



The European Eco-School/ International Agenda 21 School

Best practice approaches

Imprint

Publisher:
Landesinstitut für Lehrerbildung und Schulentwicklung
Climate action in schools project
Project leader: Cordula Vieth
Felix-Dahn-Straße 3, 20357 Hamburg
www.li.hamburg.de/klimaschutz

Editors: Regina Marek (editor-in-chief), Christine Stecker, Monika Schlottmann
Text & Concept: Sina Clorius, journalist
Layout: Patrick Schempp, Kommunikationsdesign
Cover photos: (top left to bottom right): Jeannette Klötzl (Otto-Hahn-Schule),
Siegfried Kurzewitz (Fachschule für Sozialpädagogik),
Günter Bergfeld-Barreca (Heilwig Gymnasium)
Translation: Dr. Chris Baudy

September 2011

A DGU-run programme
(Deutsche Gesellschaft für Umwelterziehung)



Supported by the Coordination Centre for Climate Issues, Ministry of Urban Development and Environment, Hamburg.

Carbon neutral print on Circle White Matt paper produced from 100 % recycled fibre (Blue Angel certified).

Introduction	5
Foreword by Ties Rabe, Senator, Ministry of Education	5
Foreword by Jutta Blankau, Senator, Ministry of Urban Development and Environment	6
Foreword by Prof. Gerhard de Haan, Chairman of Deutsche Gesellschaft für Umwelterziehung (DGU)	7
Joining the eco-schools programme	8
Co-operation partners 2010	9
 Statistics	 11
Eco-schools programme 1995–2011	11
Hamburg’s eco-schools 1995–2011	12
 Eco-schools	
Elementary schools	14
General school principle “Learning to live”: Grundschule Carl-Cohn-Straße	14
Great young gardeners: Grundschule Eduardstraße	16
Waste collectors in Hamburg and Greece: Grundschule Krohnstieg	18
Consideration for people, the climate and the environment: Grundschule Moorflagen	20
Outdoor learning: Grundschule Müssenredder	22
Picturing our climate: Grundschule Ratsmühlendamm	24
Water and movement: Grundschule Scheeßeler Kehre	26
 Special need schools	 28
Recycling and multi-cultural vegetables: Anne-Frank-Schule	28
Musical and solar power: Schule Lokstedter Damm	30
 Primary and secondary schools	 32
Solar power for hot water and hot meals: Ganztagschule Denksteinweg	32
Slow food from our edible garden: Schule Ehestorfer Weg	34
A vineyard in Hamburg: Schule Hanhoopsfeld	36
Biodiversity and keepers of the waters: Offene Ganztagschule Hegholt	38
 District schools	 40
Climate change and art: Stadtteilschule Harburg	40
Apple campaign and climate action: Stadtteilschule Am Heidberg	42
Energy service and lunchbox: Heinrich-Hertz-Schule	44
European tree project: Julius-Leber-Schule	46
Fuel cells and climate action: Stadtteilschule Niendorf	48
Energy controlling and a Japanese Garden: Otto-Hahn-Schule	50
Charity Fun Run and energy efficient computers: Stadtteilschule Süderelbe	52
Worldshop and seabird protection: Stadtteilschule Walddörfer	54
 Grammar schools	 56
Sustainability contract: Albrecht-Thaer-Gymnasium	56
Sustainable learning: Alexander-von-Humboldt-Gymnasium	58
Consumer culture and human rights: Gymnasium Grootmoor	60
Going green: Heilwig-Gymnasium	62

Eco-Rangers and Aid for India: Gymnasium Hummelsbüttel	64
Seeking out energy vampires: Immanuel-Kant-Gymnasium	66
Clean and cool: Gymnasium Kaiser-Friedrich-Ufer	68
Pan-European research and intercultural education: Gymnasium Kirchdorf-Wilhelmsburg	70
Fair trade and first aid: Gymnasium Lerchenfeld	72
Cooling down for climate protection: Lise-Meitner-Gymnasium	74
Wild bees and desert plants: Marion-Dönhoff-Gymnasium	76
Vocational schools	78
Cycling tours and climate quiz: Fachschule für Sozialpädagogik	78
Energy mix and global solidarity: Gewerbeschule 8 Recycling und Umwelttechnik	80
On-site energy production: Gewerbeschule Metalltechnik mit Technischem Gymnasium G17	82
Climate protection and climate show: Handelsschule mit Wirtschaftsgymnasium Harburg H 10	84
Appendix	86
Solar power capacity: kWp	86
Recognition and participation	86
Online materials and information	88
Climate action in schools	90
<i>Fifty-fifty</i> bonus programme – a win-win situation for all	91
Application form.....	92

Foreword by Ties Rabe Senator, Ministry of Education

For 17 years now, the international programme “European eco-schools/ International Agenda 21 schools” has been a great success in Hamburg as the number of schools joining this programme is on the rise. Every year, schools with eco-friendly activities are awarded the title “European Eco-school/International Agenda 21 school”. In this way, education for sustainable development is continuously integrated into Hamburg’s school life.

A look back shows that it is worthwhile to apply for this title: During the school year 2010/2011, 42 of 44 applying schools were actually awarded the title of “European eco-school”. They all have successfully implemented measures of environmental and climate protection in both their school lives and their teaching. In Hamburg, schools have joined this international environmental education programme since 1995.

For the school year 2010/11 special emphasis has been placed on “climate change and climate protection”, an issue we are particularly concerned with. To keep climate change at bay, we need everyone to join in the concerted action to protect the climate, in particular our schools with their educational mandate.

Some eco-schools also became “climate schools” in 2010: They documented their commitment towards climate protection in a climate action plan with specified goals to be reached by 2020.

Eco-schools have an exemplary record of successful green and climate action. We are looking forward to many more schools in Hamburg being awarded the Green Flag in the future. Contact us and learn from each other!



A handwritten signature in black ink, appearing to read 'Ties Rabe', written in a cursive style.

Foreword by Jutta Blankau Senator, Ministry of Urban Development and Environment



Hamburg is proud to bear the title “European Green Capital 2011”. This title commits Hamburg to extend their exceptional eco-friendly measures, generate ideas and facilitate the exchange about environmental issues between European cities. Hamburg has turned into a platform for a Europe-wide discussion between experts and citizens. Numerous events and activities are taking place all over Hamburg’s metropolis region.

The protection of our environment and climate is our utmost concern. With the help of an ambitious climate action plan, Hamburg aims to reduce the city’s carbon emissions by 40 per cent by 2020. Hamburg’s schools play a decisive role amongst the local actors in this issue.

Since 1995 the European eco-schools programme attracts more and more schools to participate. This brochure portrays Hamburg’s eco-schools and their efforts towards a healthy environment and climate. A great deal of these independent classroom and outdoor activities are examples of good practice supporting our aspirations of a European

Green Capital. You will find plenty of green ideas and actions bound to get you and your school started, too.

Some of Hamburg’s “Eco-schools” are amongst the first “climate schools”. In addition to the programme’s claims these schools implement ambitious climate action plans and look forward up to the year 2020!

Eco-schools are asked to build on their achievements and adopt their own climate action plan, shaping, as it were, their commitment in a structured and future-oriented way – beyond the year of the Green Capital. Potential “climate schools” – this title is awarded after submitting a feasible climate action plan – contribute directly to Hamburg’s climate action plan. Integrated into the pedagogical setting, these climate actions are to raise the pupils’ awareness on how to behave in an eco-friendly and climate-compliant way at school and in their everyday life contexts. We wish to encourage more of the eco-schools to create their own climate action plans and get the additional title of “climate school”.

A handwritten signature in black ink, appearing to read "Jutta Blankau". The signature is fluid and cursive, with a long horizontal stroke at the end.

Foreword by Prof. Gerhard de Haan Chairman of Deutsche Gesellschaft für Umwelterziehung (DGU)

In 2002, the United Nations invited its member states to contribute to the “Decade of Education for Sustainable Development (2005-2014)” and to implement respective educational measures in all learning spheres. Of central concern are globally relevant and future-related topics like the support of initiatives and activities around fair trade and climate action. Schools, in particular, can foster sustainable thinking and action and enable the young generation to come up with creative solutions to global problems in their local and personal environment. With their manifold projects and initiatives created within the framework of the international eco-schools programme, Hamburg’s European Eco-schools/International Agenda 21 schools have supported the cause of this international concern over the

past 16 years in an exceptional way – in particular with their resolute approaches to environmental and climate protection and their remarkable realisation. Consequently, many of these eco-school projects have also been recognised as “Official German Projects of the Decade” (of Education for Sustainable Development) due to their excellent work on building the very competencies that are indispensable for the sustainable development of our society. These projects rank among 1,000 German projects of the Decade that have been recognised by now.

I wish everyone involved the necessary drive to carry on and develop a plethora of creative ideas and, of course, every success with the realisation of their projects.



A handwritten signature in black ink that reads "Gerhard de Haan". The signature is written in a cursive style.



Joining the eco-schools programme

After more than 15 years of successful administering the European eco-schools/International Agenda 21 schools programme in Hamburg, we are now presenting a documentation of the process – to acknowledge the work of Hamburg’s eco-schools and to motivate more schools to join this programme. This large collection of examples geared towards “environmental and climate protection” should inspire you and your school to “go green” and apply for the title. Some of the eco-schools portrayed here are also involved in our project “Climate action in schools” as pilots and are devising their own climate action plan (German information on www.li-hamburg.de/klimaschutz).

Another objective of this brochure is to systematically improve teaching and school life processes and to present a quality management system for the protection of our climate and natural resources. For this to work, school communities must make efficient use of our natural resources.

Policy and application criteria

Every year, about 40 schools apply to become part of the European Eco-school/International Agenda 21 school programme coordinated nation-wide by Deutsche Gesellschaft für Umwelterziehung (DGU). To join this programme, the school community must approve of the school’s participation. Since 2007, quality management has been part of the application process. It was developed within the framework of the national “Transfer-21” programme managed by the Free University of Berlin. This quality management includes a

short description of the status quo of two topics/action fields that also have to be described. In 2010, we recommended “Mankind and the climate” as one of the topics to work on. The chosen action fields must cover eight quality criteria: school life/pupil participation, natural resources, teaching, competencies, cooperations/global partnerships, mission statement, school management and further training opportunities for teachers. Within one year, the schools need to start their topical activities with regard to these quality criteria. Then they submit their report to a panel with members from public institutions and co-operation partners. In 2010, 38 schools received the European Eco-school/International Agenda 21 school Award. To maintain this title, schools have to reapply for it each year and follow this procedure.

Green flag criteria

1. The school has set up an eco-committee to control the entire process.
2. The school has successfully engaged in two topics, i.e. carried out respective projects and activities.
3. The report contains a brief description of the chosen topics and the progress made regarding – if possible – all eight quality criteria in relation to the original targets.
4. The school has submitted their report signed by the head teacher and the project leader.

Co-operation partners 2010

These partners are committed to green and climate action and support the objectives of Hamburg's climate action plan.



ANU – Natur- und Umweltbildung Hamburg e.V. is an umbrella organisation for the professional education outside formal educational settings. We are a network of environmental institutions and people providing green or sustainable education and training. We predominantly work with children and juveniles outside schools and provide further teacher training for multiplying effects. Distinguished by comprehensive competencies, our members provide schools in particular with educational opportunities. School classes benefit especially from hands-on activities in authentic contexts.

www.anu-hamburg.de
(German information only)



basic AG Lebensmittelhandel – ‘Organic pleasure for all’ is our motto. Being an organic supermarket chain, we provide gourmets with a full range of high-class, certified organic food traded also from local organic farmers and farming co-operatives. Furthermore, we supply our own inexpensive brand of

certified organic products.

www.basichbio.de
(German information only)



HAMBURG LERNT NACHHALTIGKEIT
Kommunikation, Umwelt, Entwicklung, Bildung

Behörde für Stadtentwicklung und Umwelt (BSU)

– In 2005, Hamburg launched its initiative “Hamburg is Learning Sustainability” (Hamburg lernt Nachhaltigkeit HLN) spearheaded by the BSU (Sustainability Department). It is a network of public as well as educational institutions, NGOs, companies and individual players who all support the Decade of Education for Sustainable Development (DESD) in Hamburg. HLN combines the varied activities and links them to the official targets and guidelines specified in Hamburg's Action Plan (HHAP). Hamburg's Eco-school programme is also listed here. Expert talks taking place on a monthly basis and the annual “Round Table” provide educational actors with a forum for discussion and networking. HLN news, papers etc can be accessed via the internet on

www.nachhaltigkeitlehren.hamburg.de



GLS Bank – GLS Gemeinschaftsbank eG is a co-operative society. GLS stands for “community bank for loans and gifts”. GLS Bank was the first German Bank to finance exclusively socially

and ecologically responsible enterprises and projects. As a member of the Deutsche Volksbanken und Raiffeisenbanken (BVR), the GLS has signed up for their guarantee system for the depositors' money. In 1974, GLS was set up by anthroposophists and the first German bank to adhere to ethical-ecological standards.

www.gls.de/die-gls-bank/ueber-uns/gls-bank/english-portrait.html

greenpeace magazin.

Greenpeace Magazine – This is a German magazine for environmental policies. We support Hamburg's Eco-school programme because pupils should take responsibility for the environment and “go green” of their own accord as early as possible.

www.greenpeace-magazin.de
(German information only)



HAMBURG ENERGIE – We are an urban power supplier providing Hamburg's metropolis region with clean energy – produced entirely without coal and nuclear technology. The more customers use our services, the better for our climate: We can increase our investments in eco-friendly power generation for Hamburg and its outskirts, which in turn boosts Hamburg's economy and improves the quality of life.

www.ich-schliess-mich-an.de
(German information only)



Hamburger Klimaschutzstiftung – The Hamburg Foundation for Climate Protection was founded by the Free and Hanseatic City of Hamburg in the spring of 2008. Acting as a politically independent foundation, we aim to make Hamburg’s citizens realise that we need to protect our climate and use our natural resources carefully. Currently, our funding centres on turning the well-known Karlshöhe Centre for the Environment (Umweltzentrum Karlshöhe) into an advanced and exciting learning space spanning topics such as nature, energy and climate protection.

www.hamburger-klimaschutzstiftung.de



Das Ziel ist klar.

Hamburg Wasser – Our main tasks are providing Hamburg and its suburbs with drinking water and conducting trouble-free waste water management and sewage treatment. Being Germany’s biggest municipal water supply and sanitation company, Hamburg Wasser, taken together with Hamburger Wasserwerke and Hamburger Stadtentwässerung, has roughly 160 years of experience in dealing with this natural resource. The main objective is to maintain a high quality stand-

ard of Hamburg’s drinking water at any time.

www.hamburgwasser.de



Institut für Wetter- und Klimakommunikation (IWK) – Apart from running an online weather monitoring platform (WetterSpiegel), our weather experts supply weather updates on hamburg.de, Hamburg1 TV, Radio Hamburg, Oldie 95 and Radio Energy as well as for the daily newspaper Hamburger Abendblatt. At the weather control centre on Rothenbaumchaussee we also collect data stemming from weather stations set up in schools as part of the climate observation campaign “Klimabotschafter – Schüler werden Klimabeobachter”. This project was launched by Hamburger Abendblatt, Hamburg1 TV and Globe-trotter Ausrüstungen and other initiators.

klimabotschafter@klimagipfel.de



NABU Hamburg – Counting about 20,000 members, the Naturschutzbund (NABU) Landesverband Hamburg e.V. is Hamburg’s biggest environmental organisation. Having many local expert groups as well as groups for children and young people organised by the Naturschutzjugend (NAJU), NABU groups care for over 50 per cent of Hamburg’s nature reserves as well as for endangered species and biotopes.

They also advocate eco-friendly policies, raise public awareness of environmental issues and run a wide-ranging ecological education programme for people of all ages.

www.nabu-hamburg.de

(German information only)



Planetarium Hamburg – Our visitors can marvel at and explore natural science, change their perspective and leave with a lasting impression on their minds. This place is a “flying classroom” with a varied programme for pupils of all ages. In order to push the importance of responsible action to the fore, the core objective here is to make people understand the links between the cosmos, our environment, culture and life (style).

<http://www.planetarium-hamburg.de/service/information-for-our-english-speaking-visitors/>



Wildpark Schwarze Berge – Throughout the year, visiting our wildlife park is always a worthwhile experience. Here, you can encounter about 1,000 native animals such as deer, harts, lynx, wolves, bears or bats and potbellied pigs at first hand and enjoy hand-feeding, especially the latter. School classes can book a comprehensive programme of guided tours and excursions.

www.wildpark-schwarze-berge.de

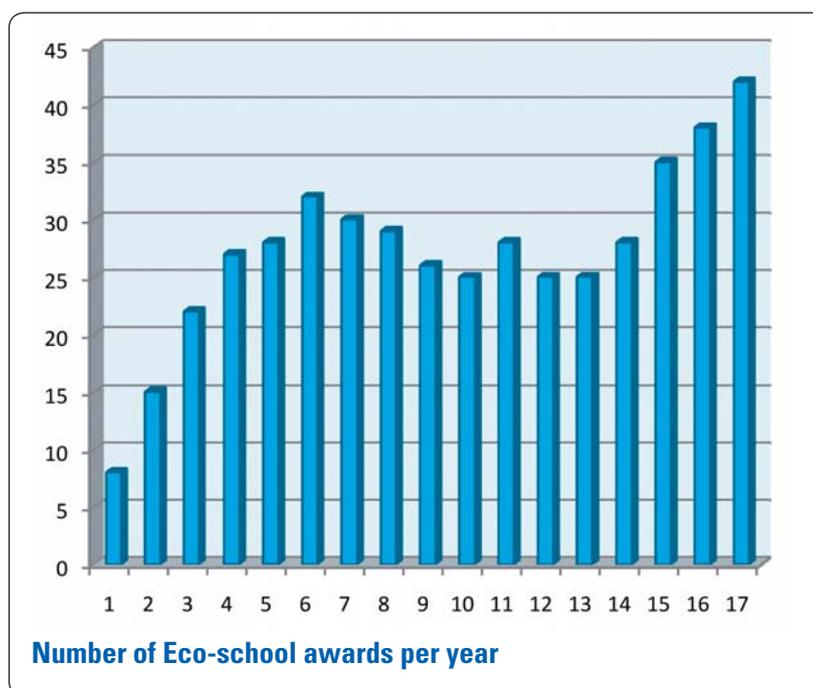
(German information only)

Statistics

Eco-schools programme 1995–2011

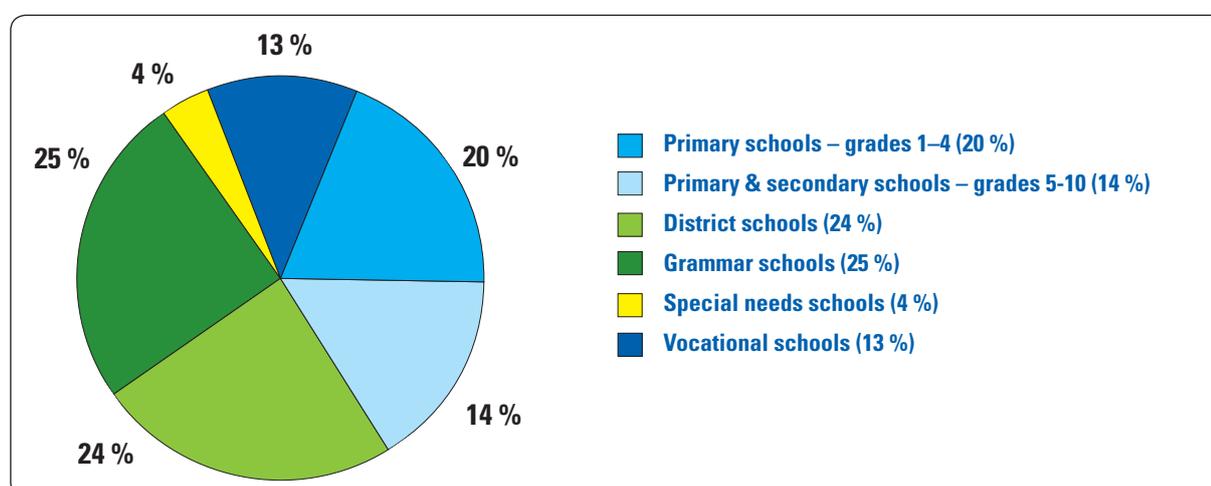
Awards per year

1995	8
1996	15
1997	22
1998	27
1999	28
2000	32
2001	30
2002	29
2003	26
2004	25
2005	28
2006	25
2007	25
2008	28
2009	35
2010	37
2011	42



Awards per school type 1995–2011

Primary schools (grades 1–4)	15 (20%)
Primary & secondary schools (grades 5–10)	11 (14%)
District schools	18 (24%)
Grammar schools	19 (25%)
Special needs schools	3 (4%)
Vocational schools	10 (13%)



Hamburg's eco-schools 1995–2011 (part 1)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Albrecht-Thaer-Gymnasium				X	X	X	X	X	X	X	X	X	X	X	X	X	X	14
Alexander-von-Humboldt-Gym.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	17
Gymnasium Allee Altona	X		X	X	X	X	X									X	X	8
Schule Alsterredder			X															1
Schule Altonaer Straße						X	X	X	X									4
GS/STS Am Heidberg														X	X	X	X	4
Grundschule Am Heidberg																	X	1
Anne-Frank-Schule															X	X	X	3
Schule Beltgens Garten					X													1
Gesamtschule Bergedorf						X			X	X								4
Gesamtschule Bergstedt			X	X														2
Gesamtschule Blankenese			X	X	X													3
Grundschule Brehmweg		X	X	X		X												4
Schule Carl-Cohn-Straße			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
STS Denksteinweg															X	X	X	3
Gymnasium Dörpsweg	X	X	X	X	X	X	X	X	X	X	X	X	X	X				14
Schule Eckerkoppel		X																1
Schule Eduard-Straße											X	X	X	X	X	X	X	7
Schule Ehestorfer Weg															X	X		2
Gesamtschule Eppendorf			X	X	X	X	X	X		X								7
Ev. Fachschule für Sozialpädagogik														X				1
Fachschule für Sozialpäd. Altona											X	X	X	X	X	X	X	7
Friedrich-Ebert-Gymnasium																	X	1
Schule Fuchsbergredder						X	X	X	X		X							5
Gewerbeschule 6				X														1
Gewerbeschule 8					X	X	X	X	X		X	X	X	X	X	X	X	12
Gewerbeschule 9																	X	1
Gewerbeschule 17							X	X	X						X			4
Gymnasium Grootmoor								X	X	X	X	X	X	X	X	X	X	10
Schule Grützmühlenweg				X	X	X		X		X	X	X						7
Gymnasium Hamm			X	X														2
Handelsschule H 5			X															1
Handelsschule H 10		X											X	X		X	X	5
Handelschule H 19																	X	1
Schule Hanhoopsfeld/Lessing-STS						X	X	X	X	X	X		X	X	X	X	X	11
GS/STS Harburg				X	X	X						X	X	X	X	X	X	9
Schule Hegholt/STS Hegholt			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Gymnasium Heidberg																	X	1
Heilwig-Gymnasium														X	X	X	X	4

GS (Gesamtschule), STS (Stadtteilschule)

Hamburg's eco-schools 1995–2011 (part 2)

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total		
			X	X	X	X	X	X	X	X	X	X	X	X	X			13	GS/STS Heinrich-Hertz-Schule
								X	X	X		X	X	X	X	X		8	Gymnasium Hummelsbüttel
													X	X	X	X		4	Immanuel-Kant-Gymnasium
																X		1	Inselschule Neuwerk
					X	X										X		1	Johannes-Brahms-Gymnasium
					X	X								X	X	X		5	GS/STS Julius-Leber-Schule
				X	X	X	X		X	X	X	X	X	X	X			11	Gym. Kaiser-Friedrich-Ufer
X	X	X	X	X	X	X	X	X	X	X		X	X		X	X		15	GS Kirchdorf/STS Nelson-Mandela-Schule
										X	X	X	X	X	X	X		7	Gym. Kirchdorf-Wilhelmsburg
			X	X	X	X					X			X				6	Schule Krohnstieg
														X	X	X		3	Gymnasium Lerchenfeld
															X	X		2	GS/STS Lohbrügge
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	17	Schule Lokstedter Damm
	X	X	X	X	X	X												6	Gymnasium Marienthal
			X				X		X		X							4	Max-Brauer-Schule
					X	X	X	X		X	X	X	X	X	X	X		11	Schule Moorflagen
					X	X	X	X	X	X		X	X	X	X	X		11	Schule Müsrenredder
	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		15	GS/STS Niendorf
													X		X	X		3	Gymnasium Ohmoor
							X											1	Schule Oppelner Straße
		X		X	X	X	X							X	X	X		8	Gym. Osdorf/Lise-Meitner-Gym.
		X			X	X	X	X	X	X	X	X	X	X	X	X		13	GS/STS Otto-Hahn-Schule
											X							1	Peter-Petersen-Gesamtschule
			X	X	X	X		X										5	Gesamtschule Poppenbüttel
									X	X	X							1	Schule Ratsmühlendamm
								X	X	X	X							5	Schule Rönneburg
											X	X	X	X	X	X		6	Schule Scheeßeler Kehre
	X	X	X	X	X	X	X											7	Schule Schierenberg
X	X		X	X		X												5	Grundschule Schottmüllerstr.
	X																	1	Staat. Schule Gesundheit W1
													X	X	X	X		4	GS/STS Süderelbe
X	X	X	X	X	X	X	X	X	X	X	X							12	Schule Surenland
					X	X	X	X	X	X								6	Schule Tonndorf
			X	X														2	Schule Turmweg
	X	X		X														3	Gym. Uhlenhorst-Barmbek
						X	X	X	X	X	X	X	X	X	X	X		11	GS/STS Walddörfer
				X														1	Schule Weidemoor
X	X	X	X	X	X		X	X	X	X	X	X			X	X		14	Gym. Willhöden/Marion-Dönhoff-Gym.
									X	X				X				3	Schule Windmühlenweg

GS (Gesamtschule), STS (Stadtteilschule)

Elementary schools

General school principle “Learning to live”: Grundschule Carl-Cohn-Straße

Profile

Carl-Cohn-Straße 2
22297 Hamburg
Phone: +49 40 428 880 702
E-mail: schule-carl-cohn-strasse@bsb.hamburg.de
Website: www.schule-carl-cohn-strasse.hamburg.de

Pre-school and elementary school
280 pupils
18 teachers plus 6 music teachers
Head teacher: Brigitte Mischur
Eco-school committee: Christine Heidingsfelder,
Petra Knauff, Brigitte Mischur, Wiebke Stolzenberg
European Eco-school/International Agenda 21 School
since 1997

“Learning to live” is our guiding principle and many children have illustrated this with 11 posters covering aspects such as “Life is nature”, or “Life means social responsibility” and many more.
Photos by Brigitte Mischur



From a green assembly to a school parliament

It all started with a “green assembly”: Instructed by an advisory teacher, all the class representatives of our school met on a regular basis to discuss their ideas. We introduced a waste separation system and reduced our energy and water consumption. Our reward: payments from the so-called “fifty-fifty bonus programme” (cf. appendix) for over 16 years now.

Soon everyone realised why a sustainable school life means more than environmental protection and our green assembly turned into a Children’s Parliament – whose members greatly contributed to the development of our guiding principle “Learning to live” with its 10 guidelines and their practical application in our school: Life is nature. Life means social responsibility. Life is culture. Life is movement.

Physical activities

Whether they conquer a climbing wall over four meters high – actually designed as a giraffe by an artisan – or get to the top of a climbing rock (built in the summer of 2009), use a play boat or engage in a match on one of the two small football pitches (inaugurated together with the German Football Association (DFB)): it all helps our pupils exercise outdoors every day.

Eco-Islands

Life includes water, air, rain and wind, mud and soil, the seasons and much more that young city-dwellers can only experience to a limited extent. Thus, the children lay out small biotopes in our schoolyard, explore biodiversity and see how plants grow and wither over the year. Each class is responsible for one "eco-island", one of which functions as a "green outdoor classroom" with a shed and climbing plants twining around it as well as benches. We use it quite often during summer. We also have a wetland area, nesting places for insects and birds, an herbal spiral, a willow weave playground and a nature trail where children identify objects by haptic exploration. On World Environment Day, all the children, many parents, some grand-parents and all the teachers engage in redeveloping our school grounds. Amongst the school's co-operation partners rank Schutzgemeinschaft Deutscher Wald, Norderstedter Werkstaetten, Stadtparkgaertnerei, as well as nature conservation associations like NABU and Schutzstation Wattenmeer.

Water

We need water for drinking, washing, eating and cooking. It flows in riverbeds or rains from above. Water makes sounds and it is used in



christening ceremonies. At Grundschule Carl-Cohn-Straße, we deal with "water" in an interdisciplinary way and collaborate with Umwelt-Aktion e. V.: The children experiment with water and understand that it is heavy and evaporates quickly or trickles away, it dissolves salt and becomes undrinkable when it contains too much of it. Maps and pictures show pupils that clean water is unfairly distributed on our planet and thus touch on global responsibility – and this sense of responsibility plays a vital role in our school life.

Since 2005, our school has participated in a campaign called "One child – one musical instrument": Each third and fourth-grader learns to play a musical instrument and they perform, for instance, water music in many concerts as wind players, string players or percussionists.
Photo by Valeria Witters

Great young gardeners: Grundschule Eduardstraße

Profile

Eduardstraße 28-30
20257 Hamburg
Phone: +49 40 428 012 313
E-mail: joerg.chmill-voelsch@bsb.hamburg.de
Website: www.schule-eduardstrasse.hamburg.de

Elementary school (all-day school)
184 pupils
12 teachers plus 5 nursery school teachers
Head teacher: Holger Wagner
Eco-school committee: Brigitte Biester, Joerg Chmill-Völsch,
Meike Harms, Holger Wagner
European Eco-school/International Agenda 21 School
since 2005

From seed to herb curd

One fine weekend in the autumn of 2008, children, parents, nursery school teachers, teachers and our caretaker rolled up their sleeves and got to work: They laid out a vege-

table patch and a swampy bed, planted 7,000 flower bulbs, shrubs and a cherry tree. Spring came and from then on the third-graders were in charge of the vegetable patches.

Sowing, raking and weeding:
Our 3rd graders tend to
our school garden.
Photo by Eva Gaitzsch



Eagerly awaiting the harvest they sowed and pruned the plants on a weekly basis. At the same time, the children read Jesus' "Parable of the mustard seed" (New Testament) and approached the issue of sowing and harvesting from a religious point of view.

Then, harvesting began and the pupils prepared fresh herb curd and enjoyed it with French loaf in the school garden. Next, they deep-fried elderflowers in dough and prepared a fresh corn salad with radish. During the summer break Spielhaus Eimsbuettler Markplatz, a co-operation partner of our school, watered and pruned the plants. The following school year, the new third-graders took over. Gardening improves both the students' competencies and the cooperation between our teachers.

About climate chaos and energy vampires

In order to prepare a teaching unit on "energy" we contacted the Hamburger Landesinstitut für Lehrerbildung und Schulentwicklung and organised three school internal workshops. At present, our staff is creating a competence frame on the topic "Energy and the climate" for grades one and two: Pupils should know the difference between fossil and renewable energy, be aware of the relationship between energy consumption and climate change and learn how to save energy. Didactic steps will include, amongst other issues, measures to make the children

Gardening is great because you learn so much from it:

You know

- various gardening tools;
- herbs, fruits and vegetable;
- recipes for native crops;
- animals that live on plants, in the soil or in a compost;
- special terms like sowing depth, germination time, harvest season.

You can

- observe very closely how plants grow;
- sow plants and tend to them;
- name parts of a plant correctly;
- explain how compost develops;
- observe soil organisms with a bug magnifier;
- identify different plants by the way they smell or taste.

You know

- how plants germinate;
- the edible parts of plants;
- the names of our garden plants;
- what makes plants grow;
- the parasites that can ruin our garden plants.



Delightful: freshly harvested, rocket salad.
Photo by Eva Gaitzsch

understand when electric current or heat is necessary and which electrical items are real "energy vampires".

Waste collectors in Hamburg and Greece: Grundschule Krohnstieg

Profile

Krohnstieg 107
22451 Hamburg
Phone: +49 40 527 390 30
E-mail: maren.lawrenz@bsb.hamburg.de
Website: www.schulekrohnstieg.de

Elementary school
200 pupils
13 teachers
Head teacher: Maren Lawrenz
Eco-school committee: Mona Brand-Bartels, Maren Lawrenz,
Inka Schallehn
6th European Eco-school/International Agenda 21 School
Award in 2009

Having gathered information about how various herbs grow best, first-graders designed "instruction plaques" with small symbols for 10 plants.
Photo by Inka Petersen



plants, the kids gathered exact information about the needs of each plant and created "instruction plaques" using small symbols. They tended to the herbs and gathered them for cooking. Then they presented their project to their parallel class. Our school garden with its large pond (30 m²) plays a vital role in the environ-

mental and ecological education of all classes at our school.

Peppermint, parsley lavender and more

Most people know peppermint and parsley, but how about lemon balm? How do we use it? Those first-graders who made up our garden team know that all plants need water, some of them plenty of it, others only little amounts. Lavender prefers a sunny spot and peppermint loves shaded places. Before cultivating a plot with 10 different herbal

Collecting waste to create art

The students themselves came up with the idea and launched an inter-disciplinary project on "waste separation and avoidance": 3rd-grade students planned it. During science instructions, whole day courses and at home, the kids researched waste (management) and



Kids of Vassilika Village School located in the North of the Isle of Euboea are campaigning for responsible waste management. Photo by Annegret Thalassimos

documented all they knew about it. Results were communicated on open days, at school conferences and parent evenings. Furthermore, they visited the local recycling plant and composed artful collages from waste.

Idea transfer to Greece

Having produced a project portfolio and posters on “waste separation and avoidance”, the third-graders sent their posters off to a Greek partner school, a small village school for first to sixth-graders. It is located in Vassilika, a village in the North of the Isle of Euboea. This partnership had begun in 2007 on Europe Day.

Our pictures and reports inspired the Greek students and they started gathering their litter rather than carelessly throwing it over the fence to get rid of it – as apparently had been the case up to then. They documented their activities with photos showing the situation before and after the collection campaign and sent them back to our school.

Fairly upset by these photos the third-graders realised that in other places litter was not normally disposed of in bins. Yet, the kids were delighted to see that their partner class had become aware of the problem and dealt with it successfully. Having been only little experienced in project work, the Greek teachers were amazed how spontaneously their students had approached this issue and how single-mindedly they had put their ideas into practice. Thanks to their excellent collaboration in this project, Vassilika’s primary school received the Green Flag Award.

Consideration for people, the climate and the environment: Grundschule Moorflagen

Profile

Wagrierweg 18
22455 Hamburg
Phone: +49 40 570 01 56
E-mail: schule-moorflagen@bsb.hamburg.de
Website: www.schule-moorflagen.hamburg.de

Elementary school
242 pupils
22 teachers
Head teacher: Gesa Crost
Eco-school committee: Ulla Claßen, Anna Zachariae
10th European Eco-school/International Agenda 21 School
Award in 2010

Consideration for others

“Watch out for yourself, your fellow pupils and care for the environment” is our school’s motto. In a project called “No fists”, children learn how to recognise and under-

stand rage, despair or fear in themselves and their fellow students and train conflict resolution. They also learn how to ignore provocation or prevent it via so-called “stop-it rules”. Preventing violence in

Climate protection day: Grade 4a worked on the Inuit lifestyle in the polar region. They built landscapes from paper and igloos from clay and created posters and workbooks.
Photo by Uwe Heils



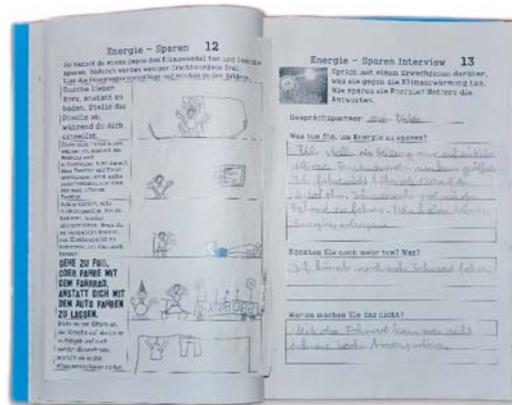
schools strengthens class solidarity and contributes to peaceful solutions.

Studying the climate

Exploring our climate and the weather, keeping a record about it and drawing pictures – our students deal with climate protection in an interdisciplinary fashion. Our “Climate Resource Box” (specially designed by our principal science teacher) helps our staff to deal with climatic issues in science classes, German lessons and Arts classes. On our climate project day, the pupils approached the topic via a “Forest workshop” and an “Inuit workshop”.

Caring for the environment

Every morning just before 8:30 specially appointed “light inspectors” check the changing rooms, toilets and corridors if the lights have been switched off.



They may also draw up a “lights-off contract” with their parents to introduce energy conservation measures at home. One paragraph of the contract reads: “Such environmental savings will be spent on an outing with all energy conscious members of the family.”

Once a week, a musical “waste call” reminds all classes to drop off their separated waste at the school’s waste collection point – under the strict and kind supervision of our caretaker.

At our “Inuit workshop”, students quickly discovered the impact of climate change on the polar region and how they can reduce carbon emissions.

Photos by Uwe Heils

Moorflagen Climate Resource Box

Some suggestions on interdisciplinary lessons of climate protection. Let your students:

- draw texts to illustrate photos depicting environmental disaster, the glaciers in the past and today etc;
- read texts and illustrate the topic (climate change in other countries, advice on energy saving etc) with drawings;
- explore, draw or create polar bears;
- make technical drawings of solar-powered toy engines and explain them;
- draw and read weather terms;
- conduct interviews with (grand-) parents on past and present weather conditions;
- look up weather and climate terminology in a dictionary and copy correctly to their exercise books;
- arrange index cards with weather and climate terms in an alphabetical order and copy to their exercise books;
- learn a weather poem;
- observe the weather and make notes in a table.

Outdoor learning: Grundschule Müssenredder

Profile

Müßenredder 61
22399 Hamburg
Phone: +49 40 533 068 30
E-mail: dorothea.boltz-krause-solberg@hamburg.de
Website: www.grundschule-muessenredder.hamburg.de

Elementary school · 380 pupils · 29 teachers
Head teacher: Gero Bruening, Dorothea Boltz-Krause-Solberg
Eco-school committee: Dörte Bobrowski, Dorothea Boltz-Krause-Solberg, Sibylle Brockmann, Heike Busch, Angela Felber, Britta Haaks, Karsten Jobst, Andrea Kühn, Insa Linneweber, Fabian Münster, Cornelia Sternkopf, Kai Uther, Kerstin Zürcher · 11th European Eco-school/International Agenda 21 School Award in 2010

Students explain solar power

Since June 2009, our school has been back feeding the national power grid with solar energy. Our photovoltaic (PV) system was partly sponsored by the Hamburg School Board and in part financed with the help of our *fifty-fifty* bonus payments. From the very start, students had been part of this project. Soon, we will offer pupil-to-pupil workshops on topics such as PV, renewable energy and energy saving measures.

For more than ten years now, Grundschule Müssenredder has taken part in Hamburg's *fifty-fifty* bonus programme and successfully integrated the respective rules about efficient energy and water consumption as well as waste minimisation into its school life.



Thanks to the cheerful „onlookers“ pupils now regard the fenced-in resting area on our premises as a place of peace and quietness. Photo by Andrea Kühn-Kuhlencord

Together with Deutsche Umwelthilfe we instructed our fourth-graders on energy project work. We are also planning to conduct a special climate protection day and adopt our own climate action plan.

Cheerful onlookers

A meadow and an herbal spiral form our outdoor resting area for humans and animals alike. However, turning this specially tended part of our school garden into a real oasis of peace and calm has been a rather lengthy process – improving in the end (a) the co-operation between school parliament and staff and (b) adherence to rules within the school community.

First, many children took the resting area for a normal playground. So we planted a privet hedge to protect the area but some kids used it to play hide and seek, trampled herbs down

or see-sawed in the trees. Finally, the school parliament and staff agreed to fence in the area.

Supported by some parents, first-graders created “onlookers” from wooden panels during project week in summer: colourful faces with a bristly hairdo made from a broom, horse heads with a mane made from doormat strips, and over-sized crayons. Now, the resting area sports a striking and cheerful boundary that all the kids gladly accept.

Moving about

Müssenredder Elementary School has a new room for physical exercise. This place – called “Eldorado” by the school parliament – is specially equipped for kids to develop both their gross and fine motor skills, concentration and dexterity: Children juggle with sheets and balls, balance over a flexible balancing beam, lie down on mats and relax whilst being massaged with a ball, or push a ball through a foot maze to the goal. Members of a group named “Courage counts” train “wrestling by rules” or travel to fanciful places. Even the school parliament meets at the “Eldorado” and proceeds sitting on the cork floor.

Outdoor learning

For many years now, a special school grounds team has organised a regular clean up. During geometry classes the students are to find geometric shapes outside and discover that many plants, too, are composed of cylindrical, conic and spherical shapes.

On project day, two third year classes dealt with physical fitness via movement and healthy food and turned their findings into a film,



book or song. On one of our next project days we will devise a course for physical activities in the schoolyard.

A first year class bred butterflies. They ordered eggs from a professional butterfly farmer and placed them in a terrarium. As soon as the eggs hatched, the kids fed the larva with nettles and watched very closely how the caterpillars cast their skin and pupated. Later, they released the peacock butterflies in the schoolyard.

New windows

With great interest our students followed the replacement of our old windows. They conducted interviews with the workmen and the architect – published in our school magazine – and learned that the new windows were double-glazed and their colourful frames were made of wood instead of plastic to avoid hazardous waste.

Our students love schoolyard activities. Here, they are helping the caretaker to replace the sandbox sand.

Photo by Andrea Kühn-Kuhlencord

Picturing our climate: Grundschule Ratsmühlendamm

Profile

Ratsmühlendamm 39
22335 Hamburg
Phone: +49 40 428 880 10
E-mail: schule-ratsmuehlendamm@bsb.hamburg.de
Website: www.schule-ratsmuehlendamm.hamburg.de

Elementary school
320 pupils
22 teachers
Head teacher: Peter Schroth
Eco-school committee: Ilse Bornholdt, Christina Iserhot,
Annette Möller, Maja Ruhnau, Monika Schlottmann
1st European Eco-school/International Agenda 21 School
Award in 2009

How can we save energy? During their discussions in a group of four, the fourth-graders quickly drew up a long list of options such as swap your car for a bicycle, use energy saving lamps etc.

Photo by Monika Schlottmann



often could I ice-skate on the local lake, more often or less than my parents or grandparents? Their own winter experiences and respective interviews led the kids straight to the meaning of climate change.

Being frequently in the news, terms like “greenhouse effect” or “carbon emissions” are now on

Urgent measures to protect the climate

When temperatures drop and night falls earlier in autumn, many animals eat a lot to grow fat and get prepared for hibernation. But what happens if it does not get cold (enough) and if there is, at the same time, less food than needed to survive the season? Working on “Animals in the winter” made our fourth-graders think about climate change. How

every pupil’s lips. Most of the kids were quick to suggest solutions to the problem: switching computers off to avoid energy loss via standby mode, cycle or use public transport instead of cars, use energy saving lamps etc. And they took immediate action: They agreed with their teacher on appointing one pupil at a time to check the windows, the heating and the doors during the breaks. The phrase “Open the windows, turn down the

heating, close the door” should be kept in mind while on duty.

The end of hibernation?

The fourth grade students approached the scientific background and prognoses of climate change with the material their teachers had prepared for them. The following questions brought the kids promptly back to their initial topic: How does climate change influence hibernation habits? What kind of adaptations will be necessary? How can climate change impact biodiversity?

Each group looked at a particular animal and developed a future scenario. These frequently resembled the scientific ones: interrupted or changed dormancy, a different choice of food and a change of habitat. During German lessons the pupils wrote science fiction stories featuring the animals they had worked on and put them in a reader entitled “Tiere in 100 Jahren” (Animals in a 100 years’ time). It is available at our school library.

Mind mapping and researching

Co-operative learning is an integral part of our guiding principle. Working in groups of two or four enables the kids to acquire knowledge on their own, to distribute the task amongst them according to their individual abilities and to treat each with respect and consideration.

The way the kids learned about “Animals in the winter” is a good example of co-operative learning methodology: In a “silent reading carousel” the pupils prepared themselves for the topic. Together, they engaged in mind mapping and arranged their new knowledge into topical areas and looked for their individual focus – the first step towards group work.

Then the groups worked out the conditions for the different hibernation habits (hibernation, dormancy, torpor). Each group created an oral and a written presentation of their “findings” and conducted “researcher talks” to exchange their ideas with the other groups. The written papers were put together in a book. The groups took turns in presenting their work at different tables at the “Experts Café”. Finally, the teacher prepared an overview of the result: Hibernation is caused by daylight and temperature.

Keepers of the channels and the environment

The third-graders of our school also dealt with climate change, too and approached the issue via the weather and its manifestations. What shapes the weather (sun, water, air)? What types of precipitation do you know? They drew the different climate zones onto a map of the world. The kids also presented their findings about greenhouse effect and created posters with their ideas about how everyone can save energy and preserve a clean environment.

Students’ posters on the impact of climate change.



“Because the earth is getting warmer we are facing more storms.”



“Because our planet is getting warmer, the glaciers are melting and more water is streaming into the rivers, lakes and oceans. Houses may be flooded.”

Water and movement: Grundschule Scheeßeler Kehre

Profile

Scheesseler Kehre 2
21079 Hamburg
Phone: +49 40 769 20 80
E-mail: helga.kedenburg@bsb.hamburg.de
Website: www.SchuleScheesselerKehre.de

Elementary school
285 pupils
18 teachers
Head teacher: Helga Kedenburg
Eco-school committee: Petra Habenicht, Antja Höft, Helga Kedenburg, Birgit Mojen, Gabriele Plewe
5th European Eco-school/International Agenda 21 School Award in 2010

Left: Each class tend to their own beds and patches located in a large school garden.
Photo by Ute Mangold

Centre: First-graders and preschoolers after apple picking. The yield will soon be turned into apple sauce, apple pancakes or apple juice. Sometimes even a big "Apple Feast" takes place and the pupils often bring their family along.
Photo by Helga Kedenburg



Right: Our „Mini-Phaenomena“ holds 20 learning units where the kids can conduct experiments as independently as possible and learn to understand physics. On this photo they are testing pressure blasting: When pouring water in a tube which is closed off at one end and carries four holes drilled at different heights (15, 20, 25 and 30 cm), then the water presses through these holes spraying different distances.
Photo by Helga Kedenburg

Physical activities and health

In the afternoon, kids at Grundschule Scheesseler Kehre run, dance or kick balls to their hearts delight. There are a number of courses on offer such as sports circle, Hip Hop dancing, fit kids, football, experience dance, athletics, basket ball and karate.

They are cosponsored by the "Sports Class" campaign and are conducted in collaboration with sports clubs. More than half of our

pupils attend at least one course per week.

Such physical activities, garden work and preparing healthy meals from freshly gathered fruit, vegetable and herbs combine well to let the kids discover their individual physical capabilities and needs in a holistic fashion.

At the class representatives' conferences, the kids showed their delight in their individual capabilities and



Every Friday, we turn our gym into a big training centre for psychomotor skills. All classes come here and every child can try any exercise they dare do and expand their dexterity and confidence. Photo by Petra Habenicht

stressed that they enjoyed being a child “because we can move about so much”.

Even during some lessons, the kids may move about as movement counterbalances brainwork and improves at the same time the ability to stay focussed. We cover the issue of “keeping fit and healthy” interdisciplinarily in science classes, sport, German lessons and arts classes.

No water, no life

Water beds, water-lilies, water ballet: In German class, listing “water-related” words is a typical task for fourth-graders when the focus is on “water”. Asking them to create salt pictures, their arts teachers also introduce the kids to elementary physics: Where does the water disappear to and why does the salt remain? At home then the kids are to figure out why water does not simply disappear, i.e. they should develop their own ideas about the water cycle.

In science class, the pupils form groups and try to work out why water is so important, filter dirty

water or fill a cup with water via a fibrous thread hanging from a water tank placed at a higher position. Keen and eager pupils have no problems to write an essay about “My life as a water drop”.

Concluding this teaching unit, the class visits the “Water Forum” run by the Hamburger Wasserwerke and the Water Lab at the Zentrum für Schulbiologie und Umweltbildung (ZSU).

Special needs schools

Recycling and multi-cultural vegetables: Anne-Frank-Schule

Profile

Hohnerkamp 58
22175 Hamburg
Phone: +49 40 642 15 70
E-mail: angelika.allers@bsb.hamburg.de
Website: www.afshh.de

Special needs school
144 students · 23 teachers
Head teacher: Angelika Allers
Eco-school committee: Angelika Allers, Frank Bernhardt,
Andrea Brandt, Sabine Goebel, Sylvia Horn, Silke Opitz,
Waltraud Sievers
2nd European Eco-school/International Agenda 21 School
Award in 2010

Gathering herbs: Lemon balm is a relaxing bath additive.
Photo by Frank Bernhardt



Organic gardening

Herbs have a nice smell and bees and bumblebees feed on them. They spice up your pizza and can heal minor health problems. Some students laid out a herbal spiral, and the very garden builder who helped us realise this project offered one particularly committed pupil a training place in his company.

The local garden centre sponsored the bigger natural stones and some teenagers gathered the smaller ones in their leisure time. The kids also documented the building activities and the planting process. Our grade 10 students created an herbal reference book.

While engaging in project planning, practising the correct use of gardening tools and tending to the plants, the young people also learnt the basics of organic gardening such as finding a suitable habitat and preserving biodiversity.

Recycling building material and a multi-cultural vegetable patch

Recycling flagstones and the sensible use of an unkempt garden – our



8th year students receiving our
Eco-school Award
Photo by Frank Bernhardt

greenhouse is a perfect example of how to optimally use a garden with only moderate financial means. Gaertneri Pieperit – a long-standing co-operation partner of ours – sponsored new flagstones and used old ones to pave the foundation together with two former Anne-Frank students. The students who had prepared the foundation were honoured with a small festive ceremony. Their work entailed drawing a plan and calculating the area needed for our nursery, relocating shrubs, digging out tree stumps, cutting branches, digging a spade-deep hole of at least one cubic meter, removing the earth and sieving it as well as heaping up, levelling and compacting sand for the flagstones.

Market garden Pieperit gave us a number of young tomato plants, cucumber plants and pepper plants, Globetrotter sponsored growing containers and other material. A former student of Iranian descent

brought different types of Iranian tomato seeds and this led to the creation of a “multi-kulti” (multicultural) vegetable patch and a discussion about migration, flight and persecution. Later, “Multi-Kulti” became the motto of our school festival. Several classes visited “Fluchtweg” (The get-away), an exhibition on the fate of children whose families had to flee their homes.



Before the nursery could be built, the area had to be freed from shrubs and undergrowths. Here, two ninth-graders are removing the spoil.
Photo by Frank Bernhardt

Musical and solar power: Schule Lokstedter Damm

Profile

Lokstedter Damm 38
22453 Hamburg
Phone: +49 40 55 77 830
E-mail: schule-lokstedter-damm@bsb.hamburg.de
Website: www.lokdamm.hamburg.de

Special needs school
113 pupils
22 teachers and about 30 more pedagogical staff
Head teacher: Volker Eikermann
Eco-school committee: Benjamin Friedrichs, Gudrun Gemmer, Birte Hanßen, Christiane Kahl, Gisela Linnekogel
European Eco-school/International Agenda 21 School since 1995

Busy bees saving energy

Our school has been part of Hamburg's eco-schools programme from the very start. Our principle reads: Education changes the environment and builds competence! Our eco-

pupils how each of them can contribute to climate protection.

The performance included a list of measures the teenagers had drawn up on their own. The overriding

Busy bees animate the eco-school concept: At our school the complex interplay between environmental protection, sustainability and climate protection is likened to a honeycomb.
Photo by Schule Lokstedter Damm



schools committee often liken the complex network of the individual topics to a honeycomb "that will be gradually filled up by our bees".

Musical climate protection

Students of our final grade created and performed a "Energy Conservation Musical" to show their fellow

principle reads: "We want a beautiful world – and sustain it!" This musical inspired some classes to appoint "energy inspectors" who keep an eye on the lights and heating. Another positive effect: When cooking a meal, most students now use a hot-plate that fits the actual pot or pan being used.



Left: In science class students build small solar power plants to see and understand how a PV system works.

Photo by Schule Lokstedter Damm

Right: You need patience to catch and observe spiders, ants or digger wasps. The school garden provides ample insights into biodiversity and the individual characteristics of animals and plants and students learn how to treat them with respect.

Photo by Schule Lokstedter Damm

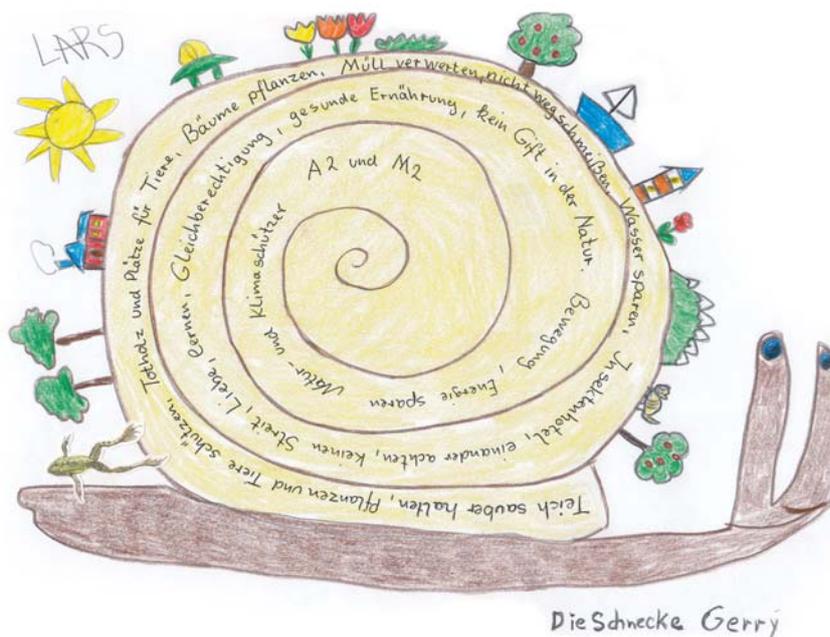
Of big and small solar power plants

Since May 2009, we have been producing electric energy with our own photovoltaic (PV) system. A large digital panel updates students about the system's performance and shows the important role of renewable energy. Building tiny PV systems in class familiarises the pupils with solar technology.

treat plants and animals with respect. They learn to perceive living beings with their special characteristics and to protect biodiversity. Only patient explorers can find and observe snails, ants or digger wasps. In class, we use information leaflets and brochures for the interdisciplinary teaching of biodiversity and to inspire, for instance, the students to draw their favourite animals.

Unusual creatures

Our school garden is the very place for the children to learn how to



"Gerry, the snail" lists all the aspects of a sustainable school life at Schule Lokstedter Damm.

Artist: Lars Schöttker

Text by Grade A1:

keep pond tidy – protect plants and animals – provide deadwood and space for animals – plant trees – recycle waste, don't dump it – create insect preserves – respect each other – don't quarrel – love – learn – value equality – eat healthy food – never use nor dump toxic substances outside – move about – save energy – protect the environment and the climate.

Primary and secondary schools Solar power for hot water and hot meals: Ganztagsschule Denksteinweg

Profile

Denksteinweg 17
22043 Hamburg
Phone: +49 40 670 488 60
E-mail: schule-denksteinweg@bsb.hamburg.de
Website: www.denksteinweg.de

Primary and Secondary school (all-day school)
260 pupils
16 teachers
Head teacher: Mathias Herzog
Eco-school committee: Armin Opitz, Martina Anderson
2nd European Eco-school/International Agenda 21 School
Award in 2010

Solar thermal power

The installation of our solar thermal system was completed in the summer of 2009. Since then we have been heating our water with

solar power. During installation, the students also learned to soft-solder copper tubing. On project day, the students and their teacher demonstrated how well the system works.

Together with their teacher, Armin Opitz, students of grade R8 are demonstrating how the solar thermal power station works.
Photo by Marcel Wallraf



The weather was fine and within 45 minutes the sun heated 13 litres of water from 24° C to 51° C. Our solar thermal power plant proved to be a suitable object to demonstrate practical climate protection.

Hot meals for orphans

In order to improve the living conditions of 110 orphans in East Africa, our pupils engaged in various fund-raising activities. In summer 2005, Ganztagschule Denksteinweg began a partnership with Achungo Children's Centre in Homa Bay, Kenya. Three classes are regularly sending letters in English to our partner school. With their motto "Singing for kids in need", two music courses are collecting money. Grade 8 and 9 students worked for one day in a company and donated their pay to the Kenyan orphans, too.

Half of the money raised with a charity fun run at our school festival was also donated to Kenya. Thanks to these donations, Achungo Children's Centre could buy, amongst other things, a solar cooker



to provide them with two hot meals on sunny days. This saves firewood and cuts carbon emissions.

Our partnership with Achungo Children's Centre in Homa Bay, Kenya started in the summer of 2005. Thanks to the money raised here and donated to Kenya, our partners could purchase a solar cooker to provide them with two hot meals on sunny days, which in turn cuts the use of firewood and CO₂ emissions.

Photo by Michael Nyangi



Another positive outcome of our partnership: The 60 orphans are now living in a house financed with the help of our donations.

Photo by Dr. Barbara Jeanrenaud

Slow food from our edible garden: Schule Ehestorfer Weg

Profile

Ehestorfer Weg 14
21075 Hamburg
Phone: +49 40 428 881 806
E-mail: schule-ehestorfer-weg@bsb.hamburg.de
Website: www.schule-ehestorferweg.hamburg.de

Primary and secondary school
705 pupils
53 teachers
Head teacher: Wolfgang Meyer
Eco-school committee: Kerstin Gleine, Rüdiger Schirm,
Hans-Heinrich Waldow
2nd European Eco-school/International Agenda 21 School
Award in 2010

What's blooming here? The "green classroom" makes learning easy.
Photo by Kerstin Gleine



food" in class. Slow Food Deutschland is our partner in this project.

The yield of our school garden are directly eaten or processed and sold: At a local market the pupils sold flower binds, herbal oil and flower crème. The money raised was invested in new plants or excursions to a botanic garden etc.

Edible school garden

Potato salad, jam or face lotion are some of the products our students create from the fruits and plants they grow in our school garden. In spring they dig, sow, weed and harvest during work, biology and science classes and in inter-disciplinary all-day courses.

Fresh radish and lettuce automatically give rise to dealing with "healthy

You can smell and touch different herbs in a passable herbal spiral built by 3rd and 4th graders as well as 7th and 8th-graders as part of their elective subject "green classroom". The 8th-graders built a dry wall hiding the compost from view and providing, at the same time, an amazing habitat for flora and fauna.

“Cooker-to-go”

During project week and in their natural science and technology classes, 3rd, 7th and 9th-graders built a “foldable cooker to go”: light weight, no need for electric energy, no on/off switch and above all, no carbon emissions as the cooker works in the blazing sun. The water heats up even quicker with the solar parabolic mirror designed and built by grade R9 during interdisciplinary classes (covering physics, biology and technology). Collaborators in this project were “Save our Planet” and “World Renewable Energy Network”. The students documented their solar project and published it online and in the press.

Our solar cooker heats water for tea and vegetable soup. Testing the self-built gadget outdoor for the first time, amazed pupils watched the water’s temperature rise. Due to many clouds passing over us, the maximum temperature amounted to “only” 73° C after the kids had replaced the silvery, open pots with small black lidded ones.

Green Energy

Gardening and renewable energy are closely connected. Powered by solar energy, our greenhouse is the perfect place to grow tomatoes, pepper and courgettes that can be harvested until late in autumn. During winter, the nursery is used to shield plants from frost and to grow various vegetables before they get transplanted outdoors. Part of the energy used here the plants pass on to their environment including (i) us – when we eat them and (ii) nature – as decomposed and recycled inedible plant matter, i.e. compost. In the future, our compost is to feed a small biogas plant, the first components of which



have already been constructed by fifth-graders. As soon as this biogas plant has been optimised it will heat our greenhouse during cold spells.

In this way, our school garden turns into a central learning sphere for matter and energy cycles, biodiversity and social responsibility, fun and pleasure.

The foldable cooker built by third, seventh and ninth-graders comes without an on/off switch and, more importantly, does not produce any carbon emissions.

Photo by Kerstin Gleine

A vineyard in Hamburg: Schule Hanhoopsfeld

Profile

Hanhoopsfeld 21
21079 Hamburg
Phone: +49 40 702 92 66
E-mail: schule-hanhoopsfeld@bsb.hamburg.de
Website: www.schule-hanhoopsfeld.hamburg.de

Primary and secondary school
300 pupils
21 teachers
Head teacher: Klaus-Rainer Brügel
Eco-school committee: Jessica Reese,
Renate Schmidt, Guenter Schwabe
10th European Eco-school/International Agenda 21 School
Award in 2010

In each classroom pupils have put up posters reminding their fellow students of simple and yet highly effective energy conservation methods. All classes are participating in our energy conservation project.
Photo by Jessica Reese



Posters and inspectors

Each classroom displays posters that advise pupils on how to save energy. Every class is involved in our energy conservation project. “Energy inspectors” see to it that the lights are indeed switched off when not needed and that either the windows

are open and the heating is turned off or vice versa.

Our vineyard

Students carefully cut the fleshy purple berries off the vine and put them in a basket. Given the proper care, you can indeed grow grape in Hamburg. Since 2004, we regularly harvest grapes, extract the juice which is then filled into carboys where it matures into (Hanhoopsfelder) grape wine. At first, however, the students had to use spades and forks to clear a terraced patch by uprooting wild herbs and digging them in. Spring 2004 then saw the planting of young vines from Baden-Württemberg. Already two years on, the first harvest took place.

Tending to the vineyard, by now home to Indian cress, phacelia and other flowers too, is a prominent part of the school’s garden work.

Water lab

They may splash, spill, heat, vaporise or freeze water and learn a lot about this natural resource at our “water workshop”. Grade 8 pupils changed an unused classroom into a water lab and developed plenty of ideas for this knowledge workshop. Even chemists marvel at water, which makes up over 90% of the human body. Salt dissolves in water in no time and oil floats on its surface. Ice, however, reveals quite a different set of characteristics than the liquid substance. And why is everybody so keen on knowing whether there has once been water on Mars?

Issues like these help students appreciate the value of this resource. The production of one drinking can consumes 40 litres of water – so why don’t we drink the water instead? Anyone interested may now even fill their own water bottles with clean and healthy water from a water dispenser. Furthermore, in our lavatories we have replaced the old water taps with water-saving push-on taps.

In our “bottle garden”, students can explore the cycle of water, oxygen and carbon dioxide. During natural science classes 7th-graders lock plants with a bit of soil in an air-tight carboy and watch this self-sustaining miniature eco-system thrive over a couple of weeks.

Plants for the planet

When some old trees had to be felled in our schoolyard, the 9th-graders felt the need to compensate for this “loss”. Sponsored by a local bank (Sparkasse Harburg-Buxtehude), the pupils seized the opportunity to get actively involved in climate protection and planted more than 500



8th-graders changed an unused classroom into a water lab.
Photo by Jessica Reese

trees in a local forest and contributed actively to climate protection.

One morning in March 2009, the “climate activists” arrived at the forest to first get an introduction on the forest as an eco-system and then to be instructed on the appropriate way of planting trees – most of the juveniles were newcomers to this field. After a short while everyone took so much delight in it that they planted over 10 times more trees than had originally been intended.



In order to compensate for some old trees that had been felled in our schoolyard, young „climate activists” took delight in planting over 500 trees in a nearby forest and exceeded the originally intended amount of 50 trees by more than 10 times.
Photo by Jessica Reese

Biodiversity and keepers of the waters: Offene Ganztagschule Hegholt

Profile

Hegholt 44
22179 Hamburg
Phone: +49 40 646 04 20
E-mail: ganztagsschule-hegholt@bsb.hamburg.de
Website: www.hegholt.de

Integrative Primary and secondary school, open all-day school
660 pupils
55 teachers
Head teacher: Joachim Gravert
Eco-school committee: Clara-Marie Böning, Rosemarie Hoppe, Karima Krempin, Elke Pfeiffer, Wolfgang Plothe-Mitzlaff
15th European Eco-school/International Agenda 21 School Award in 2010

Left: So many different apples!
At the Umweltzentrum
Karlshöhe, our 2nd-graders explore
the diversity of native fruits.
Photo by Nicole Simon-Doehler

Centre: Wheat, rye, oats and many
more grains: pupils are dealing
with many aspects of biodiversity.
Here, they are exploring
various cereals.
Photo by Rosemarie Hoppe

Right: What's the name of this bug
here? Equipped with dip nets and
sieves, bug magnifiers and classifi-
cation sheets, the young explorers
moved about in the open
to trace biodiversity.
Photo by Clara-Marie Boehning



Sustainable motivation

For 15 years now, our open all-day school has successfully participated in Hamburg's eco-schools programme. Education for sustainable development (ESD) is very high on our school's agenda. The payments from Hamburg's *fifty-fifty* reward programme are a considerable financial help and an enormous incentive to our students to save great amounts of both energy and water.

Every year we adopt a particular theme on sustainable development. On International Environment Day and within several projects the students dealt with climate change, green and clean energies, causes and effects of deforestation and biodiversity.

Project diversity

Bug magnifiers and bean diary, German Spitz or whale profiles, are just some of the many aspects in-

involved in teaching the importance of biodiversity from year 1 to year 10.

First-graders decided on the ornamental plants and agricultural crops to be used in our school garden and kept an accurate diary of the scarlet runners' germination and growth process. Grade 2 pupils roamed the fruit meadow with scattered fruit trees outside Umweltzentrum Karlshöhe to inspect butterflies, spiders, wasps and many other insects with their bug magnifiers. The so-called "apple project" exemplified genetic diversity.

Our fourth-graders also dealt with breeding and genetic diversity: Grade 4b planted pansies with small and yellow petals or big and violet ones. Grade 4a looked at different breeds of dogs and their origins. The pupils also marvelled at the various types of whales ranging from small toothed whales like the porpoise (1.5 m in length) to baleen whales such as the blue whale (spanning over 30 meters in length). Being rather concerned how endangered these marine mammals are, the kids created buttons with whale motifs and sold them in the neighbourhood to support the work of greenpeace activists.

For two months, eighth-graders worked in class and on a weekly project day on the issue of biodiversity: They helped remove trees and shrubs from the dry grassland of Hoeltigbaum Nature Reserve, discovered quite a variety of old grain and found themselves immediately considering issues of healthy food.

Our 10th grade focused on the connection between climate change and the endangerment of biodiversity. Looking at the coral islands in the



South Sea Coral made them soon realise the social impact of the matter.

The kingfisher project

With wheel-barrow and shovels the 7th and 8th-graders fostered biodiversity in a local stream: They placed stones and pebbles in the Seebek to bring about different streaming speeds and a natural, i.e. a winding course of the stream. Furthermore, they planted native shrubs and trees along the riverside. As keepers of two sections of the Seebek, our students support the work of Naturschutzbund Deutschland (NABU). The aim is to rebuild an attractive habitat for kingfishers. For more than 20 years, pupils of year 8 have been examining the water quality of two streams, the Osterbek and the Seebek, and have taken part in restoring their natural states.

Our students are keepers of two sections along a local stream (the Seebek) and support the work of Naturschutzbund Deutschland (NABU) who wish to rebuild an attractive habitat for kingfishers. For over than 20 years now, pupils of year 8 have been examining the water quality of two streams, the Osterbek and the Seebek and have taken part in restoring their natural states by placing stones and pebbles inside the bed to cause the stream to meander.
Photo by Wolfgang Miehle

District schools

Climate change and art: Stadtteilschule Harburg

Profile

Eissendorfer Straße 26
21073 Hamburg
Phone: +49 40 428 87 10
E-mail: gesamtschule-harburg@bsb.hamburg.de
Website: www.gs-harburg.de

District school
1550 pupils
140 teachers
Head teacher: Heidrun Pfeiffer
Eco-school committee: Philipp Hefke, Dörthe Ohlhoff,
Heidrun Pfeiffer, Vasca Scheppelmann, Susanne Schüler
8th European Eco-school/International Agenda 21 School
Award in 2010

Students of the natural science course are engaging in practical ecological work in the Ebro Valley/Spain.
Photo by Vincent Fortuin



Sustainable learning and nutrition

A central concern at our school is to make our school life a sustainable one. We teach ecological issues in an interdisciplinary and presentational fashion. Sixth form students signing up for “eco-system research” combine biological and geographical theory with small-sized research projects such as bird mapping in the marshlands of the river Elbe or investigating sedimentation in the Elbe mud flats.

We link ecological teaching with global justice and social equity. At our school canteen we sell fair traded teas and chocolate bars and integrate related aspects in various classes.

Colourful campaigning for environmental protection

“Energie sparen – mach mit” (Join me – save energy) reads one of the many laminated signs that the students put up to encourage the economical use of energy and water as well as waste separation. An environmental action team produced many ideas to optimise waste separation at our school. For instance, the students noticed that the three separation bins neither look the same in each classroom nor have they been arranged in the same way. Thus, we will purchase standard bins in the near future. Energy conservation

and waste avoidance pay off a great deal as our school takes part in Hamburg's *fifty-fifty* bonus programme.

Climate change in the classroom

How much warmer gets the temperature in our classroom during a lesson, how can we prevent the air from turning stale? To get to the bottom of this and the waste of energy related to open windows whilst the heating is still on, sixth-graders are measuring the temperature in their classroom at regular intervals.

Our solar power plant has been in operation since 1997. Soon, our students will be able to monitor the system's performance on a large digital panel to be installed in our hall.

Climate change and art

Generally, climate change is often evident only in statistics. To communicate this phenomenon in a more accessible way, tenth-graders attending "art and nature" classes created digital photo collages – pointing both a daring and humorous finger at the possible impact of climatic change by placing African animals

in Hamburg's urban bounds. The pupils used their own photos taken at Hamburg's well-known Hagenbeck Zoo as well as urban scenery photographed on their way to and fro the zoo. Later they combined the photo collages into a digital picture story serving as the prologue to "Bingo Flamingo", our environmental musical.

Practical ecology

In late September 2008, 10th-graders attending natural science class visited the Ebro Valley in Spain to engage in ecological outdoor activities for one week – the languages spoken were English and Spanish. Instructed by ecology teachers, the students examined the ecological specifics of the river, its delta, and the adjacent lagoons. Additionally, the guests visited research stations for aquatic culture, an ornithological station as well as protective stations for turtles and endemic fishes. This study trip also initiated a long-standing partnership with a school in Sant Carles del la Rapita located on the fringe of the Ebro Delta.



10th-graders visualised "climate change in Hamburg-Harburg" with imaginative collages.
Photo collage by
Philipp Beermann-Fey

Apple campaign and climate action: Stadtteilschule Am Heidberg

Profile

Tangstedter Landstraße 300
22417 Hamburg
Phone: +49 40 428 892 01
E-mail: gesamtschule-am-heidberg@bsb.hamburg.de
Website: www.gesamtschule-am-heidberg.de

District school
1050 pupils
105 teachers
Head teacher: Helga Smits
Eco-school committee: John Borchers, Karen Fröhlich,
Kira Jensen, Helga Smits, Nils Westphal, Hartwig Zillmer
3rd European Eco-school/International Agenda 21 School
Award in 2010

Experts on the sun and rain

Equipped with a thermometer, a barometer and a sun, rain and wind gauge on the roof, our school has been taking part in Hamburg's school project "Climate observation". Our weather data are constantly updated and published on www.wetterspiegel.de.

2009 saw the installation of our photovoltaic system with 12 solar panels and a large digital display, as well as their formal presentation to the public by the school community and the installation company.

In the spring of 2010, we installed a cistern to water the plants and filled our school pond with soft rain water – this project was funded by the local parliament.

Rich variety

Perceiving ourselves as a "school of the district", we collaborate with a nearby housing estate. Dating back

to the 1920s and 30s, many of these houses have rather large orchards. Here, pupils attending nature and environment classes are out and about each year to gather apples in autumn, extract the juice and offer it to the primary school kids on "Apple Juice Day".

During natural science and environment class, 8th and 10th-graders map the location of the old apple trees to keep track of this cultural-historical memorial of biodiversity and to raise the residents' awareness

Fresh from the garden right into your cup: Every year, the 7th-graders of nature and environment class run an "apple campaign" in autumn. The pupils gather apples in the nearby gardens, extract the juice and offer it to primary school pupils.

Photo by Hartwig Zillmer





Students built an “insect preserve” for wasps, earwigs, bugs and other useful insects and thus contributed to the biological pest control in our school garden.

Photo by Hartwig Zillmer

of this natural treasure. We can already see a tendency amongst new residents to take more interest in these old varieties. A gardener introduced the students and their teachers to the cultivation of orchards. He showed them how to “rejuvenate” old fruit trees: Cut a branch from the old tree, point it at one end and stick it into the cutting of a younger tree trunk where it grows on and bears fruit. The students discovered quite a range of old apple varieties and their natural habitat: the meadows. They also got an idea of how important these apples once were when fruits and vegetables were predominantly available only to people who owned a garden. In 2009, this project won first prize of “Environmental protection in your neighbourhood”, sponsored by Commerzbank and Hamburger Wochenblatt.

Batrachians, birds and bats

Our school is involved in caring for a nearby local moor (Raakmoor) supervised by Naturschutzbund Deutschland (NABU). The pupils help remove, for instance, young trees and

shrubs. The core zone of Raakmoor is an important habitat for amphibians; the fringe serves as a popular recreational area.

Students built seven bat shelters which were all placed in our schoolyard – this won us the title “bat-friendliest school” awarded by NABU.

Climate action

In the school year 2009/10, our school became a pilot school in Hamburg’s climate action project. Hamburg assists schools with the adoption of their own climate action plan that helps reduce carbon emissions. 9th-graders choosing the newly introduced profile course “Nature and the environment” are working in small project groups on climate actions such as appropriate airing, thermostat adjustments and a “switch-off-the-lights” campaign.



Corks for conservation: Students take their collected (wine) corks to a sheltered workshop where the cork is processed and sold to the building material industry. Part of the revenue is reserved for nature conservation projects in Estemadura/Spain.

Photo by Hartwig Zillmer

Energy service and lunchbox: Heinrich-Hertz-Schule

Profile

Grasweg 72-76
22303 Hamburg
Phone: +49 40 428 891 132
E-mail: heinrich-hertz-schule@bsb.hamburg.de
Website: www.heinrich-hertz-schule-hamburg.de

District school
1700 pupils · 130 teachers
Head teacher: Gerd Augustin
Eco-school committee: Gerd Augustin, Ursula Fabian,
Susanne Hilbig-Rehder, Karin Jessen, Hans-Jürgen Klimki,
Isabel Mädler, Christian Pape, Wolfgang Thiel,
Gabriele Vennemann · 13th European Eco-school/International
Agenda 21 School Award in 2010

Nabasib Primary School computers and printers are solar-powered. In November 2008, eight sixth-form students and their teacher helped install the photovoltaic system. As members of the working group called "Global perspective with he(a)rt(z)", they prepared this project and are still in touch with their Namibian partner school.
Photo by Wolfgang Thiel



power: Our solar thermal power plant heats the water used in the gym's shower rooms, and our 3kW photo-voltaic plant supplies electric energy. Both systems will be expanded later during building refurbishments.

Lunchbox and energy service

On their first day at our school, the new 5th-graders are presented with a lunchbox and a drinking bottle to promote a healthy breakfast and avoid waste.

Ambitious plans

Our school has taken part in Hamburg's project "Climate action in schools" since autumn 2009. We aim to reduce our carbon emission within the next 10 years by roughly 20 per cent. Technical support comes from an "intelligent" light control system; the pedagogical side covers the appointment and instruction of so-called "Energy inspectors". A third measure is the use of solar

Heinrich-Hertz-Schule is committed to environmental protection and has introduced a pupil energy service to help curb CO₂ emissions in our school. Similar to other duties such as sweeping the floor and cleaning the blackboard, pupils should be in

charge of closing the windows and switching off the lights on leaving the classroom after the lessons.

On project days, grade 8 always work on “nature and environment” in a number of ways. Some students sold “solar sausages” on the premises heated with a solar cooker. Under the heading “*fifty-fifty* bonus – saving energy pays off”, another group created new information on how to save energy in the classroom.

Yet another group visited the hydropower plant at the Hamburg-Ohlsdorf sluice and saw that even in Northern Germany’s lowlands water can be utilised to produce energy.

Solar power for Namibia

Located 250 km south of Windhuk/Namibia, our partner school Nabasib Primary School use electricity produced on site. Students from our school installed this photovoltaic system in November 2008 to power predominantly computers and printers. They are important tools for the teachers. Books are rare, so they need to prepare their own teaching material. Additionally, the classrooms are now fitted with lights and can thus be used for evening classes.

Eight sixth-form students and one teacher of our school had been involved in this project. During the two-year preparation phase, the team had received a great deal of support from our school community – in terms of fundraising and planning.

In 2003, the then action team behind “Global perspective with he(a)rt(z)” had successfully carried out a similar project in Mexico.

Modelling clay and sink rate

Dealing with water, many questions spanning biological, physical, chemical and cultural aspects spring to mind: Why should we use water rather sparingly? How come objects may either sink in water or stay afloat? Why does water conduct electricity? What animals live in water? The list is endless and makes water a perfect topic for interdisciplinary teaching.

Our natural science classes for 5th-graders combine biology, chemistry and physics and treat “water” in a holistic fashion: from swimming (9 double lessons) to the physics of a streamline contour, from the physical states of water – solid, liquid, gas – to a simple model of H₂O molecules, from the hydrological cycle to sustainability. The pupils study in small groups and work fairly independently. They form, for example, various round, streamlined or angular objects from modelling clay and drop them in a stand cylinder to measure their sink rate. Or, during the summer months, they inspect plants and animals that live in our school pond. Visiting the drinking water forum of Hamburg’s waterworks makes students appreciate the importance of healthy tap water.



A solar cooker heats dinner for the pupils at Nabasib Primary School in Namibia.

Photo by Wolfgang Thiel



Science class for 5th-graders is a combination of biology, chemistry and physics. Practical approaches towards “water” include, for instance, the construction of boats and other floating objects.

Photo by Christian Pape

European tree project: Julius-Leber-Schule

Profile

Ahrensburger Weg 30
22359 Hamburg
Phone: +49 40 559 940
E-mail: roe@jls-hh.de
Website: www.jls-hh.de

District school
1500 pupils
130 teachers
Head teacher: Klaus Tobel
Eco-school committee: Bernd Röhling
4th European Eco-school/International Agenda 21 School
Award in 2010

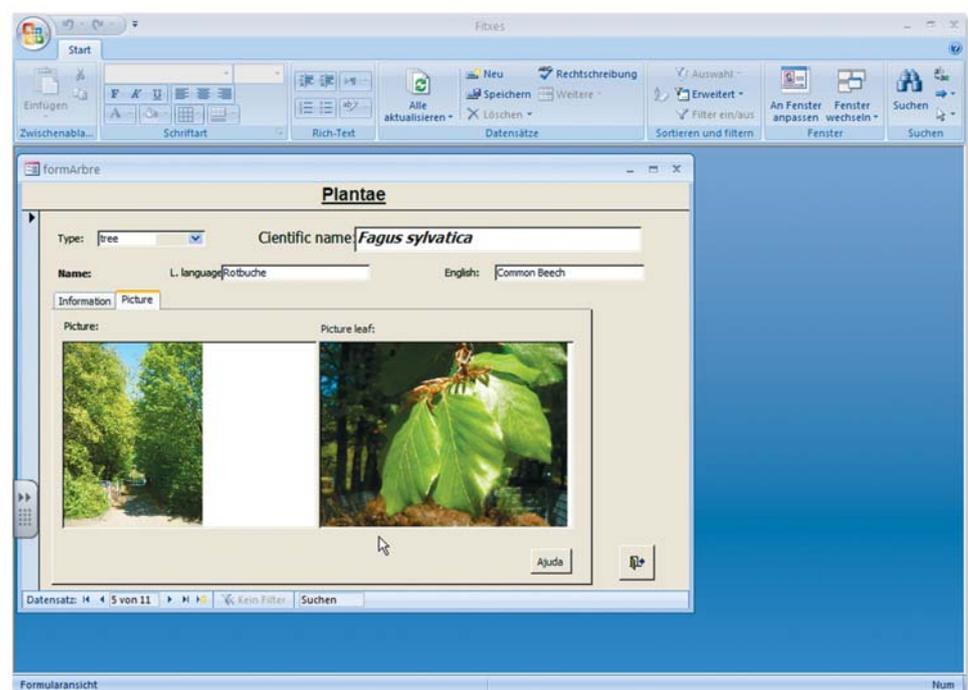
Digital trees

We chose a rhino with a “tree horn” for our school’s mascot, for obvious reasons: There are many ancient trees in our schoolyard and by now, the pupils of grade 11d

know a great deal about each of these trees.

Within the framework of a Comenius project, they created a digital tree map telling the user, for instance,

There are 87 common oaks growing in our schoolyard. 11th-graders developed a computer program mapping the places where each individual tree is located on the premises. The pupils included their own pictures of the trees and their leaves as well as specific background information.
Fig. by Julius-Leber-Schule



the exact location of all horse chestnut trees, their scientific name and the family they belong to.

Additionally, members of the natural sciences working group took photos of all the trees, stored them in a database, added comments in English and sent a digital copy to our partner school in Spain where the database will be published on the net.

Our natural science classes created showcases with posters about the vital role that trees play in our ecosystem as green lungs, natural habitats and CO₂ reservoirs.

Umwelt – Environment – Medio Ambiente – Miljoe

The active exchange between our school and three Comenius partner schools in Spain, England and Sweden promotes the communicative competencies of our pupils: They learn to present and critically assess their work and to deal with other people's points of view. They translate their presentations into English – in class – and make them available on the jointly used internet pages.

One Comenius project entailed work on various aspects of environmental protection. In part I, 11th-graders worked on "Waste and recycling". They interviewed people on issues like waste minimisation and recycling in Hamburg, they recorded a recycling song, created a sculpture from waste material and documented their visits to a waste recycling plant. The young "recyclists" exchanged their ideas about the project with their partner pupils from Barcelona.

Part II of this project centred on biodiversity and part III will cover



Consisting entirely of waste material, this sculpture was built during part one of the Comenius project entitled "Waste and recycling". It stimulated a lively exchange between Julius-Leber-Schule and our Spanish partner school.

Photo by Finn Jaeger

energy and the production of self-made fuel cells in chemistry class.

Fifty-fifty payments

Our daily routines in school include energy conservation measures. Since August 2002 we have benefited from Hamburg's *fifty-fifty* bonus programme in return for saving water and electric energy and reducing our waste. A team of energy inspectors consisting of five students and one teacher regularly check the entire premises and advise anyone caught wasting energy on appropriate measures.

Fuel cells and climate action: Stadtteilschule Niendorf

Profile

Paul-Sorge-Straße 133-135
22455 Hamburg
Phone: +49 40 428 885 60
E-mail: gesamtschule-niendorf@bsb.hamburg.de
Website: www.gesamtschule-niendorf.de

District school
689 pupils · 70 teachers
Head teacher: Johannes Paustenbach
Eco-school committee: Bodo Albrecht, Hans-Jürgen Benecke, Elke Bernhard, Jörg Fischer, Frieder Heitmann, Ingo Kangarlou, Ulrike Kohlmüller, Thomas Kraske, Carmen Lux, Sven Nack, Johannes Paustenbach, Karin Petrina, Gaby Runge-Soppe, Dr. Kathrin Schierwater, Heiko Thomsen, Kathrin Viertler, Werner Wörmcke, Detlef Zunker
14th European Eco-school/International Agenda 21 School Award in 2010

Christian Schumann, Mario Rainer and Lukas Wagner are young experts on fuel cell powered boats: Together with their teacher, Hans-Juergen Benecke they won first prize of Zero Emission in 2009, a contest organised by the Free and Hanseatic City of Hamburg and E.on Hanse (Gas provider).
Photo by Robin Kruse



powered by fuel cells and won first prize of “Zero emission” in 2008 and 2009.

The older pupils developed a solar-powered catamaran with its first test-run in September 2009 on Alster Lake. A two-year refinement period spent in class and after school resulted in a catamaran of

roughly 4 m in length and 3.5 m in width accommodating four pupils.

Alternative power

Cruising Alster Lake or Hamburg’s alleys with solar or hydrogen power – eighth and tenth-graders attending nature and technology classes worked successfully on their vision of zero emission mobility. Starting off with a small model, they moved on to built a normal-sized catamaran

Having a maximum capacity of 480 watts, four solar modules propel the boat with an 800 watts electric outboard motor up to 8 km per hour. Depending on the intensity of insolation, the catamaran can travel in

“eco-mode” for 14 hours at the longest. This solar boat won the school two more prizes: “Hamburger Klimabaer” (Climate Bear) and Deutscher Klimapreis of Allianz Umweltstiftung 2009.

New solar technology needed

Having by now been in operation for almost 20 years, our photovoltaic panels lost their efficiency and can produce electric energy only to a limited degree and when exposed to intensive solar radiation. Due to their age, they cannot be repaired and must be replaced. Thus, we are looking for sponsors – a digital display, funded by the Federal Ministry for Environment, Nature Conservation and Nuclear Safety, is already in place. Pupils have already calculated that we would be able to sell 17,700 kilowatt hours to the national grid and save 9,700 kg of CO₂ per year with a 30 kW solar power plant. And this in turn would translate into 3,700 EUR bonus payments from Hamburg’s *fifty-fifty* programme.

Waste separation contract

Our classes are participating in the *fifty-fifty* bonus programme by contract. Each class commit themselves to electricity and water conservation and waste separation.

In return they are rewarded with up to 250 EUR per year. Participation in Hamburg’s Clean-up Campaign earns them another 50 EUR. In 2009, 20 classes of our school collected litter and waste in our district.



Eighth-graders attending environmental and climate protection class designed posters stating their ecological aims. Photo by Karin Petrina

Climate action class and environmental course profile

Environmental and climate protection is the focus of one profile course for eighth-graders. In small groups, pupils develop ways to increase environmental awareness amongst their fellow students and to improve energy and water conservation on the premises.

A new sixth form course will turn students’ attention towards science and environmental technology. Topics will include heat insulation, passive houses, alternative sources of energy spanning the use of heat pumps, combined heat and power units, PV systems, wind power plants, and the construction of solar-powered vehicles.



Environmental and climate protection are also on the mind of this young man here: Equipped with a worksheet, measuring jug and a stopwatch, he is about to investigate the amount of water passing through the water taps. Photo by Karin Petrina

Energy controlling and a Japanese Garden: Otto-Hahn-Schule

Profile

Jenfelder Allee 53
22043 Hamburg
Phone: +49 40 428 873 03
E-mail: info@otto-hahn-schule.de
Website: www.otto-hahn-schule.de

Integrated district school
1220 pupils
100 teachers, 6 social pedagogues, 35 freelance teachers
Head teacher: Regina Wiegandt
Eco-school committee: Fynn Beers, Jan Kalkofen,
Jeanette Klötzl, Jens Leidigkeit, Christoph Mahler,
Constantin Mahler, Sabine Marschner, Julia Maske,
Stephanie Menyes, Herbert Oppat, Miriam Ritz,
Renate Wiegandt, Nicolai Zantke
12th European Eco-school/International Agenda 21 School
Award in 2010

Left: Planting five trees, sponsored by Max Bahr DIY Market, the students kicked off a project week entitled "Taking responsibility for our environment". Photo by Frauke Dietz-Müller-Veeh

Left: Planting five trees, sponsored by Max Bahr DIY Market, the students kicked off a project week entitled "Taking responsibility for our environment". Photo by Frauke Dietz-Müller-Veeh



Energy management

Energy and climate action are now an integral part of our school curriculum. Having improved our energy conservation measures and cut our CO₂ emissions by 26 per cent or 170 tons, we received more than 20,000 EUR bonus payments from Hamburg's *fifty-fifty* programme. Our solar plant certainly contribu-

ted a great deal here. It has been in operation since June 2008 – our pupils had been involved in the planning and installation process.

Together with our caretaker, our pupils carry out heat energy controlling by regularly measuring the temperature in different rooms and optimising the heating system ac-

cordingly. Earlier, the caretaker and his team participated in an energy management training programme.

Each class assigns two environmental inspectors to watch in particular over the efficient use of resources. They regularly meet up with the eco-school committee and once a year the entire group visit a nature information centre – to keep up the spirits.

Climate action in Spain

Environmental and climate protection as well as sustainability are the main focus of courses such as “nature and technology”, “natural sciences”, “history and geography” – all open to grade 7 and higher – or our “explorer courses” beginning with grade 5.

Tenth-graders participating in “Jugend forscht” (“Young explorers aged 15-21”, a nationwide competition administered in each federal state) submitted several projects to the organisers in Hamburg. One group won third prize with their work entitled “Water explorations on the premises of the Lettow-Vorbeck-Kaserne”. Another team built a model “zero-energy house”. A third group developed a solar thermal power plant consisting solely of plain recycling material and thus easily built in poorer countries.

Taking part in the European Exchange Programme “Comenius”, our school plans to develop a project on the climate and the environment together with a partner school in Spain.

Bees, flowers and a Japanese Garden

Gardening in our school garden follows ecological principles. For our own apiary, we plant flowers such as



phacelia because they attract bees. Recently, we also planted early flowering plants and a potato patch.

Pupils are harvesting home-grown potatoes.
Photo by Jeannette Klötzl

Seventh-graders attending natural science class developed a plan to redevelop the old pond. They freed the pond from unnecessary plants but left one section to itself – by now a real wetland biotope and home to many different species.

Our Japanese rooftop garden was laid out anew during project week in autumn 2008. On Environment Day, students sold home-grown plants. The pupils of grade 8 became the keepers of a rose bed at a street corner in the centre of our district (Hamburg-Jenfeld) and tend to it on a regular basis.

Charity Fun Run and energy efficient computers: Stadtteilschule Süderelbe

Profile

Neumoorstück 1
21147 Hamburg
Phone: +49 40 428 893 02
E-mail: gesamtschule-suederelbe@bsb.hamburg.de
Website: www.gesamtschule-suederelbe.de

District school
615 pupils
48 teachers
Head teacher: Helmut Rudolph
Eco-school committee: Helge Brandes, Thomas Bürger,
Kirsten Kayser, Thomas Licht
3rd European Eco-school/International Agenda 21 School
Award in 2010

During project week, a group of pupils replaced conventional components of the school's PCs with new and energy-efficient ones. Now, these computers use up to 60 per cent less energy than before.

Photo by Helge Brandes



Energy-efficient internet surfing and charity run

Computers can be real energy vampires – but that can be changed. During project week, a group of pupils fitted 12 PCs with new and energy-efficient components and equipped an entire IT room with “new” computers that use roughly 60 per cent less electric energy than “conventional” PCs.

Another team compared the capacity of different computers and compiled their findings in an instruction sheet for their fellow students.

This exemplifies just one step within our school's energy conservation programme. Another is our caretaker's water saving and heating project, part of which is the computerised central control of our heating system.

For many years now, mothers have voluntarily supported our school canteen and provided the students with a healthy breakfast and a nutritious meal, minimising at the same time their waste.

Recently, we have expanded our photovoltaic power plant, which originally consisted of 40 solar modules installed together with pupils as early as 1999. Now our school exports up to 8kW of excess energy to the national grid – weather or rather sunshine permitting. A charity run with all our pupils (i.e. 620 children) in June 2009 yielded 5,700

EUR in cash. We donated 3,250 EUR to UNICEF and saved the rest for the second PV. The charity fun run was yet another opportunity for each pupil to join our energy conservation programme and contribute as much as they could.

Home to dragonflies

Two years ago, tenth-graders attending a natural science class decided to turn the muddy and non-descript school pond into a near-natural wetland biotope. They worked out a respective plan about the type and hierarchy of steps to be taken and the equipment needed etc.

First, they had to tidy the pond and create a compost to dispose of mud and plant matter. Then they pumped the pond dry, purchased sand to level the embankment and renewed the pond liner. Next in line was the planting of radican sword, bulrush, marsh violets and primroses, water lilies, weeds and lotus. The students made sure not to destroy the decorative sea roses. They paved the pond's outer edges with flagstones to facili-

tate observations without destroying the embankment. The following summer the first dragonflies flitted about.

The current tenth-grader generation is caring for the biotope. They are planning to level the embankment even more to attract amphibians.

Our school pond is an integral part of all natural scientific classes and makes aquatic habitats more accessible: Exploring the pond with dip nets and bug magnifiers, the pupils can better understand the importance of clean water and a clean environment.



In 1999, teachers and pupils installed our first photovoltaic (PV) system. Today, we wish to expand our PV system in co-operation with local craftspeople. Together, the new and old solar panels could back feed a maximum of 8kW of excess energy to the grid.
Photo by Michael Meier-Hahn



A charity run yielded 5,700 EUR in cash – 620 pupils had contributed to this event and thus also to our energy conservation programme. Additionally, this event enhanced social cohesion at our school. We donated 3,250 EUR to UNICEF and reserved the rest for the expansion of our PV system.
Photo by Helge Brandes

Worldshop and seabird protection: Stadtteilschule Walddörfer

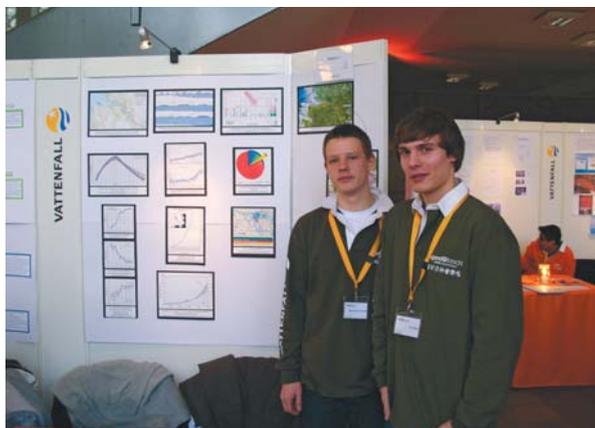
Profile

Ahrensburger Weg 30
22359 Hamburg
Phone: +49 40 428 854 021
E-mail: gesamtschule-walddoerfer@bsb.hamburg.de
Website: www.gswalddoerfer.de

District school
1250 pupils
111 teachers
Head teacher: Elisabeth Thölke
Eco-school committee: Katharina Hocke, Susanne Schwarz,
Reiner Sievers, Franziska Weisser
10th European Eco-school/International Agenda 21 School
Award in 2010

12th-graders attending our profile course "Earth-Human System" participated in the nationwide competition "Jugend forscht" (Young Explorers) in 2010. Their projects on climate change won first, second and third prize. The winning team – Max Schmidt and Tim Willer – explored the impact of increasing flood tides on Hamburg's port.

Photo by Susanne Schwarz



forscht" (in Hamburg), a nationwide competition for young people aged 15 to 21.

The winning projects included work on climate change such as the impact of a storm tide on Hamburg or the future of the Halligen Isles (located in the Wadden Sea).

From Hamburg's port to the natural gas omnibus

In 2007, one of our students won a place in the "Cape Farewell Youth Expedition" to the Arctic. Since the beginning of the school year 2009/10, our school has been participating in Hamburg's project "Climate action in schools" and in 2010, twelfth-graders of our profile course "Earth-Human System" won first, second and third prize of "Jugend

Grade 8 focussed on "Modern times – networking worlds" and won first prize of "FutureTour" organised by Hamburger Verkehrsverbund HVV (public transport system). This tour entailed visiting various learning stations that dealt with transport, energy and mobility, interviewing people and documenting the results.

Students replaced fluorescent tubes with energy-efficient models sponsored by Philips.

Currently, eighth-graders are working on an energy conservation exhibition which aims to show ways and means of responsible action.

Herb curd and seabird protection

Our school has a long-standing environmental cooperation with Naturschutzverein Jorksand. Many teaching units take place on the premises of "Ahrensburg Haus der Natur" (Environmental Information Centre). Here, seventh-graders lay out vegetable patches on a regular basis, classify aquatic animals and prepare herb curd with fresh herbs from our school garden.

During springtime, a team examined the pond's water quality and published the results on the net as part of the "Schüler für eine lebendige Elbe" campaign (Pupils for a living river Elbe).

Another area of collaboration between our school and the Naturschutzverein Jorksand is the Oehe-Schleimünde Seabird Preserve. Various groups of pupils, teachers and parents regularly engage in nature conservation activities on the Baltic Sea. This area is also perfectly suited for ecological projects. When in the autumn of 2008 the land had been put up for auction, our school sent letters to Hamburg politicians and Per Steinbrueck, then the German Minister of the Exchequer, urging them to keep Oehe Island under public ownership. Luckily, "Lighthouse Foundation" bought this area and is currently renovating the information centre located in the old pilot house.

As soon as the building work is finished, the young environmentalists hope they will get involved in the redecoration of the information centre.

Green classroom

Over several weekends a team of pupils, parents and teachers planned the ecologically oriented redevelopment of the schoolyard. Several resting zones as well as seating areas, an art yard, a fire place and some small biotopes resulted from this activity. Grade 10f committed their energies to the school pond, cleaned it thoroughly and redeveloped it with its surrounding area. From now on, water quality tests can take place on the premises. Additionally, pupils have also created a showcase for the respective biology teaching unit.

Global solidarity

More than once did Ruediger Nehberg visit our school and presented the human rights campaign of TARGET e.V. towards ending female genital mutilation. Two groups consisting of ninth and tenth-graders organised a charity run to raise money for TARGET. All the students from grade 5 to 13 took part in this and collected 25,000 EUR which they handed over to Ruediger Nehberg in March 2009.

Eighth-graders raised another 25,000 EUR in 2008 in support of UNICEF's AIDS project in Africa.



Pupils observing birds at the mouth of the river Schlei: Our pupils help Naturschutzverein Jorksand conserve the Seabird Preserve Oehe-Schleimünde on the Baltic Sea.
Photo by Susanne Schwarz



Pupils, parents and teachers worked several weekends on the ecological development of our school grounds, one result of which was the creation of alternative seats.
Photo by Susanne Schwarz

Grammar schools Sustainability contract: Albrecht-Thaer-Gymnasium

Profile

Wegenkamp 3
22527 Hamburg
Phone: +49 40 547 30 60
E-mail: albrecht-thaer-gymnasium@bsb.hamburg.de
Website: www.albrecht-thaer-gymnasium.de

Grammar school
700 pupils
54 teachers
Head teacher: Birgit Niedlich
Eco-school committee: Ulrich Brameier, Matthias Drieschner,
Claudia Wagner
12th European Eco-school/International Agenda 21 School
Award in 2010

In 2009, we installed a photovoltaic system with 17 solar modules. We aim to produce about 3000 kWh green energy per year which translates into an annual reduction of 2 tons of carbon emissions.
Photo by Claudia Wagner



Recycled paper protects the climate

Saving the rain forest is easy: Just buy your exercise books at our school. They have been produced from 100 per cent recycled paper and cost only 40 cents each. Our sustainability action team is a group of pupils, parents and teachers who organise the sale of these exercise books and spiral-bound notebooks during breaks. There are also lunch boxes available at the stands – sporting our school’s logo and helping avoid waste.

Sustainability contract

On their first day at Albrecht-Thaer-Gymnasium, pupils commit themselves to the guiding principle of sustainability, i.e. social, economical and eco-friendly behaviour, by signing a respective statement. “I accept the authority of our environment inspectors” reads one sentence here. These pupils supervise, for instance, waste separation and make sure that lights are switched off when not needed and windows are kept open no longer than necessary. Once a year, they check all classes on their ecological compliance to find the “most eco-friendly class”. On the last school day before the summer break, the winning class is awarded 100 EUR.

Every other year, each class appoint two environmental representatives.



Clearly visible in the school's auditorium, a notice board shows postings such as the sales times for the recycled exercise books or the lunch box. Environmental representatives update this board. Below the board, there are recycling boxes for used batteries, corks and ink cartridges. Photo by Claudia Wagner

Together, they make up the school's ecological council who, fairly independently, organise Environment Day events twice a year.

Solar panels and economic flushing

Sunshine is more than welcome at our school now – as every single ray is converted into solar power by our photovoltaic plant installed in June 2009.

Saving electric energy has been part of our school routine and has paid off for quite some time now: Being participants of Hamburg's *fifty-fifty* bonus programme, we have regularly been financially rewarded since 1996. New energy-efficient fluorescent lamps, economic toilet flush knobs as well as automatic taps enhance the responsible use of energy resources and water.

Bread for the world – donations to Peru

Sixth formers as well as ninth-graders attending geography class deal with issues around fair trade. Pupils designed a poster and pinned it to

the "Environment notice board" which itself is visibly placed and reserved for postings on sustainability and environmental protection. Taking bread as an example, the pupils had ample opportunity to study fair trade, sustainability and global food supply as well as climate change when Bread for the World's "Bread omnibus" visited our school in June 2009.

Pupils regularly donate money, raised for instance at the Christmas bazaar, to a shelter for street kids in Peru. A few years ago, the founder of "Casa Verde" had presented his work in our school.



Our toilets are equipped with automatic taps and economic flush knobs. Photo by Claudia Wagner

Sustainable learning: Alexander-von-Humboldt-Gymnasium

Profile

Rönneburger Straße
21079 Hamburg
Phone: +49 40 645 39 10
E-mail: alexander-von-humboldt-gymnasium@bsb.hamburg.de
Website: www.alexander-von-humboldt-gymnasium.hamburg.de

Grammar school
815 pupils · 55 teachers
Head teacher: Matthias Peters
Eco-school committee: Inger Kock, Marlis Mauritz,
Yvonne Musolff-De Nardo, Katja Schreiber, Henning Trost
and about 30 pupils
16th European Eco-school/International Agenda 21 School
Award in 2010



Our pupils may refill their PET drinking bottles anytime with fizzy and still water from our water cooler.
Photo by Jürgen Marek

Comprehend the present to design the future!

Our school's mission is based on education for sustainable development, i.e. the development of so-called participation skills, and follows the principles of the Agenda 21. Interdisciplinary thinking and acting, social learning, auto-nomous motivation as well as active involvement all aim to foster pupils' ability to deal with future challenges. Four times in a row now, our school has been awarded the title of "Official German Project of the Decade Education for Sustainable Development".

Healthy water supply

It is as simple as it is healthy: drinking water at our school, anytime and free of charge. Whenever they feel like it, our pupils can refill their PET bottles with either fizzy or still water from our own water cooler. Cofunded by a number of spon-

sors, the parents committee, the school treasury and our students via *fifty-fifty* bonus payments, this user-friendly "spring" is an energy-efficient and thus climate-friendly water cooler supplying healthy water. Teaching units focusing on nutritious food and water as a precious natural resource show the children why the wasteful use of this essence of life is to be avoided.

Living water

Recently, tadpoles have been found in the Engelbek and soon also other creatures will return to this small stream – this may even include the common otter. In the 70s, the course of the Engelbek has been straightened and its bed narrowed. Consequently, the water's flow rate increased and rare water plants and fishes disappeared.

Instructed and supervised by a hydraulic engineer, fifth-graders have

been actively involved in the gradual restoration of the Engelbek's natural course since 2005. By now, water lilies are dotting the streambed, pilewort and wood anemones line the embankment and the stream is home to tadpoles as well as insect larva and fishes.

This project was awarded a prize by Körber Foundation Hamburg.

Sustainable action

Since 1997, we have been operating our own solar power plant. We are now planning to expand our photovoltaic system to produce an energy output of 22 kWp. We have benefitted from Hamburg's *fifty-fifty* bonus programme for 16 years and used the payments in return of saving electricity, water and waste collection fees to (a) award annual prizes to classes that have proved to be particularly eco-compliant and (b) provide a healthy breakfast prepared from organic regional products plus free milk to all pupils.

7th, 8th and 9th-graders can opt for courses focussing on regenerative energies or global learning. Climate change and sustainability are also integrated in our natural and social sciences classes.

Learning from Tanzania

During a visit from our Tanzanian partner school in May 2010, our students and our guests exchanged their views on solar energy, economical water use and fair trade products.

For two weeks, Alexander-von-Humboldt-Gymnasium accommodated nine students of Kituntu Secondary School and three adults. Travel expenses were funded by ENSA, a German development policy exchange programme for students initiated by the Federal Ministry of



Economic Cooperation and Development (BMZ).

Hydrogenous mobility

Puzzling over this trend-setting technology, two groups participated in Hamburg's "Zero Emission Contest" organised by the Department of Urban Development and Environment (BSU) and E.ON Hanse (gas provider). Participants were to construct a vehicle or motive device driven by a single fuel cell. A team of seventh-graders won a special prize for their solar and hydrogen-powered hybrid vehicle.

Since 2005, fifth-graders have been engaged in restoring the natural course of the Engelbek – instructed and supervised by a hydraulic engineer. The children remove old bank reinforcements and place barriers from deadwood and stones inside the streambed. This helps slow down the water's flow rate and thus creates spawning ground for fishes and frogs. Photo by Henning Trost



Two teams of our school took part in Hamburg's „Zero Emission Contest“ and presented fanciful fuel cell vehicles. Photo by Christa Grimm

Consumer culture and human rights: Gymnasium Grootmoor

Profile

Am Damm 47
22175 Hamburg
Phone: +49 40 640 87 30
E-mail: gymnasium-grootmoor@bsb.hamburg.de
Website: www.grootmoor.de

Grammar school
1320 pupils · 101 teachers
Head teacher: Rainer Hencke
Eco-school committee: Nico Danowski, Michael Geske,
Steffi Hupfer, Christian Kaven, Renate Kopelke, Katrin Pax,
Stephan Punzet, Franz Tichy
9th European Eco-school/International Agenda 21 School
Award in 2010

At a workshop “Educational institutions and sustainable consumption” (BINK) run in April 2009, our pupils worked together with scientific research partners.
Photo by Franz M. Tichy



institutions and sustainable consumption”. This is an interdisciplinary three-day research project launched by the Federal Ministry of Education and Research. Consisting of our head teacher, four teachers, two mothers and five pupils, our BINK steering group meets once a month.

Consumer culture

Consuming comes naturally to us but thinking about what we should and should not buy does not. We want our pupils to use food in a responsible way. However, knowing will not do, we need concrete action.

With five other educational institutions, our school is taking part in the BINK workshop “Educational

Senegalese partner school

In 2007, our school began building partnerships with three Senegalese schools. Today, many of our classes are involved in this project and each pupil of the participating African schools is now being sponsored: Families and classes are regularly sending some money for school fees and school books. Our Senegal action team showed an exhibition about our partner country in our



In the spring of 2010, some of our pupils and one teacher visited one of our partner schools in Senegal. Photo by David Maritzen



Our annual "Day for Senegal" sees pupils working for a company, household or garden and credit their wages directly to the school's Senegal account. Photo by Gymnasium Grootmoor

break hall and proclaimed the 30 June of a year the "Day for Senegal" analogous to the nationwide campaign "Your Day for Africa". Instead of attending classes on that day, the pupils may work in a company, household or garden and credit their wages to our Senegal bank account. A delegation of our school visited Senegal in the spring of 2010.

Environmental managers

Pupils attending our environmental management class – introduced in 2009 – measured the temperature of the exterior walls of our school buildings and developed a concept for better insulation.

To insure financial rewards from Hamburg's *fifty-fifty* bonus programme, our students tirelessly engage in saving water and energy and avoiding waste. Environmental inspectors make sure that everyone sticks to the *fifty-fifty* rules. On their environmental rounds, the environmental managers look very thoroughly for further saving potentials.

Human rights

In March 2009, our school was recognised as a UNESCO project school and awarded the title of "Official German Project of the Decade Education for Sustainable Development" for our conception of "Learning sustainability". Collaborating with Helene-Lange-Gymnasium, another UNESCO project school in Hamburg, several courses and classes of both schools organised an exhibition entitled "60th Anniversary of the Universal Declaration of Human Rights". The posters were displayed at Hamburg Town Hall as well as shown and well received in various district offices.

Going green: Heilwig-Gymnasium

Profile

Wilhelm-Metzger-Straße 4
22297 Hamburg
Phone: +49 40 428 868 90
E-mail: heilwig-gymnasium@bsb.hamburg.de
Website: www.heilwig.de

Grammar school
790 pupils
65 teachers
Head teacher: Ingrid Krause
Eco-school committee: Andreas Becker, Günter Bergfeld-Barreca, Ingrid Krause, Max Melter, Anja Schlott
2nd European Eco-school/International Agenda 21 School Award in 2010

Left: Covering altogether 3,561 km during their Climate fun run, 427 pupils raised 14,217.70 EUR for the installation of a solar power plant. Photo by Günter Bergfeld-Barreca



Right: Sparrow project on our school grounds: Our sixth-graders positioned 22 nesting boxes, laid out beds with crops sparrows feed on and sand baths to help the birds get rid of parasites. Photo by Günter Bergfeld-Barreca



Climate fund-raiser

“Let’s run for a better climate” was our motto in July 2009. Each pupil was invited to look for a sponsor willing to turn every single kilometre they ran into money. In Hamburg’s City Park, 427 pupils covered 2,561 km altogether and raised 14,217.70 EUR. The school allocated 50% to the participating classes.

The second half was assigned to the school budget to be invested in future projects such as energy con-

servation measures like movement-sensitive lighting or water saving devices. How the money will be spent is for the “round table” to decide, a body consisting of representatives of each grade, parents and teaching staff. In 2009, the school paid for the PV system.

Green energy

Calling themselves “the Greenies” and promoting the use of renewable energy at our school, a group of

pupils worked on our solar project for one year. They had the statics checked of our school roof twice, looked for specialised craftspeople, applied for funding and contracted workers. By the end of June 2009, the green team had reached their goal: a solar power plant was installed on our roof. The Federal Ministry for Environment, Nature Conservation and Nuclear Safety sponsored a large digital panel displaying the amount of solar energy production in real time. The payments we receive for back feeding the grid will be spent on further climate protection measures such as replacing broken heating thermostats.

The green team's PowerPoint presentation on solar energy and photovoltaics supplements the respective subject classes. Renewable energies are now an integral part of our geography, chemistry and physics syllables.

Feathered friends

Sixth-graders found out that the number of sparrow mates liv-

ing in Hamburg's city centre has dropped dramatically from several hundred pairs to just 86. Supported by Naturschutzverein NABU and Wildtier-Stiftung, the children laid out forage beds and sand baths so the sparrows could find food and get rid of parasites. Having carefully researched their optimal location, the pupils positioned 22 nesting boxes – sponsored by Heilwig-Gymnasium Former Students Association – in shaded, quiet places two metres above ground and with the entry hole facing South East. Now the pupils regularly watch the boxes to see if sparrows are using them and how many young birds they rear.



„Eco-pupils“ visiting Hagenbeck's Zoo (Hamburg) – one of the regular rewards for their climate action. Photo by Günter Bergfeld-Barreca



Smiling happily when the sun is out: „The greenies“ who worked hard for one year for the installation of a photovoltaic system – and succeeded in June 2009. Photo by Günter Bergfeld-Barreca

Eco-Rangers and Aid for India: Gymnasium Hummelsbüttel

Profile

Hummelsbüttler Hauptstraße 107
22339 Hamburg
Phone: +49 40 538 90 60
E-mail: gymnasium-hummelsbuettel@bsb.hamburg.de
Website: www.gymnasium-hummelsbuettel.de

Grammar school
645 pupils · 53 teachers
Head teacher: Thorsten Schüler · Eco-school committee:
Ingo Eichstedt, Sibylle Hahn, Joachim Lau, Verena Merten-
Eichberger, Ludger Rademacher, Beate Schaper as well as
between three and five students and parents each.
8th European Eco-school/International Agenda 21 School
Award in 2010

More solar power

In chemistry, tenth-graders happily engaged for 6 months in an interdisciplinary, awareness-raising pilot project on climate change. Planning the installation of a second solar power plant, the pupils acquired profound knowledge about climate change and set up their own website. Right now, static checks are being prepared.

Every year, at least three classes are rewarded a school-internal prize for energy-efficient behaviour. Prizes include money as well as vouchers for visiting particular places.

For years now, the active involvement in Hamburg's *fifty-fifty* bonus programme has been part of our daily school routine. At their meetings, so-called eco-rangers discuss issues such as a new PV system, waste separation and energy conservation potentials.

Aid for India

Our school helps Indian girls to go to school. Aiming to build a partnership with Indian schools, two girls and two teachers from Gymnasium Hummelsbüttel visited Orissa, a federal state of India, in October 2008. On their return they set up the "Aid for India" group. Supported by many fellow pupils, parents and teachers, the group brokered 50 partnerships for Indian girls attending Bonaigarh Primary school, Amlikhman Girls Grammar School as well as with individual girls from Gudrapara village

Valerie and Marcel Jenner donated parts of their pocket money for the education of their Indian partner pupils.
Photo by Verena Merten-Eichberger





During eco-school award ceremony, students of Gymnasium Hummelsbüttel presented "Aid for India".
Photo by Ludger Rademacher

and Majhapara village. Our pupils pay the annual school fees of 70 EUR for their "partner pupil". On 01.01.2010, this project culminated in the successful set-up of a registered non-profit organisation called "Indienhilfe GHB e.V." (Aid for India). We hope that our school can attract more supporters (donors and sponsors) of this project as our NGO is entitled to sign charitable donation certificates.

"Choti Si Asha – a little hope" is a Hindi saying and the motto of "Indienhilfe". On many occasions, the group present their project and collect donations to support education in rural areas. The two sixth-graders who had been to India in 2008 reported about the living conditions in India and showed pictures to fellow primary and secondary students: life without tap water and with no electricity after 6 p.m., one hour extra learning time in the dormitories of a boarding school due to a solar power plant and the necessity to get drinking water from a well or to take a bath in the river to wash one's hair.

This report made our students compare our standard of living with school life in India and led to the conclusion: Here, a rural school hall of residence without showers would be absolutely unthinkable!

New learning culture

Our school aims to introduce a novel teaching and learning culture and is currently testing workshop classes for fifth-graders. The students form small groups and each group work on their individual topic. They present their information in an "expert folder". Then the teacher marks and discusses the folders and assigns a new job to all pupils who are now to ask an "expert fellow student" and not to the teacher if they had questions. At the beginning, this posed a problem to the children, but over the course of time they coped with the new situation – and learned to read more closely, ask straight forward questions and explain their knowledge to others.



Our "Aid for India" group with their hosts in the village of Majhapara in 2008
Photo by Hans-Juergen Lenz

Seeking out energy vampires: Immanuel-Kant-Gymnasium

Profile

Am Pavillon 15
21077 Hamburg
Phone: +49 40 761 04 10
E-mail: info@immanuel-kant-gymnasium.de
Website: www.immanuel-kant-gymnasium.de

Grammar school
620 pupils · 51 teachers
Head teacher: Dagmar Siegmann · Eco-school committee:
Katharina Eyme, Christian Hollaender, Markus Hübner,
Peter Huggett, Markus Kahf, Christian Kahf, Maximilian
König, Uwe Leiding, Michael Mahncke-lwe, Lukas Reiche
3rd European Eco-school/International Agenda 21 School
Award in 2010

Our green action team presenting their projects: Redesigning the schoolyard and greening sealed surfaces.
Photo by Christian Holländer



Fighting energy vampires

With the help of a toolkit – sponsored by Vattenfall Umweltstiftung after successful participation in a “Climate Academy course”, our students can now act as energy managers: checking the school’s energy consumption and identifying energy vampires. Every three months, the students present the respective results in a diagram resembling a temperature curve.

On Environment Day, a yearly event entirely organised by the pupils themselves, the best “energy conservation idea” is awarded a prize.

At the heart of a new eighth and ninth-grade natural scientific course on “energy and climate protection” is the creation of (i) an energy record of the entire school build-

ing and (ii) instructions on how to save energy. This course began in the school year 2009/10 (see info box)

Fighting waste

To raise our pupils’ awareness of waste separation and minimisation as well as the responsible use of our natural resources, we visit various waste management plants in Hamburg. Each class or course collect their own waste and dump

it regularly in the respective bins in the school-yard. The tidiest class is rewarded with a day trip at the end of each year – the jurors are a “waste team” of pupils and teachers.

Sunny outlook

For several years, our green action team has persistently campaigned for the setup of a photovoltaic system and succeeded: Recently we have

obtained the permission to install a PV system on the gymnasium’s roof. Generating up to 17 kW, the solar plant will be able to supply on-site electricity and back feed the national grid with excess electricity produced on sunny days. Additionally, such a PV system is perfectly suited for illustrative and experimenting purposes complementing natural scientific classes and courses.



Natural science courses at the Immanuel-Kant-Gymnasium

Energy and climate protection Passage from the course description

If you are

- interested in extending your scope on natural scientific and applicatory issues;
- excited about planning, conducting and documenting experiments, then natural science courses are the perfect choice for you – they offer you fascinating opportunities to conduct project work.

There are a number of options to present your results in/via:

- project folders;
- pin boards, posters, collages;
- online articles (for our school website);
- video clips;
- presentations on various occasions (exhibitions, open days etc);
- teaching material (models, experiments, examples);
- participation in competitions;

Your presentation will be graded.

Contents:

Since you are studying at an Eco-school/International Agenda 21 school, this course will look at various aspects around “energy”.

You may work on one of the following topics:

- The climate: description and explanation;
- The sun – giving life and energy;
- Energy consumption at our school: Room for improvement;
- Contributions to energy conservation;
- Green energy: wind power, solar thermal and photovoltaic power, fuel cell technology;
- Power and energy converters such as a bicycle or gears;
- Natural conduction;
- Natural scientific view on sportspeople’s energy output;
- Data analysis of our school’s energy record.



Visiting waste management plants such as this municipal sewage treatment plant makes our students understand the importance of (a) waste separation and minimisation and (b) the responsible use of our natural resources.

Photo by Michael Mancke-Iwe

Clean and cool: Gymnasium Kaiser-Friedrich-Ufer

Profile

Kaiser-Friedrich-Ufer 6
20259 Hamburg
Phone: +49 40 428 012 333
E-mail: gymnasium @kaifu.de
Website: www.hh.schule.de/kaifu

Grammar school
1050 pupils
80 teachers
Head teacher: Jörg Frobieter
Eco-school committee: Christina Sandberger, Ute Strubel
and the "Eco-assembly" (2 delegates of each class)
11th European Eco-school/International Agenda 21 School
Award in 2010

Jan Sasinka (grade 8) presenting his no-carbon-emission boat. He is one of the pupils who took part in Hamburg's „Zero Emission“ Contest.
Photo by Jens Rieboldt

Clean is cool

Our school-internal competition "Clean and cool" rewards classes that perform well in terms of short-term ventilation during breaks, proper waste separation, efficient use of light as well as in making their classroom a cheerful and tidy place where pupils and teachers feel at home.

The awarded prizes are paid from Hamburg's *fifty-fifty* bonus programme.

Competitions like this and other eco-friendly ideas are organised by our so-called "Eco-assembly", where two environmental delegates of each class meet. Later they inform their fellow students during class assembly about future environmental activities.



Three weeks for eco-projects

Over a period of three weeks, ninth-graders worked on various eco-projects focussing on "cars and the environment" etc. One group investigated fuel cells and hybrid cars, others acquired special knowledge about the production, functioning and recycling of solar-powered cars.

Sixth-graders explored food and physical activities by (a) participat-



Every year, roughly one hundred 5th, 6th and 7th-graders are participating in the annual "One-tenth Marathon", a part of the Hanseatic Marathon. Everyone tries very hard to keep running over a distance of 4,219 km. Combined with a food project, this run helps the pupils understand that good health is a matter of a balanced diet and regular physical exercise.

Photo by Joachim Haase

ing in a "One-tenth Marathon" and (b) preparing meals.

The seventh-graders were to deal with acoustics. Some built musical instruments; others experimented with matter and energy. A girl and two boys focused on traffic noise and are now experts on sound emission directives, noise protection walls, flight noise appointees and the Hamburg Noise Map. On special presentation days, the pupils presented their individual projects to the public.

Water is life

Our pupils support "Viva con Agua", a non-profit organisation campaigning for better access to drinking water in poor countries. About 800 girls and boys covered roughly 5,500 km in a "Charity Fun Run for Africa" in 2007 and in 2009, raising altogether 55,000 EUR for the construction of eight drilled wells in Ethiopia.



Our students support the campaign for clean drinking water worldwide run by "Viva con Agua".

Photo by Gymnasium Kaiser-Friedrich-Ufer

Pan-European research and intercultural education: Gymnasium Kirchdorf-Wilhelmsburg

Profile

Krieterstraße 5
21109 Hamburg
Phone: +49 40 428 877 01
E-mail: cornelia.heise@bsb.hamburg.de
Website: www.kiwi.hamburg.de

Grammar school
762 pupils
55 teachers
Head teacher: Gerlind Buscher
Eco-school committee: Gerlind Buscher, Ingo Danneberg, Heike Eggert, Andreas Gloy, Karsten Kohl, Robert Schreiber
6th European Eco-school/International Agenda 21 School Award in 2010

Left: Testing the river Elbe's water quality is part of the EU research project DiPol.
Photo by Karsten Kohl

Right: A "video class" documents the water quality tests for DiPol, an EU-project investigating the impact of climate change on coastal and inland waters.
Photo by Karsten Kohl



Climate change researchers

What is the impact of climate change with changed amounts of precipitation and pollutants on the North and Baltic Sea as well as on European urban waters? Pupils attending a biology and geography course took several water and sediment samples to analyse them and make them available to the pan-European research project Diffuse Pollution

– Impact of Climate Change on the Quality of Urban and Coastal Waters (DiPol).

This project is a cooperation between our school, i.e. the Gymnasium Kirchdorf-Wilhelmsburg (KiWi) and the Technical University of Hamburg-Harburg (TUHH) as well as 17 other Northern European institutions. Our special DiPol student crew

filmed the water testing, visited the Elvebakken Skole in Oslo/Sweden and also attended a course together with their Swedish partners in September 2009. In spring 2010, another sixth-form course continued the field, lab and film work. DiPol was launched on 01.01 2009 for three years.

Discovering biodiversity

A diked off island on the river Elbe, Hamburg-Wilhelmsburg is crossed by numerous channels. On Biodiversity Day in June, initiated by GEO Magazine, eighth-graders examined local ditches. They discovered over 100 different species: various crustaceans (e.g. branchiopoda, copepoda), mosquito larva, rotifers, leech, egeria, woodlice and many more aquatic organisms and higher plants in the areas surrounding the ditches. This suggests a water quality ranging between grade 2 and 3. The students submitted their drawings to GEO Magazine who also organised a competition.

Energy conservation plan

For many years now, our school has been involved in Hamburg's *fifty-fifty* energy conservation programme and the "City Clean-up" campaign. In each classroom a so-called "environment plan" reminds pupils about the rules of waste separation and energy conservation. Our annual eco-competition awards prizes for the most cheerful and cleanest classroom of the most energy-conscious class.

Gateway to the world

Together with other schools, day nurseries, parent associations and other local organisations we have launched the project "Gateway to the world". Amongst others, two action



teams are involved in the setup of a local environmental information centre and are planning to extend the scope of natural science classes.

One world for all

In Hamburg-Wilhelmsburg people from over 100 nations live side by side. Our school's guiding principle of amicable coexistence and intercultural education is an integral part of our syllabi. We train pupil arbitrators and assign them to younger classes. Spanning over an entire week, fifth-graders worked on a project tackling harassment via role play, exercises, films, behavioural patterns and poster creations.

Theology classes also include intercultural education: "One world for all of us" is the mission here aiming to teach the pupils consideration and global responsibility.

Environmental action plan for KiWi classrooms
Illustration by Gymnasium Kirchdorf-Wilhelmsburg



Reception at Hamburg's Town Hall in July 2007: 9th-graders won third prize of "Cooles für unser Klima – Schülerinnen und Schüler für den Klimaschutz" (Cool climate action in schools).
Photo by Karsten Kohl

Fair trade and first aid: Gymnasium Lerchenfeld

Profile

Lerchenfeld 10
22081 Hamburg
Phone: +49 40 428 884 70
E-mail: sekretariat@gyle.de
Website: www.gyle.de

Grammar school
630 pupils · 51 teachers
Head teacher: Hans-Walter Hoge
Eco-school committee: Martje Benöhr, Hans-Walter Fehrler,
Torben Hoyer, Kurt Maier, Gisela Reichardt,
Marie Lena Schawe, Wolfgang Walter
2nd European Eco-school/International Agenda 21 School
Award in 2010



Supporting the United Nations Millennium Development Goals (MDGs), our school canteen sells fair-traded products. Our “Fair Trade at School” team meets twice a week, collect information on prices and products, order fair-traded sweets with GEPA – The fair trade company, and advertise their offers.
Illustration by TransFair

Fair chocolate bars

We actively support the United Nations Millennium Development Goals (MDGs), especially the fight against hunger and poverty, and the strife for social justice and sustainability.

Ninth and tenth-graders promote the purchase of fair-traded goods at our school canteen with slogans like “Kaufen – Genießen – Unterstützen“ (Buy – Enjoy – Support) on self-made posters. Geography lessons of grade nine take a closer look at global trading centring, for example, on responsible consumer behaviour to strengthen fair and eco-friendly trading relationships.

Our fair trade student team meet twice a week. Their activities include gathering information about prices and products, purchasing fair-traded sweets with GEPA – The fair trade

company, and promoting the goods on sale at the cafeteria.

In this way, the young fair traders get insights into the business routines of the school canteen. Additionally, the group conducted a survey on consumer acceptance of fair trade goods amongst their fellow pupils.

Three classes, two 6th grade and one 7th grade, sponsor children in Paraguay and Burkina Faso. Every Monday, ninth-graders sell homemade cake and donate the money to Welthungerhilfe. Half of the income generated via the Christmas Bazaar is sent to a Bolivian parish priest to provide lunch and homework help to local school children.

Rain Forest Toilets

For three years now, our “eco-team” have busied themselves to



September 2009: A delegation of our school headed by project leader Gisela Reichardt (2nd from left) at the Eco-school/International Agenda 21 school ceremony
Photo by LI, Hamburg

raise their fellow students' awareness of the school's environmental and climate action. Did you know that the school has taken part in Hamburg's *fifty-fifty* energy saving programme? Did anyone realise that the toilets are flushed with rainwater collected in cisterns? The team believes that boring signs would not do here but colourful "rain forest loos" could do the trick.

Instant help

Everyone feels safe at our school. Each week, two pupils are on duty

and give first aid in the case of an emergency. They also check the First Aid Kit and replace missing or expired supplies or equipment.

There are seven "first aid workers" at our school who have been trained by Johanniter-Jugend. They are also on duty during festivals and sports events – and swing into action when you need them: At a school festival, for instance, they administered competent medical help to a student suffering an acute asthma attack.



There are seven young "emergency helpers" at our school who have been trained by Johanniter-Jugend and each week, two of them are on duty to give first aid if needed. Additionally, they make sure that the First Aid Kit is always properly equipped. Furthermore, they render their services at festivals and sports events.

Photo by Gymnasium Lerchenfeld

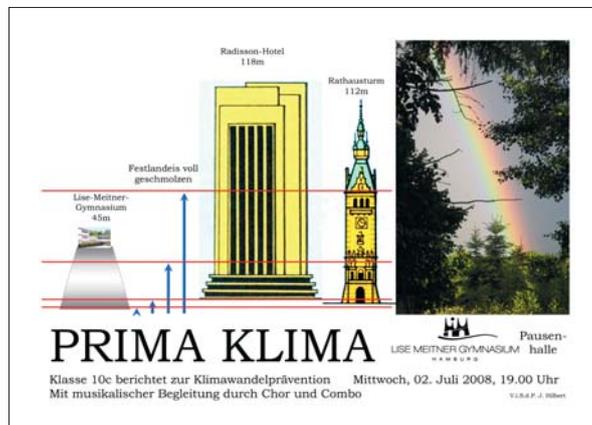
Cooling down for climate protection: Lise-Meitner-Gymnasium

Profile

Knabeweg 3
22549 Hamburg
Phone: +49 40 428 885 20
E-mail: lise-meitner-gymnasium@bsb.hamburg.de
Website: www.hh.schule.de/lmg

Grammar school
600 pupils · 46 teachers
Head teacher: Doris Oldenburg
Eco-school committee: Volker Blum, Thomas Brüggmann,
Jochen Hilbert, Marie Hildebrandt, Janina Horn, Julia Loch,
Heidi Kreinsen
7th European Eco-school/International Agenda 21 School
Award in 2010

Grade 10 promoted an event on climate change with a rather impressive poster.
Photo collage by Jochen Hilbert



Via 22 digital temperature sensors precisely adjusted down to a tenth of a degree, ninth-graders monitored the temperatures in each corridor, toilet and empty classroom. Additionally, they kept a record on whether and how many windows and doors had been opened or closed. The results were rather unacceptable: In

Classroom climate monitoring

In November 2009 our school was one of 23 Hamburg schools who joined Hamburg's "Climate action in schools" programme.

Everybody knows that keeping doors and windows open wastes energy when it is cold outside. Our pupils, however, look at the problem from a scientific angle.

In many rooms, the temperature exceeded the recommended 19° Celsius by 5 degrees, in other rooms the windows were open whilst the heating was on, cooling the rooms down to 15°. The students displayed their findings in a "fifty-fifty" showcase – a first step towards raising awareness in each class about the benefits of short-term ventilation instead of permanent airing.



[Waste Watchers: Just change the world!] This original logo was created by our eco-team for the recently introduced environmental service in each classroom.
Photo collage by Sarah Ahrens

Schools are advised to keep the temperature in classrooms at 19° Celsius – and classroom monitoring tells us why: The temperature rises to 20° within 3 minutes after 30 children have rushed into the room, and may well be around 22° by the end of the lesson.

Aiming for an energy surplus

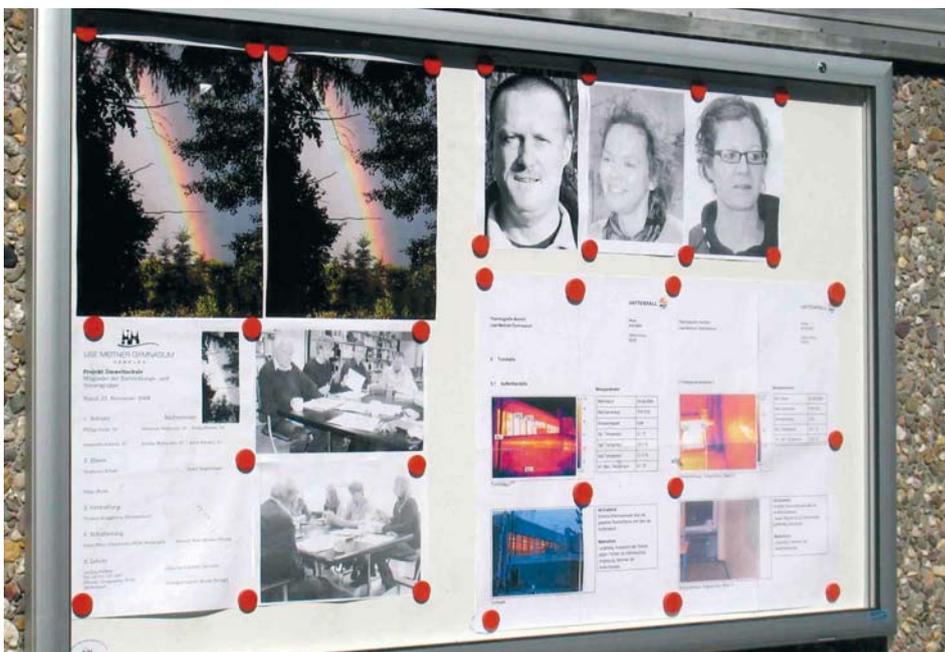
Due to the temperature monitoring results, Thomas Brüggmann, caretaker and member of our school's eco-committee, turned the thermostats down. As a rule of thumb, one degree down saves 3,300 EUR a year, so 3 degrees down save almost 10 thousand EUR. Consequently, our bonus payments from Hamburg's energy conservation programme should go up further. Recently, we have used 3,800 EUR of such money

to insulate the valves in the heating room and we expect this measure to amortise in roughly one year's time.

Further bonus payments will be invested in a new photovoltaic system to extend our small solar power plant and solar thermal plant. Our environmental action team plans the installation of a 6 kWp PV system including a large digital display, a weather station and a data recorder. We hope to get financial support from the City of Hamburg within their "Solar Energy for Schools" programme. This would cover 80 per cent of our expenses. In the long run, we want to improve the insulation of our buildings and become a so-called "Energy-plus school" where on-site energy production exceeds energy consumption.



We recently insulated the valves connected to these distant heating pipes – this will probably reduce our annual heating bill by 3,000 EUR.
Photo by Jochen Hilbert



This showcase displays information about energy conservation, green energies and other environmental issues.
Photo by Jochen Hilbert

Wild bees and desert plants: Marion-Dönhoff-Gymnasium

Profile

Willhöden 74
22587 Hamburg
Phone: +49 40 428 866 01 00
E-mail: info@marion-doenhoff-gymnasium.de
Website: www.marion-doenhoff-gymnasium.de

Grammar school
670 pupils
55 teachers
Head teacher: Karin Flemming
Eco-school committee: Andreas Boneß, Walter Krohn,
Jürgen Tetzlaff, Thure Timmermann
13th European Eco-school/International Agenda 21 School
Award in 2010

On World Desert Day, June 17, 2009 pupils attending elementary biology courses at our school dealt with useful plants of arid regions such as the Asian oil plant *Jatropha*. They created posters on these exotic useful and officinal plants and exhibited them at Hamburg's Botanic Garden.
Photo by Walter Krohn



monitored the temperature inside the jar when placed in the sun. Another class measured the traffic passing the school.

Pupils studying elementary biology put up a wall-newspaper portraying their insights into the impact of climate change as well as alternative sources of energy.

Mini-greenhouses and leaf-miners

Watching a "Multi-vision Climate Show" on Climate Action Day in April 2009 stimulated numerous student groups to conduct serious project work such as the following:

Sixth-graders constructed miniature greenhouses with the help of two-litre cucumber jars, filled them with soil and planted small plants. Then they added thermometers and

Another elementary biology course observed the leafing process of trees and created a spring leaf herbarium. Eighth-graders also watched foliation and observed the horse chestnut leaf-miners. Another class of eighth-graders laid out a new flowerbed and planted *Jatropha curcas* – a plant predominantly grown in South East Asia for the production of bio-diesel.

Vocational schools

Cycling tours and climate quiz: Fachschule für Sozialpädagogik

Profile

Max-Brauer-Allee 134
22765 Hamburg
Phone: +49 40 428 11-2978
E-mail: FSP11@bsb.hamburg.de
Website: www.fspaltona.de

Vocational school (School for Social Pedagogy)
900 pupils
80 teachers
Head teacher: Barbara Wolter
Eco-school committee: Gisela Kurzewitz, Ursula Mühler,
Hanno Oelwein, Stefan Osterode, Frank Tofern
6th European Eco-school/International Agenda 21 School
Award in 2010

Soon, entire classes may borrow bicycles to go on a cycling tour. 16 second-hand but roadworthy bikes are already available. Our students collected or bought them at auctions and whipped them into shape. Additionally, they worked out cycling routes around Hamburg to promote eco-friendly mobility.
Photo by Ursula Müller



Climate-friendly outings

Not every student can afford a bike. At our school, classes can soon plan cycling tours – 16 roadworthy, second-hand bicycles are already available. Pupils collected or bought them at auctions and whipped them into shape. Furthermore, they elaborated cycling tours around Hamburg to boost eco-friendly mobility.

Also, from June to August each year, our teachers “get on their bikes” in support of the nationwide “Cycling to work” campaign.

Visualising energy

How much solar energy is produced on site? Starting with 12 solar panels, our power plant includes now 20 photovoltaic collectors and was connected to a large digital display placed in the entrance hall in May 2009 – to regularly remind staff and students alike of the importance of renewable energy.

The display shows the current CO₂ savings and the payments the school has received according to German feed-in tariffs since the plant has

The display shows the current CO₂ savings and the payments the school has received according to German feed-in tariffs since the plant has

been in operation. The display was funded with the help of our *fifty-fifty* bonus payments and co-funded by the Hamburg Climate Action fund. Together with their music teacher, two classes presented “Schattenbaby” (Shadow Babe) and “Sonnenkollektoren” (Solar Collectors) at the official start-up ceremony in May 2009.

Tanzanian pen pals

Our students donated 500 EUR of *fifty-fifty* payments to Ipepo Secondary School in Tanzania, a school without access to electricity. This money is dedicated to the installation of a solar power plant. During English lessons, some students wrote letters to our partner students – hoping to find pen pals for a lively exchange.

Climate action – (no) more than a game?

Approaching climate protection in a playful way, e.g. via board games or a green house model, was the idea behind the following project: Pupils devised a rally through our building with folding cards showing questions on sustainable issues the answers of which would be revealed when opening up the cards. “Go downstairs to the basement and find the 4 differently coloured bins. What do we collect in them?” reads one card placed in the staircase.

Another card put in a different place asks the reader: “When you look out of the window you’ll see on the roof of the annexe big, bluish panels. What’s their purpose?”

Whole grain and hot spices

Most of the meals served at our cafeteria are made from fresh and organic fruits and vegetables. Also,



we only serve fair-traded coffee here. Every year, we collaborate with Öko-markt Hamburg e.V. and organise several action days: Free trial snacks are on offer with specific information provided by a nutritionist. The 2009 topics were winter veggies, wholemeal grain and spices.

Migration and education

“Learning together” is a three week Comenius project: Students from different classes including immigrants, social services and nursery assistants teamed up to work on migration and education. Additionally, an exchange with Belgium and Turkey was prepared.

Our school dedicated 500 EUR *fifty-fifty* bonus payments to the installation of a photovoltaic system at a Tanzanian School without electric power. Trying to establish a lively exchange, some students sent letters to the pupils of Ipepo Secondary School written during English class. Photo by Siegfried Kurzewitz



Our students have developed methods to teach climate protection in a playful manner. Photo by Ursula Mühler

Energy mix and global solidarity: Gewerbeschule 8 Recycling und Umwelttechnik

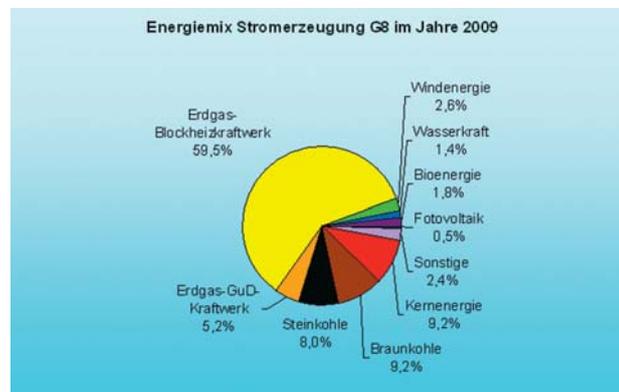
Profile

Sorbenstraße 15
20537 Hamburg
Phone: +49 40 428 82 40
E-mail: info@gewerbeschule-8.de
Website: www.gewerbeschule-8.de

Trade school
500 pupils
35 teachers
Head teacher: Andreas Beyerle
Eco-school committee: Egbert Kutz, Peter Löbel,
Dolores Rescheleit, Wolfram Senneberg
11th European Eco-school/International Agenda 21 School
Award in 2010

Left. In 2008, we generated 48 per cent of the electricity used via our combined heat and power unit. In 2009, this plant supplied already 60 per cent of our electricity demand. We also use its waste energy for heating. Researching information about the various sources of electric energy, students created an energy mix diagram for our school in 2009. Illustration by Gewerbeschule 8

A student company called "Woodwork" produces – under the umbrella of our non-profit organisation "Lernen pro Umwelt" (Ecological production and Learning) – amongst other things multiple nesting boxes for sparrows. Some of them are located on our school grounds; others are for sale to support our NGO. Photo by Peter Loebel



Energy mix for our school

Our combined heat and power plant is only twice as big as the units installed in detached houses. Nevertheless, it covered 48 per cent of our electricity demand in 2008 and already 60 per cent in 2009. Simultaneously, we can use its waste energy for heating. Students attending electronics and information technology class calculate the amount of CO₂ saved compared to traditional heating systems.

They analyse and evaluate our energy mix and establish the various electricity sources (fossil and renewable) as well as their exact share in our electricity demand. Finally, they publish their results on www.solarlernen.de.

Shelter for bats

Hands-on jobs such as creating a shelter for bats foster ecological knowledge. At our school, students draw and construct shelters where

bats can rest and hibernate. Incidentally, they learn a few things about the way these flying mammals live. Six shelters have been placed at our school building now, six others have been sold.

Promoting micro-lending

Our students feel that anybody with an income should donate some of it to a charitable cause. Thus, they invest the pay they get from the student companies as motorcar and electrical mechanics or wood workers in Oikocredit (www.oikocredit.org). This is an alternative provider of microcredit to small-to-medium enterprises in developing countries. Investors receive a return of up to 2 per cent of their investments. The students participated with this project in “Sei ein Futurist” (Futurists Wanted).

A school for Kannaré

Their project “Solidaritaet macht Schule – solidarité interscolaire” (Solidarity between schools) won Gewerbeschule 8 the “Deutsche Kinderpreis” of World Vision Deutschland and the Protestant Church. Ten students of a vocational preparation class who had also attended brick-layer courses, participated in the construction of a school in Kannaré, a small Nigerian village.

Together with the villagers they finished the building from laying the foundation to painting the walls within six weeks – in the blazing sun without access to shower rooms or tap water. Whether it is used to mix mortar or for refreshments, each litre of water must be fetched from a well 500 m away – by women in colourful garments carrying the canisters on their heads.



On receiving the prize the students were invited to TV and talk shows. Now they sell woodwork made from recycled wood to keep up their support for our partner school.

Plant for the planet

Driving a car causes carbon emissions from fossil fuels which must be offset somehow to achieve climate neutrality – for instance, by joining the “Plant for the planet” campaign. Each tree stores CO₂ in its leaves, trunk and roots. Instructed by a forester, our students successfully planted altogether 110 trees and shrubs in the Volksdorfer Forest including field maple, dogwood, hawthorn, spindle tree, sloes and guelder rose. In this way the students contributed to the protection of our climate, created habitats for songbirds and small mammals and thus protected local biodiversity, too.

Ten students helped the villagers of Kannaré/Niger to build a school within six weeks. Part of their travelling expenses came from sales of their woodwork made from recycled wood. This project won our school a German prize (Deutscher Kinderpreis) awarded by World Vision Deutschland and the Protestant Church.
Photo by Dolores Rescheleit



To offset their cars' carbon emissions, our pupils planted over 100 trees and shrubs in the Volksdorfer Forest: field maple, dogwood, hawthorn, spindle tree, sloe and guelder rose.
Photo by Wolfram Seneberg

On-site energy production: Gewerbeschule Metalltechnik mit Technischem Gymnasium G 17

Profile

Dratelnstraße 24
21109 Hamburg
Phone: +49 40 428 79 01
E-mail: G17@bsb.hamburg.de
Website: www.g17-hamburg.de

Trade School and Technical Grammar School
1060 pupils
74 teachers
Head teacher: Karl-Heinz Lorenz
Eco-school committee: Norbert Brinkmann, Jens Janssen,
Karl-Heinz Lorenz, Roland Wiemer
4th European Eco-school/International Agenda 21 School
Award in 2009

Our demonstration facility on the roof terrace consists of a photovoltaic system, a solar thermal power plant and a weather station.
Photo by Norbert Brinkmann



Teaching material on the rooftop

We introduced wind and solar power plants at our schools as early as 1996. Together with other schools of the vocational school centre of Hamburg-Wilhelmsburg and sponsored by Deutsche Bundesstiftung Umwelt (DBU) we installed three regenerative power systems (photovoltaics, solar heat and wind energy).

A detailed description of these plants and related projects can be found on www.windsonne.de. In 2008, we extended our PV system for the second time to generate 20 kWh. Our school association and students had been involved in the planning and installation of the new solar panels. We used different types of solar cells

for teaching purposes. Thus, several panels can in part adjust to solar altitude; others are in a fixed position. Each year, we export 18,000 kWh of green energy to the national grid.

This equals the annual amount of energy used by five families of four. The fees we are paid from the German feed-in scheme are invested in

the gradual extension of our plants. The water used in the shower rooms is heated by two solar thermal systems with collectors covering 37 m².

With our solar thermal demonstration plant the students can compare different types of solar collectors. Recently, we replaced the old wind power plant with a new one having a power rating of 900 watts and a connection to the grid. Our students designed, dimensioned and built its tower. A data logger records the energy production data. These data and the data output of our weather station help our students keep a record of all the energy data and to compare and analyse the performance of their power plants in terms of days, months and years. Various courses and learning groups use these plants for illustrative and experimental purposes. Additionally, our school runs a combined heat and power plant with a capacity of 100 kW of electric power and 190 kW of thermal power.

Climate protection for A-level students

Within Hamburg's frame work curriculum for technology classes at technical grammar schools, our school is the only institution that offers building technology classes incorporating climate protection as well as mechanical engineering classes integrating regenerative energies. Building technology students design energetically sound buildings, analyse plant technology such as solar heat and pellet heating, establish the weak points of existing buildings and develop respective refurbishment schemes. Mechanical engineering students learn the basics of mechanical engineering in general and in connection with wind energy technology.



Learning with energy

Although the energy problem features regularly in the media, students tend to have rather little knowledge about the responsible use of energy. Thus, we want our students to attend at least one wholeday course on the "Introduction to regenerative energy" where they work on the possibilities and limits of utilising regenerative energies. Furthermore, they should get an overview on green energy technologies – via an on-site power plants tour and certain experiments conducted at various learning stations. The idea here is to raise students' interest in this topic so they wish to study it in more detail.

Having designed the new wind power plant, the students fitted the tilttable tower with three rotor blades.

Photo by Norbert Brinkmann



Each year we sell 18,000 kWh of solar energy to the national grid – which equals the annual energy demand of five families of four.

Photo by Wolfgang Sander

Climate protection and climate show: Handelsschule mit Wirtschaftsgymnasium Harburg H 10

Portrait

Göhlbachtal 38
21073 Hamburg
Phone: +49 40 428 886 30
E-mail: h10@bsb.hamburg.de
Website: www.handelsschule-harburg.de

Commercial school
1000 pupils
70 teachers
Head teachers: Wolfgang Bruhn
Eco-school committee: Elke Apel, Reimund Baumgart,
Florian Keck, Irmtraud Schulz, Michael Schulz
5th European Eco-school/International Agenda 21 School
Award in 2010

The students performing the
"Climate Show" on Open Day 2010
Photo by Niklas Schulz



Drama and songs for the climate

The "Climate Show" conceived, written and performed by students of our school delights people over and over again. "You look awful. Is it the fever?" asks one planet another one. "It's mankind" replies the heated planet. Highlight of the show is the "Hamburger Klimasong" (Hamburg Climate Song) with the

catchy chorus line: "E-E-Energy, bye-bye stand-by" whereby the "Es" stand for economise (Einsparen), efficient (Effizient) and renewable energy (Erneuerbare Energie). The message is clear: We all live on the same planet, have got the same goal, and everybody can do their bit! "Such a climate show is worthwhile but climate action

is still better" concludes Michael Schulz, leader of the school's solar project.

Solar power and AIDA

Working towards the installation of a photovoltaic system on the school's rooftop taught our students to apply modern planning and marketing concepts. To optimise their

working process, the pupils proceeded in 4 steps: identifying the goal – devising the plan – organising the action – reviewing results. To find sponsors for the PV plant, the students applied the marketing concept AIDA: Attention – Interest – Desire – Action. The group aroused attention for instance, at a local Agenda 21 event in Hamburg-Harburg when they presented their solar project at the local town hall. The organisers of a local “Solar Home Exhibition” became interested in the project and permitted the sale of home-made wholemeal cake in a show house – so, the organisers desired to support the project and engage in climate action. Then, the students swung into action and run their own “Solar Café” in a show house and on a local Open Day of Hamburg’s Trade Chamber, an important cooperation partner of our school.

The project group’s “solar news” loudspeaker announcements kept the school community updated on the progress of the project, and more and more students joined the project team. In the end, 140 students were engaged in the planning and fundraising activities. The group was invited to various prize award ceremonies (e.g. “Hamburg engagiert sich” (Voluntary Workers in Hamburg) at Hamburg’s Town Hall.

The project group was also invited by (i) the Senate of Hamburg to perform their climate song in front of one thousand guests, (ii), the World Future Council (WFC) as well as several TV stations.

The show must go on

There is still a lot to do for the future traders, businesspeople and commercial A-level students. They



want to save still more electricity, water and heat. Our school has already won the “Klimabaeren” (a polar bear model) because our electricity demand was 55 per cent below the average consumption of Hamburg’s commercial schools.

Thanks to the ambitious energy conservation projects at our school, we regularly receive bonus payments from Hamburg’s *fifty-fifty* scheme. Part of such rewards helped fund the PV system. Now we are saving up for two more projects: a solar power plant for our partner school in Peru and a so-called “energy-plus classroom” properly insulated, with triple glazed and heat accumulating windows as well as an intelligent ventilation and lighting system. As a result, this classroom and the solar power plant should produce more on-site energy than is actually needed.

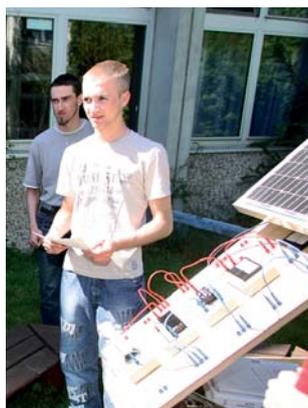
In the spring of 2009, students of a basic vocational preparation class planted 10 trees on our premises to bind CO₂ in the long run.

Photo by Irmtraud Schulz



07.12.2007: Reception at the Hamburg Town Hall on Voluntary Workers Day featuring projects on environmental protection and sustainable development.

Photo by Michael Schulz



Demonstration of a solar power system.
Photo by ZSU

Solar power capacity: kWp

The usual unit of maximum solar power output is called kilowatt peak (kWp): W stands for “watt”, the unit for electric power, and p stands for “peak”. Accordingly, kWp denotes the amount of electric energy a module produces under defined laboratory illumination conditions: light intensity of 1,000 W/m² and temperature of the cells at 25° C. These

values are rather rarely achieved due to the varying intensity of sunshine, shading and temperature.

A 1 kWp solar power plant needs roughly an area of 8 to 10 square metres. In Germany, photovoltaic systems generate between 700 and 900 kilowatt hours (kWh) per year.



The Zentrum für Schulbiologie und Umwelterziehung (ZSU) offers advice and study material.
Photo by ZSU

Recognition and participation

Already at the primary level, pupils learn, experience and test quite a number of issues around environmental and climate protection in school – and benefit greatly from this at the secondary school level. They learn to observe their environment both consciously and critically, which at the same time inspires them to act responsibly: They may become “environmental wardens”, “energy inspectors” or “energy cops”. Furthermore, passing on their knowledge to others and instructing fellow pupils enhance the acquisition of participation skills. This calls for recognition, and small prizes make the pupils proud of themselves and mark their important role within the school community. At the Alexander-von-Humboldt-Gymnasium pupils engaged in the school’s internal sustainability audit and working towards the eco-friendly redevelopment of their school receive an honourable mention in their school certificates.

Another perfect example is the building of learning partnerships between sixth form and younger stu-

dents. Together, they may write and produce a film on the climate.

The Hamburger proceedings “Klimaschuetzerzertifikate für Lernende” (Hamburg Guide on Certificates for Climate Protecting Learners, Hamburg 2008, Behoerde für Bildung und Sport) provides German material on “energy” to be used in primary school classes for experiments and pupils’ own investigations. On completion of this unit the learners receive a certificate called “Smart Climate Activist”. (download on http://www.transfer-21-hh.de/downloads/T21_HH_Klimaschuetzer_Zertifikate.pdf)

Hamburg’s *fifty-fifty* team advises schools to train “environmental inspectors” at the beginning of grade 5 and to organise a competition for the economic use of electricity and heat (see www.fiftyfifty-hamburg.de, Wettbewerbe, Energiesparklasse). Over a specified period of time (usually a few weeks), each class is inspected with regard to their room ventilation as well as their use of light and electricity. The class who perform

most economically is awarded a prize.

Lower Saxony is currently working on an environmental passport for primary school kids. "This document should both appreciate and reflect the pupils' environmental learning progress from year 1 to year 4. It may also serve as a demonstration of the special qualifications these kids have already acquired before moving on to the next educational level", explained Joerg Utermoehlen, environmental advisor of Landesschulbehörde Lüneburg. (German details on <http://www.landesschulbehoerde-niedersachsen.de/pressemitteilungen/kinder-der-zukunft-2013-umweltpass-fur-grundschulinnen-und-schuler>, 12.06.2009)

Bremen's so-called 3/4plus project, too, includes the idea to train first-graders to become energy inspectors. A German report on the successful integration of this aspect at Surheider Schule can be found on www.34plus.de. Energy inspectors can download and print out a briefing on all the important tasks.

A sound environmental training prepares primary school kids well for the next educational level.

Their knowledge and participation skills directly connect to the respective secondary school syllabi so they can upgrade their knowledge and participate easily in school internal activities.

Some secondary schools organise competitions such as "Clean & cool – we care" or "We are taking climate action" and monitor each class over a certain period of time in terms of waste separation and the use of light and energy.



Using a solar cooker.
Photo by ZSU

At other schools, teams or inspectors or trained student energy managers supervise the efficient use of resources and award prizes.

Some schools even draw up a contract with each class in which the students pledge to use water and energy efficiently and separate and minimise waste. Or they ask their pupils to sign the school's guiding principles on sustainability.

Such school internal campaigns and competitions award particularly active classes and teams. Prizes are often paid from *fifty-fifty* bonus payments since all these activities have helped cut energy demands and thus increased the rewards.

Online materials and information

Portals featuring projects and objectives

www.umweltschulen.de

This portal offers German and English information about environmental protection, background information as well as stimulating teaching and study material covering issues like waste, energy, soil, nature or environment and healthy living.

www.umwelterziehung.de

The Deutsche Gesellschaft für Umwelterziehung (DGU) supports environmental education perceived as the sound pedagogical and scientific concern with the environment. It is the German counterpart to the Foundation for Environmental Education (FEE) in Europe (www.fee-international.org/en).

www.li.hamburg.de/klimaschutz

On this website German schools can find comprehensive information about Hamburg's pilot project "Climate Action in Schools" as well as advice on adopting individual climate action plans. English flyers can be downloaded on <http://www.li-hamburg.de/projekte/lik/lik.downloads/index.html>.

www.transfer-21.de

After 4 years running, the nationwide programme "Transfer-21" was concluded in July 2008. Yet, several programs are still in operation. This website holds many ideas for the integration of education for sustainable development (ESD) in schools. Tried and tested materials as well as publications, events planner and a database certainly provide for new projects and encourage networking.

www.transfer-21-hh.de

The materials section of Hamburg's own transfer-21 portal lists information about publications, workshop materials, the process of internal sustainability audits and many other topics of environmental education. Many Hamburg publications can also be downloaded here.

www.bne-portal.de

This portal holds ESD news, educational actors, teaching and study material, competitions and events supporting the Decade of Education for Sustainable Development in German and English. Users are invited to keep up-to-date and participate in campaigns and competitions.

www.uport-hh.de

Uport is Hamburg's Umweltportal (environmental portal) listing educational opportunities, organisations, learning spaces and schools as well as news on environmental protection and sustainability.

Education servers and special web portals

<http://www.klimawiki.org>

Together, the German and the Hamburg Eduserver are building an online encyclopaedia about the anthropogenic climate change and its impact on the planet's ecological and social system(s). This wiki aims to provide for educational settings.

<http://bildungsserver.hamburg.de>

This Hamburg-based Eduserver links environmental educators and learners to numerous interesting websites. They can find teaching ideas, a list of school competitions,

further training opportunities etc. There is also a section for primary school teachers.

<http://bildungsserver.hamburg.de>

In this section of Hamburg's Eduserver the reader can locate numerous articles on climate change, its ecological and social impact, and climate protection – including also latest scientific findings jointly provided by this eduserver and the Max-Planck-Institute for Meteorology.

<http://bildungsserver.hamburg.de>

This link collection centres on “nature” with many ideas for school projects and suggestions for the use of teaching materials in primary school classes.

www.openschool21.de

Based in Hamburg-Altona and recognised as an Official German project of the Decade for Education for Sustainable Development, Open School21 offers a varied programme for school classes on global learning aiming to arouse curiosity and make students appreciate unfamiliar or foreign contexts of living.

Web portals for children

www.bmu-kids.de

Run by the Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU), this portal offers information, games, instructions for handicraft, competitions and links focussing on environmental protection and the work of the ministry – all put in simple terms for younger learners.

www.greenpeace4kids.de

www.greenpeace-jugend.de

These Greenpeace websites are geared towards children and young people and provide news and articles on (Greenpeace) topics as well as numerous downloads.

<http://www.tivi.de/fernsehen/logo/index/19467/index.html>

Visitors of this section of ZDF-tivi-Logo! (German TV Channel 2) find texts and pictures as well as video clips dealing with the climate and climate change. Users are also introduced to green energy and invited to try their hands on 12 multiple choice questions on environmental issues.

<http://www.max-wissen.de/Fachwissen/bereich/Erdkunde.html>

Young learners interested in geography should go to this website run by Max-Planck-Gesellschaft zur Förderung der Wissenschaften: Here, the user can download various brochures covering environmental protection and climate change.

Climate action in schools

Klima – wir handeln! (We're taking climate action!) reads the slogan of Hamburg's project "Climate Action in Schools" – a collaboration between Hamburg's School Authorities (BSB) and Hamburg's Urban and Environmental Development Authority (BSU). The aim is to prompt schools to adopt their own climate protection plans until the end of 2012. Part of this project is also the European Eco-school/International Agenda 21 school programme. Any state school rendering general education is entitled to join. The first 23 schools have already devised their own climate action plans during the pilot phase (i.e. the school year 2009/10).

Objectives

- Get as many schools of general education in Hamburg as possible to devise their own climate action plan and integrate it in their daily routines inside and outside school.
- Offer comprehensive technical and pedagogical advice on and support for climate and environmental protection: workshops, teaching resources, further trainings, on-site consultancy services etc.
- Make sure the planning paves the way for the firm integration of climate protection and environmental education in schools. The plan should define short, medium and long-term measures.

Climate protection plans

Schools' climate action plans describe their individual pedagogical and technological aims. The entire school community contribute to the plan's realisation. A new aspect

here is that one teacher takes on the key role of the school's climate protection appointee. Student climate inspectors or spokes-people assist them in furthering climate-related progress in their school. The schools are supported by the special project advisors of Landesinstitut für Lehrerbildung und Schulentwicklung (LI).

One focus is taking pedagogical steps towards raising the pupils' awareness of climate protection; another is to reduce the school's annual carbon emissions by 2% until 2020. This target follows Hamburg's climate action plan, and the schools have great saving potentials in terms of electricity, water, mobility, food or procurement.

LI quality seal

Successful schools may apply for the LI Climate School Seal of Approval. It is awarded for workable climate action plans fulfilling our quality criteria.

Interested to join? Then contact us and join by the end of this year – we will gladly assist you.

Contact:

Christine Stecker
Phone: +49 40 42 88 42 344
Christine.stecker@li-hamburg.de
www.li.hamburg.de/klimaschutz.

Fifty-fifty bonus programme – a win-win situation for all

Hamburg's *fifty-fifty* bonus scheme shows it clearly: Switching off the light, closing the windows and turning down the heating are simple and worthwhile steps to save energy. The City of Hamburg pays a bonus to schools that save electricity, heating energy and water as well as minimise their waste: a total of 50% of the money saved in this way – truly a win-win situation for the schools, Hamburg and the environment. Some schools use these *fifty-fifty* bonuses to pay prizes to the winners of internal energy conservation competitions. Others invest the money in a school festival or an outing and some use it to take steps towards climate protection such as the installation of a new solar power plant.

Depending on the size of the school building and the energy conserva-

tion performance of the school community, a school may be awarded up to a five-digit amount.

Linking pedagogy with actual climate protection via financial incentives, this project turned out to be quite a success: Since 1998, Hamburg's schools have been cutting their annual CO₂ emissions by 10,000 tons on average.

In 1994, *fifty-fifty* scheme was launched as a pilot project and since 1998 all 450 state schools in Hamburg have been participating in it. The savings are calculated in comparison to the energy and water consumed and the amount of waste produced over the year before the school had joined the programme. The respective monetary value is then worked out via current prices.

An example:

Area	Reference value	Consumption	Material savings	Current prices/unit	Financial savings
Electricity	100,000 kWh	80,000 kWh	20,000 kWh	15 ct/kWh	3,000 €
Heating	500,000 kWh	450,000 kWh	50,000 kWh	5 ct/kWh	2,500 €
Water	500 m ³	600 m ³	-100 m ³	4 €/m ³	-400 €
Waste	3 container	2 container	1 container	1,200 €/cont.	1,200 €
Total savings:					6,300 €
Fifty/fifty reward:					3,150 €

Schools joining the *fifty-fifty* bonus programme are supported by a personal advisor. www.fiftyfifty-hamburg.de provides (German) teaching resources on energy conservation and climate protection.

European Eco-school/ International Agenda 21 school



Application form
2010/2011
Submit by: 1.11.2010

Name /type of school

Adress

Telephone

Fax

E-mail

Website

Number of pupils

Number of teachers

Project leader/Contact

Eco-school committee

With the approval of our school conference we herewith apply for the European Eco-school/International Agenda 21 school Award 2010/2011.

Place & Date

Head teacher

Project leader

Einreichen an:

Umweltschule in Europa/Internationale Agenda 21-Schule
c/o Zentrum für Schulbiologie und Umwelterziehung (ZSU)
Frau Monika Schlottmann
Hemmingstedter Weg 142, 22609 Hamburg
Tel.: + 49 40 82 31 42 - 0, Fax: + 49 40 82 31 42 - 22

Submit by: 1.11.2010

Finish project by: 30.05.2011

Please use the following forms and attach extra sheets if necessary.

Topic I (free choice)

Topic II

Topic

Title and brief notes on the projects

- a Biodiversity b Sustainable economy
- c Mankind and the climate

Status Quo

Brief description and reasons for action

Targets in the following eight quality management areas

1. School life/Pupil participation

Describe the way in which the topic-related activities will improve school life or the participation of the entire school community (e.g. via communication and public relations, structural inclusion of pupils in decision-making processes, revision of house rules etc).

Topic I (free choice)

Topic II

2. Natural resources

Describe the way in which the topic-related activities will improve the responsible use of natural resources (e.g. biotopes, biodiversity, land use) and save water, energy, raw and other materials etc.

3. Teaching

Describe the way in which both topics will be integrated in your teaching.

4. Competencies

State the competencies the pupils are likely to acquire while engaged in the topic-related project activities.

5. Co-operations/Global partnerships

List the internal and external co-operation partners or global partnerships included in the topic-related project activities.

Topic I (free choice)**Topic II****6. Mission statement**

Is there a mission statement included in the school's programme and how will the topic-related project activities relate to it?

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. School management

Describe the way in which the topic-related activities will enhance the work of the school management (head teachers, authorised committees such as planning groups etc).

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

8. Further teacher training

Describe how teachers will be integrated in the topic-related activities and the type of further training opportunities for them.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

