
    - number of users
    - average usage
    - social media.
  - to describe how the internet basically works:
    - net-configuration
    - provider
    - search engines
    - clouds, streaming.
  - to report about the ecological impact of internet usage:
    - CO<sub>2</sub>- emissions
    - power consumption.

**SKILLS**

- He/She can ...
- to create their own portfolio for the IT-peer training.
  - to choose the optimal presentation-techniques and proper media from a pool of teaching material and didactical methods (supported by the trainers).
  - to design and use an own teaching-concept for the multiplication process.
  - to work with a vehicle presented by peers, who were already involved in a “vehicle-workshop” and optionally develop a vehicle on his/her own.

**COMPETENCE**

He/She assumes responsibility for a conscious and ecological friendly way of internet use



<h1>IT-Peer Training – Curriculum</h1>	<h2>Unit 3</h2>
<p><b>Qualification: Green IT ECVET Sheet, Level 2</b></p>	<p>Session 4,5,6</p>

<p><b>KNOWLEDGE</b></p> <p>He/She knows ...</p> <ul style="list-style-type: none"> <li>to define the main components, advantages and specialities of a “green” PC: <ul style="list-style-type: none"> <li>- hardware</li> <li>- software</li> </ul> </li> <li>to express the ecological footprint: <ul style="list-style-type: none"> <li>- raw materials and resources</li> <li>- waste-recycling</li> <li>- clean IT</li> </ul> </li> <li>to emphasize sustainable usage: <ul style="list-style-type: none"> <li>- energy efficient usage</li> <li>- repair</li> <li>- upgrade</li> </ul> </li> </ul>	<p><b>SKILLS</b></p> <p>He/She can ...</p> <ul style="list-style-type: none"> <li>mark the differences of a standard pc and a green pc</li> <li>see the ecological impact of IT.</li> <li>look up methods for the sustainable usage of IT.</li> </ul>
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**COMPETENCE**

He/She develops ideas for energy efficiency IT usage concepts. He/She monitor their own work and multiplication process.



<h1>IT-Peer Training – Curriculum</h1>	<p>Unit 2</p>
<p><b>Qualification: SMART Technologies</b> <b>ECVET Sheet, Level 2</b></p>	<p>Session 7</p>

<p><b>KNOWLEDGE</b></p> <p>He/She knows ...</p> <ul style="list-style-type: none"> <li>to describe the basics of different “smart” technologies and their goals: <ul style="list-style-type: none"> <li>- smartmeter</li> <li>- smarthome</li> <li>- smartgrids</li> <li>- smartcities.</li> </ul> </li> <li>to explain the advantages and disadvantages of “smart” technology.</li> </ul>	<p><b>SKILLS</b></p> <p>He/She can ...</p> <ul style="list-style-type: none"> <li>to discuss the idea of “smart” technologies.</li> <li>to argue the advantages and disadvantages of “smart” technologies.</li> </ul>
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<p><b>COMPETENCE</b></p> <p>He/She communicates “smart” technologies.</p>
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# Didactical Concept

## Austrian Didactical Concept - Green IT-Peer Training I, Day 1

TIME	WHAT?	WHY? HOW?	MATERIAL
10:00 - 10:30	welcome introduction project presentation	information about objectives and content, lecture	beamer, laptop. ppt
10:30 - 11:00	introduction game: meeting café	warm-up, team-building, teamwork	sheets for the „meeting café“
11:00 - 12:30	“I know, what you did last summer“	every day practice, chacing Paula Maroni, find the profile, count the clicks, pair-work	computer/internet, smartphones, work sheet
12:30 - 13:30	Lunch		
13:30 - 14:30	data protection, make your mobil safer, transparent costumer	capacity building: se- curity measurements, own experience and/or pair work, discussion	input, working sheet, computer, smartphones
14:30 - 17:00	counting mouse clicks, energy consumption, serverfarms, search engines	evaluation mouse- clicks, own experience, lecture, discussion	ppt., laptop, beamer



# Didactical Concept

## Austrian Didactical Concept - Green IT-Peer Training I, Day 2

TIME	WHAT?	WHY? HOW?	MATERIAL
09:00 - 10:30	warm-up, reflection of the day before, life cycle of a computer	quite experienced, impressive for youths, lecture	expert Rüdiger Wetzel, beamer, laptop, ppt
10:30 - 12:00	ressources (raw material), components, recycling, re-use	deconstruction of a laptop or an old computer, teamwork	electronic waste, old laptop or computer, working sheets
12:00 - 13:30	Lunch		
13:30 - 14:30	embodied energy, transport, energy content, network of embodied energy	internet-inquiries, group-work, presentations	paper, writing utensils
14:30 - 16:00	smart cities, smart homes, smart meters	introduction: Austrian advertisement, showing movie, discussion	movie: cartoon "what is smart meter, ...", powtoon
14:30 - 16:00	content of tool-box: index cards, solution approaches	inquiries, working with index-cards, group-work, inquiries	tool-box: index-cards



# Didactical Concept

## Austrian Didactical Concept - Green IT-Peer Training I, Day 3

TIME	WHAT?	WHY? HOW?	MATERIAL
09:00 - 10:30	warm-up, reflection of the day before, solution approaches	what is most useful for the peer-work? group work, Walt-Disney-method: decision	index-cards, paper, writing utensils
10:30 - 12:00	ideas for peer-work	individual work, walking in a threesome, discussion in groups	working sheet with visions, tool box: index cards, collection of examples
12:00 - 13:00	Lunch		
13:00 - 15:00	implementation of ideas for peer-work, vehicle presentation	target-group, project-description, objectives, step by step measures	action plan
15:00 - 16:00	results	exchange between youths, evaluation, hints, presentation	paper, writing utensils, laptop, beamer





## Recruitment Material

### Do you know, that ...

... for their server farms Google needs as much energy daily as a **town with 300.000 inhabitants**.

... **every day 2 billion people** worldwide use the internet. Increasing dramatically!

... the internet is already responsible for more CO<sub>2</sub>-emissions than the **airline industry**.

Within the EU-project "UseITsmartly" the Styrian Center of Environmental Education is teaching Austrian young people to become green IT peers. This peers get technical and methodical knowledge and show their friends and colleagues, how IT can be used in a smart and energy saving way.

### Interested?

optionally for specialised paper and master thesis

- attendance for max. 6 young people per federal state
- free of charge, with certification



### Contact

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0316/835404 - 7  
www.ubz-stmk.at  
www.useitsmartly.com





# Survey before starting the IT-peer training

## Use of IT in daily life

Thank you for participating in our project about young people's use of IT and energy. This questionnaire includes a few questions about you and some about your use of information technology (IT) in your everyday life. Please answer the following questions.

1. How old are you? _____ years				
2. Your gender? (please write) _____				
3. What is your housing situation? (please mark)				
<input type="checkbox"/> I live with my parent(s) <input type="checkbox"/> I live alone <input type="checkbox"/> I live with my girlfriend/boyfriend <input type="checkbox"/> I live with my roommates (share an apartment/house or similar) <input type="checkbox"/> I live in a dormitory				
4. Which of the following devices do you use in general? (please mark all relevant)				
<input type="checkbox"/> Television at home, which I share with others (e.g. television in living room) <input type="checkbox"/> Television in my own room <input type="checkbox"/> Laptop <input type="checkbox"/> PC at home <input type="checkbox"/> PC at school <input type="checkbox"/> Mobile phone <input type="checkbox"/> Smart phone <input type="checkbox"/> Tablet (e.g. iPad) <input type="checkbox"/> Game console (e.g. Xbox, PlayStation, Nintendo Wii or similar) <input type="checkbox"/> MP3-player (e.g. iPod) <input type="checkbox"/> Other (please write): _____				
5. Do you sometimes use a laptop? (please mark) <input type="checkbox"/> Yes <input type="checkbox"/> No				
If yes:				
5.1 How many hours do you use a laptop on a typical weekday? (please mark)				
<input type="checkbox"/> Less than 30 minutes <input type="checkbox"/> About 1 hour <input type="checkbox"/> About 2 hours <input type="checkbox"/> About 3 hours <input type="checkbox"/> More				
6. Do you sometimes use a stationary PC? (please mark) <input type="checkbox"/> Yes <input type="checkbox"/> No				
If yes:				
6.1 How many hours do you use a PC on a typical weekday? (please mark)				
<input type="checkbox"/> Less than 30 minutes <input type="checkbox"/> About 1 hour <input type="checkbox"/> About 2 hours <input type="checkbox"/> About 3 hours <input type="checkbox"/> More				
7. Do you sometimes use a mobile or smart phone? (please mark) <input type="checkbox"/> Yes <input type="checkbox"/> No				
If yes:				
7.1 How many hours do you use a mobile or smart phone on a typical weekday? (please mark)				
<input type="checkbox"/> Less than 30 minutes <input type="checkbox"/> About 1 hour <input type="checkbox"/> About 2 hours <input type="checkbox"/> About 3 hours <input type="checkbox"/> More				
11. How often do you use a mobile phone/smart phone or tablet for... (please mark the answer that applies best to your use)				
	Daily	At least weekly (but not every day)	Less than every week	Never
Send/receive photos or video by e-mail				
Video calls (e.g. Skype)				
Upload or watch photos or video on social media (e.g. Facebook or Instagram)				
Upload photos or video to YouTube/Wimeo or similar video-sharing				
Streaming music via the internet (e.g. Spotify)				
Streaming video or television programmes from the internet (e.g. YouTube, Wimeo, Netflix or national television website)				
Download video, music or podcasts to your own device (not streaming)				
Online gaming (playing games on the internet, e.g. World of Warcraft or free online games)				
Play games (not online gaming)				
Participate in virtual worlds (e.g. Second Life or similar online virtual worlds)				
Read news or gossip on websites				
Use search engines (e.g. Google)				
Download reports or other kinds of larger text documents				
Photo or video editing (e.g. using Photoshop)				
Monitor your health (e.g. using pedometer apps)				
12. How often do you use a game console for... (please mark the answer that applies best to your use)				
	Daily	At least weekly (but not every day)	Less than every week	Never
Online gaming (playing games on the internet, e.g. World of Warcraft or free online games)				
Play games on your device (not online gaming)				
Participate in virtual worlds (e.g. Second Life or similar online virtual worlds)				

8. Do you sometimes use a tablet (e.g. iPad)? (please mark) <input type="checkbox"/> Yes <input type="checkbox"/> No				
If yes:				
8.1 How many hours do you use a tablet on a typical weekday? (please mark)				
<input type="checkbox"/> Less than 30 minutes <input type="checkbox"/> About 1 hour <input type="checkbox"/> About 2 hours <input type="checkbox"/> About 3 hours <input type="checkbox"/> More				
9. Do you sometimes use a game console (e.g. PlayStation)? (please mark) <input type="checkbox"/> Yes <input type="checkbox"/> No				
If yes:				
9.1 How many hours do you use a game console on a typical weekday? (please mark)				
<input type="checkbox"/> Less than 30 minutes <input type="checkbox"/> About 1 hour <input type="checkbox"/> About 2 hours <input type="checkbox"/> About 3 hours <input type="checkbox"/> More				
10. How often do you use a laptop or PC for... (please mark the answer that applies best to your use)				
	Daily	At least weekly (but not every day)	Less than every week	Never
Send/receive photos or video by e-mail				
Video calls (e.g. Skype)				
Upload or watch photos or video on social media (e.g. Facebook or Instagram)				
Upload photos or video to YouTube/Wimeo or similar video-sharing				
Streaming music via the internet (e.g. Spotify)				
Streaming video or television programmes from the internet (e.g. YouTube, Wimeo, Netflix or national television website)				
Download video, music or podcasts to your own device (not streaming)				
Online gaming (playing games on the internet, e.g. World of Warcraft or free online games)				
Play games (not online gaming)				
Participate in virtual worlds (e.g. Second Life or similar online virtual worlds)				
Read news or gossip on websites				
Use search engines (e.g. Google)				
Download reports or other kinds of larger text documents				
Photo or video editing (e.g. using Photoshop)				



# Worksheet „Meeting Café“

## Meeting – Café



..... likes to work with young adults.	..... has already done a „peer-project“ project with young adults.	..... is involved in environmental protection.	The most used gadget of ..... is a tablet.	..... already got angry about IT today.
..... knows different methods for teaching.	..... has the newest gadgets.	..... knows about green computing and is experimenting himself.	..... knows how young adults use IT.	..... Knows how to recycle mobile phones.
..... Knows how many computers are running at his/her company.	..... has read his eMails in the morning.	..... is keen on knowing, what will happen at this meeting.	..... knows how a smart-meter is working.	..... knows what a server does.
..... Knows which group of persons is online the most.	..... has some smart-home-devices at home.	..... has no computer at home.	..... is experienced on working with IT-technicians.	..... is using green search engines.



# Worksheet „Google nows ....“

## Google knows what you did last summer!

Marcello Martinez, a young boy from Austria...

Look for information and count the mouse-clicks!

- How old is Marcello Martinez?
- Which place did he visit on August 10<sup>th</sup>, 2014 and which transport mode did he use to come there?
- Why did he spend the New Year's eve 2015/15 in bed?
- Where is he working at?
- Which sea did Marcello visit on January 1<sup>st</sup>, 2015?
- Which sports-team does she like most?
- Which nick name has Marcello?
- Which charity event did he join in August 2014?

How many clicks did you count? \_\_\_\_\_



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# Worksheet „Counting Mouseclicks!“

**How many clicks do you have needed?**

**Every click on the internet consumes 0,3Wh (declared by Google) of electrical energy.  
How much energy did your research need?**

Total consumption:

How long could you have used the following devices with this amount of energy?

Device	Power in W	Usage-time in h	Usage-time in min
LED-Lamp	10		
Laptop	60		
TV-Set	120		
Radio	15		
Refrigerator	50		
Gaming-PC incl. Screen	800		
Light bulb	75		

Now we imagine, that half of the worldwide internet-users do a search like that **a day**.

With a given amount of 2,7 billion users (as of 2014), there would be a total amount of \_\_\_\_\_ clicks.

How many kWh were used during these tasks?

The average household needs 4500kWh a year. How many households could have been fully supplied?



# Worksheet „Energy in a Smartphone“

## How much energy is contained in a Smartphone?

In a Smartphone there are **220 kWh** of energy.

- From the mining of raw materials to the manufacturing of the components
  - Mainboard(+Display)                    91 kWh
  - Plastics                                        1 kWh
  - Aluminium                                    1 kWh
  - Glass    0,5 kWh
  - Rest(small parts)                         2,5 kWh
- Assembling                                    120 kWh
- Transport                                      4 kWh

To produce 1kWh by yourself, you would have to pedal on a bicycle with an attached generator for ten hours.

How long do you have to pedal to produce just one smartphone? \_\_\_\_\_

Other electronic devices in comparison:

Device	embodied energy	pedaling (Duration) in h
Smartphone	220 kWh	
Laptop	400 kWh	
Flat Screen	1450 kWh	

In comparison the average annual power consumption:

Device	Annual consumption
Smartphone	100 kWh
Laptop	90 kWh
Flat Screen	91 kWh

How long would i have to use my smartphone, Laptop or flatscreen, so that i have used the same amount of energy, which is already embodied?

Smartphone \_\_\_\_\_ Laptop \_\_\_\_\_ Flat Screen \_\_\_\_\_



## Daily Reflection during the IT-peer Training

Name of the school:	Class:
Name of the student:	
Name of the teacher:	
Date:	
Issues:	

1. What was most interesting today?
2. What can I integrate in my future peer-work?
3. About what do I need more in depth information?
5. Everything I still want to tell:



## Example for a Certificate





## Example for a Certificate



**Name**

**School**

successfully completed the technical and methodical training  
to become an

**GREEN IT-PEER**

in the schoolyear 2014/15 to the extent of 24 teaching units.

Through peer work she directly reached 150 further students and informed them about the  
possibility for energy saving in IT.

\_\_\_\_\_  
Name of politician  
function

\_\_\_\_\_  
Managing director  
Name of company



The Green IT-Peer training was implemented  
within the EU-project UseITsmartly.



## Worksheet:

# Google Game

### Set Up

- (PC/Notebook/Tablet) with internet connection
- Two browser windows simultaneously open
- A list of words (nouns)

### Rules

- Form two groups
- Give the same word (nouns) to each group and give them 30 seconds time to form a compound (a word consisting of components that are words as *rowboat*, *strawberry*, *goldfish* etc., e.g.)
- Explain beforehand that players are only allowed to make noun-noun-compounds (not *highschool*, e.g.), so that the results are comparable
- Explain beforehand what Google-purpose the word will serve (three options: the fastest search\*, the most hits, the least hits)
- Play three rounds for each kind of search
- Keep a list, of which group won how many rounds
- Reflection of the game with material (see next page, source: <http://www.truteam.com/404/?aspxerrorpath=/blog/2010/03/google-energy-use-infographic/>)

\*Makes visible that Google-searches take different routes through the net, every time, and that data travels long distances, is nicely combined with information on data traffic, servers etc.



# Worksheet: Google Game - 2

## The Energy

Used in Google Search

As the world's largest search engine, Google processes nearly 13 Billion monthly searches. They are able to handle such large volumes of data because they have huge datacenters with thousands of servers, capable of handling immense capacities. Such large amounts of computing power require a great deal of electricity. This electricity consumption translates directly into carbon emissions. Take a look below.



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