

Pupils' comments:

– After we began doing PEAK we made some changes at home. We turn the lights off in rooms that have nobody in them. Refrigerator, freezer and chiller each have a little thermostat to give the right temperature. Now we are planning to replace the washers on our dripping taps. Our balcony door needs draughtproofing. All other windows have just been made airtight and we don't have any domestic appliances that need replacing yet. (Sara)

– If you have a 1970s cooker it is not a bad thing to replace it with a newer one that uses less electricity. And it wouldn't do any harm to use kitchen appliances less – nothing like the good old wire whisk. Other power savings you can make are: boiling water for tea in a kettle instead of on a hotplate, drying the laundry outside if the weather permits. (Stina)

how energy is used at home and at school, and to show them how they themselves can influence energy consumption. As part of their work the year nines have visited both the neighbourhood council and also private companies in the area.

The idea is that with the cooperation of representatives of the various businesses the pupils will gradually be able to present an action package for reducing energy consumption.

But instruction on energy begins in the place closest to the pupils. “We began by looking at how we behave in school, and whether there was anywhere where we could save,” says Magdalena.

In December, when we had Advent candles on everywhere, the pupils set about producing timers, so that the candles would not be on all round the clock.

“Now we turn the lights off when we leave a room,” says Magdalena.

The youngsters have had to come up with ideas on how the school can save electricity. The idea of putting a switch in each classroom that turns off all the electronic equipment in the room won first prize one month.

“The school's electricity bills have also gone down appreciably. You could see this in the bill that came for February 2004, compared with the one for January,” says a contented Magdalena.

When the pupils can compare electricity bills for different periods they find that it is not only economical to save electricity. It also provides examples of practical mathematics. Magdalena, who teaches both science and maths, has the class draw diagrams of their

own electricity consumption over a day, a month or a longer period. At the same time as they become aware of their own electricity consumption they also learn to interpret, summarize, analyse and evaluate data in tables and diagrams, all as intended in the mathematics syllabus.

Having studied electricity consumption at school, the pupils turned to the same subject at home. They had the assistance of a simulation program in the computer, where they could input details of the family's electrical equipment – such as dishwasher, cooker, microwave, radio and lighting. The program states how much energy each item uses. The next step is to find ways of reducing consumption in the home – and then go home and do it in reality.

“Since we joined the PEAK project we have made some changes at home. We turn the lights off in rooms with nobody in. Our computers have their own switches. We have always filled the dishwasher and washing machine before using them, but now we remember not to put them on in the morning,” reports Sara, who is in year nine.

Energy consumption in an industrial society is always highest in the morning.

“We try to teach the youngsters to use less power during peak periods. Otherwise there is a risk of the system collapsing and us having a power cut,” explains Magdalena.

The PEAK project idea comes from California, where it has been run in many schools. Magdalena Apelqvist has adapted the project and the teaching material to suit Swedish conditions and the Swedish curriculum.

As well as the science and social studies

subjects, mathematics, technology, home economics and English also become a natural part of the work. For example the task of finding out how much energy a washing machine or an electric beater uses is included as a home economics element.

Another possible task is to discuss how the heat indoors can be retained on a cold winter's day. The pupils can consider the order in which wall, insulation and seal should be fitted for maximum effect. There is discussion of how the radiators and the furniture should be placed in relation to each other in order to increase the radiation of heat. Another teasing question put to the children is: can an extra sweater sometimes be an alternative to turning up the heating?



Wind power can replace fossil fuel sources, and then we save the earth's resources. Pupils at Skälltorpsskolan build wind power stations from milk packets.

The PEAK material shows the targets that are to be attained in the different subjects, and suggests appropriate experiments and exercises on this basis, from year four right up to year nine.

Even English crops up in the course of the work.

“Our simulation program is in English, so pupils have to learn English words like oven and CD player. In Swedish they've had to write essays on a possible energy-saving society or an imaginary blackout situation, when the power supply fails.

“This is the basic material, but every school in the PEAK project can revise and add to it,” explains Magdalena.

The PEAK project has given the teaching a theme that runs from year to year, and from subject to subject.

Magdalena can already see tangible results, as well as the fact that the school's electricity consumption has decreased. The pupils have learned how they themselves can help to save electricity. Or as Michaela in year nine says:

“Above all we've become more aware of electricity consumption in society and the possibility of reducing it.” ♠

All the schools in the district of Backa, with about 1 500 pupils and 80 teachers, are taking part in the PEAK project. The project covers years 4–9.

The work is being done in close cooperation with Göteborg Energi, who supply expert skills in the energy field. The aim is to make the pupils aware of their energy consumption. Another objective is

to reduce total energy consumption in the district. The project started in schools in the autumn of 2003.

The PEAK project was started in California by Energycoalition – an umbrella organization embracing a number of consumers with an environmental orientation.

Hens Teach the Children about Life Cycles



Skogomeskolan has a hen house, a sheep pasture and a greenhouse with real peaches. The children help look after them all.

A pleasurable way of taking responsibility for their immediate environment.

ON A WARM August day they are having a harvest meal at Skogomeskolan on the island of Hisingen, Gothenburg. New potatoes, boiled beetroot and butter, fried eggs and a dessert of currant pie. All grown and produced in the school's own garden.

"The children help with the composting, the outdoor vegetables and the greenhouse, and look after the sheep and hens. We do primary sorting of waste as well," adds teacher Rebecka Eriksson-Russell.

Skogomeskolan is set in beautiful surroundings in the suburb of Backa. The establishment consists of school, after-school centre and nursery school, and there is close cooperation between the different units. Planning and study days are held jointly.



Junior and pre-school children feed the animals and look after them. Here they discover in practice how food scraps feed the hens that lay eggs that become food for the children.

The grounds have extensive green areas for both play and teaching. There are four greenhouses here. One is heated in winter and gives both grapes and peaches. The largest is used as teaching premises for both school and nursery school.

Skogomeskolan has an environmental profile, which means that environmental thinking is a natural part of the regime. Pupils of all ages take part.

In Solen, one of the three nursery school departments, all the children take part according to ability and interest.

They empty the compost bucket, water the plants and weed the flower beds.

“An important part of this is that it is not compulsory. If the children were obliged to do environmental work, then once they left nursery school and school proper, many would also turn their backs on environmental work for good,” says nursery school teacher Margareta Ottosson.

In spring the children can sow seed in pots indoors and in early summer they put plants in soil enriched with compost, either outdoors or in the greenhouse, depen-

Pupils' comments

- *What does environmentally friendly mean?*
- There are ecological farms, where no poisons are used. That's environmentally friendly.
- If you throw chewing gum away it may stick in the throats of birds.
- *Why is it important to be environmentally friendly (as all the children have said that it is)?*
- Otherwise the animals may die!
- If we live, animals must be allowed to live too!
- Even if snakes are nasty to us, we shouldn't be nasty back.
- *What did you learn when you were working with a decomposer?*
- Ever such a lot – about spiders, millipedes, insects and other creepy-crawlies.
- To be gentle with the environment and not destroy nature. It's good that insects eat leaves because otherwise we would be buried in leaves.
- *What is the best way to learn about nature? What do you think?*
- Going out into the countryside, being in the countryside and learning. Reading a book and learning more.
- Learning sounds by listening outdoors.

ding on what the plants can manage. Late summer is the time for the crop, which is harvested, then taken into the school kitchen where the cooks take over.

“A few days later we have a harvest meal together. Then we get a really nice lunch from what we have grown.”

The fifteen hens and the cock, which live in a little house at one end of the yard, are the responsibility of the nursery and junior schools. The children help feed and look after them.

“We talk to the children about the hen and what we get from her. About the worm that the hen eats and what it means to the soil,” explains nursery school teacher Siw Mathiasson.

The school also allows a few sheep, belonging to a local farmer, to graze in the school grounds.

“The environmental work is both practical and theoretical,” says Margareta Ottosson. “There are two reasons for this. Teaching environmental care without practice is pointless. And anyway children cannot understand

a theoretical explanation until they are about ten.

“With practical work as a basis they can also absorb the theory. The practice puts knowledge into their hands. The theoretical work gives intellectual understanding.

“Then when children and adults talk about ecocycles together they understand the context better than if they only work practically,” she says.

Skogomeskolan has had environmental thinking as a daily theme since the late eighties. The schools then headmaster, Karl Spendrup, felt that the children were always hearing much that was negative about the world around them and the future. He wanted to give them tools with which to influence their surroundings in a constructive manner. Once the ideas had taken root in the staff group and among politicians, work could begin. Since then the hen house has stood there in its corner and many generations of hens have become chicken soup.

“But the older children don't find it too easy to accept the idea of eating our animals.



Skogomeskolan has a greenhouse and a poultry house in the school grounds.



It's easier for the little ones," says Rebecka Eriksson-Russell.

The teachers do not regard themselves as experts, they develop along with the children and search for knowledge together.

"Sometimes we make mistakes that we learn from, and the work is constantly changing."

The work is assessed continuously, and sometimes the school has to change its way of working.

"For example we used to have cloth nappies, but the groups of children have grown larger, with more toddlers, and we don't have time for all the laundry", says Rebecka.

This year the focus has been on primary sorting of waste and on composting. All the classes have a lot of outings and study visits. At junior school one group of pupils has shown particular interest in animals and nature, especially insects.

"We have visited the Museum of Natural History for a lesson from an expert on "Life in Leaves", where the children collected bugs from heaps of leaves and then examined them under stereo magnifying glasses."

Back at the school the group has made a "decomposing board", a plank with various objects of different material, which has been buried in the potato patch. The board has been dug up from time to time to see what has decomposed and what has not. In that way they see which materials nature and its decomposing fauna can itself degrade.

The children often have excursions to areas close to the school where there is a stream, woodland and meadows, and also longer day excursions to places further afield, such as a pond in Slottskogen.

When they are out the children use magnifying glasses to examine organisms that they find. Using books and "identification mats" (simple lists of species on robust plastic mats) the schoolchildren try to work out what sort of creature or plant they have discovered."

The excursions seem popular, or as one of the children puts it:

"If you like the forest and nature, you learn about it."

And if you've got a greenhouse with peaches in it, then surely it's easy to enjoy environmental work. ♠

The PEAK-project in Backa

The intermediate school (ages 10–13) also takes part in the Backa schools joint PEAK project. The project aims to raise the consciousness of children and their families regarding energy consumption. It started in the autumn of 2003, but is expected to continue in the years ahead.

Lessons from Skogomeskolan's method of working:

- It is important to have all the staff behind it and for everybody to understand the purpose.
- It should feel like a natural and positive part of everyday work and not like a burden.
- Begin on a small scale and build slowly. Evaluate, retain, discard and adjust.





Secret Assignment for Ecoschool

Pelle and his friends are standing in the supermarket with a magnifying glass, looking at the things on the shelves. Customers look at them in surprise and wonder what they are doing. The pupils in years 2 and 3 have a secret mission – to take a magnifying glass, a pen and a notebook and find out what environmentally marked products there are in the shop. They are meant to find out what the marks stand for, too.

THE SCHOOL UNIT Öjersjö Storegård/Öjersjö Brunn in Partille has an ecological profile and for the past year all the classes have been doing work on lifestyle questions. The children had a lot of bright ideas when they began with the lifestyle theme, but to the younger ones the word “lifestyle” itself was hard to understand. So for years 2 and 3 the project was renamed “My Health – Our Future”, a title that they found easier to relate to. First the class talked about the words “health” and “future” and what ideas they conjure up. Everything was written down on a mind map with suggestions about what the class might work on. They agreed to specialize in three main areas – body, food and movement. Food was an area that captured the children’s interest and that was easy to illustrate.



The route taken by our rubbish is part of the children's ecocycle exhibition.



Under the heading of food the pupils have found out about vitamins, fats and proteins.



Öjersjö Brunn.



Öjersjö Storegård.

Pupils' comments

Children in years 2–3

- *Why is an environmentally friendly society important?*
- So that the earth will have life. You get more oxygen.
- What is an environmentally friendly society?
- Walking to school and not going by car.
- *What have you learned about the environment?*
- That it's terribly important not to drop the tiniest bit of rubbish, in the playground, for example.

Pupils in years 4–5

- *Is it important to have an environmentally friendly society?*
- Yes! It's as important as anything can be!

Pupils in years 6 and 7

- *Why is an environmentally friendly society important?*
- So the earth will survive and we will live better then.
- So people will feel well. So nobody feels ill in dirty places. Trees, flowers and then us people as well of course. And it can damage the ozone layer!

Pupils in year 8

- *What is an environmentally friendly society?*
- One where you try to protect the environment and nature. To think of the consequences of what you do.
- *Why is an environmentally friendly society important?*
- If we don't do it we'll destroy our planet for those that live here after us.
- So we'll feel well and not destroy things for other creatures who live on earth.
- It is important for nature, animals, people and the future.
- So that we can live an easier life with better health.
- *Is there any bad side to doing work on the environment at school?*
- I suppose not, but there may be a risk of pupils finding it boring. Don't know why. Not interesting. You learn a lot if you learn in a way that is fun, but I don't think you can do that with the environment.

The work on the food theme began with the children having to say what they thought of when they heard the word “food”. Most of them thought of their favourite dish and of sweet desserts. Some realized that there is food that is good for you and food that is not, like potatoes and crisps. With this new knowledge, the children drew diet charts. To make it more fun and more realistic the groups were told to find out more about their own piece of the diet chart. Drawing and talking about food was instructive, but having to choose and prepare food gave the children an extra dimension. At the day centre they planned and prepared nourishing snacks together. There was everything from home-made strawberry cream to good coarse buns. Proudly they offered their classmates a snack containing all the parts of the diet chart.

The children's interest in food and health gradually grew and they began to want to find out more about different kinds of food and their contents. To help them learn about vitamins, proteins, carbohydrates, fats and minerals they were allowed to do free research. They used a computer to find information on the Internet. They reported what they learned by acting as newsreaders and everything was filmed.

Exotic fruits were the next project, beginning with everybody watching a film about the path of the banana from plant to human stomach. The pupils were keen to work as a group. They were given a tricky assignment of collecting facts about various fruits. What country does the fruit come from? How has it got to us in Sweden and in Öjersjö? Draw a map of its whole route. What does a kilo of the fruit cost? What vitamins does it contain? The children gathered the information by phoning shops and asking the staff who were in charge of fruit and vegetables. In the course of the food project the teachers deliberately chose different forms of reporting. In this way the whole thing became fun for the children and broadened their horizons. The facts that the pupils had

gleaned from the interviews with the shop staff were reported by acting out the interviews, and the class got the chance to sample all the delicious fruits as well.

To the teachers it felt important to make the children aware of different types of environmental marking. Once again particular attention was paid to the educational design. It had to be fun and to stimulate the children's curiosity.

That was when they got the chance to be detectives and go out with a magnifying glass into the shops when they went shopping. This was a secret mission. Nobody knew what task the next person had. The children were to look for the four environmental marks – the Swan, the KRAV label, the Fair Trade mark and the Keyhole. They told each other eagerly about the products they had found their marks on and what they had learned that they stood for. Finally everyone with the same mark formed a group. The children drew the marks and wrote about them. The end product was a splendid poster.

Both children and teachers were proud of what they had learned on the theme of food, so they decided to put on an exhibition and to show all the others at the school what they had done.

The teachers who planned and ran the food theme thought it was a success. The children took part in the planning and layout and developed an interest in the environment and food. They also had the chance to try collaborating, and different ways of reporting and searching for facts. The final verdicts of the children were very favourable. They liked being able to take part in the decision-making, doing practical things like preparing food and, not least, the enthusiasm of the teachers, which rubbed off on them. "The teachers had so many ideas and that made it all fun" was how one of the pupils in years 2 and 3 summed up the project "My Health – Our Future". ♠

My country. For the future.

From an essay about a country called Julijia.

The flag stands for all the things that are important in the land of Julijia. The sun as a light that will always shine on the people, the star watching over us at night, the heart to remind everybody to care for each other and to listen to their hearts.

My country will be a democracy where everybody is involved and can have an influence in various ways. I think it is important for everybody who lives in a country to be involved in its development. Everybody will feel that they can exert an influence and make a useful contribution to the country's well-being.

It is important for everybody to be able to say what they think in my country. In that way they can "widen their horizons" and respect the views of everybody, even if they do not think the same.

In my country there will be a lot of parties to vote for. All ideologies will exist but ecologism will be the hallmark of my country. Everybody will care for nature and everybody will be aware of how important nature is to us people. Extreme parties will be unusual in my country. That is because nearly everybody will have learned to respect other people.

I shall have less difference between salaries in my country. I think it is illogical for a lawyer to earn around SEK 50 000 a month. Politicians have unbelievable salaries, too, whereas other jobs, which are also essential, like nurses, earn hardly half of what a doctor gets.

In my country people will do all they can to make sure that things are relatively good for everybody. Nobody will feel that they cannot do anything for the community or for their own situation.

Julia Jingrot, aged 16

From nature study to sustainable development

THE ÖJERSJÖ SCHOOLS IN PARTILLE



Öjersjö Storegård and Öjersjö Brunn are in the Municipality of Partille, just east of Gothenburg. With woods close by and a lake, Kåsjön, within walking distance and adjoining a nature reserve, there are excellent opportunities for outdoor life and for studying nature at close range. Even before Öjersjö Storegård was built there was a political decision to give activities there an ecological focus. Perhaps it was a coincidence that the school opened in the same year as Agenda 21 was signed by many countries in Rio de Janeiro. Everybody who was employed at the new school in 1992 was well aware of the school's ecological profile. To get started, an environment committee made up of staff of all categories was formed. When Öjersjö Brunn was added in 1999 the two schools became one unit, with a joint working plan and environmental policy.

To start with, an area was set aside as the school garden. This was placed close to the pupils' classrooms so that the beds could be seen. The things being grown need to be ready for harvesting when school starts in the autumn, so rhubarb, berry bushes, carrots, spices and flowers are suitable. Various kinds of potatoes are grown as well and the pupils use potatoes in different ways. The younger children like sorting potatoes by size, weighing the crop, making potato soup, baking potato bread, writing potato stories and having a harvest feast.

Outdoor life and nature study have been an obvious part of the teaching. With nature so close it is normal for the children to be out in the woods and fields almost every day, all year round, in all weathers. Seeing, hearing, feeling, smelling and experiencing nature with all the senses links outdoor life and nature study in a simple manner.

At an early stage the schools tried to ensure that as far as possible all purchases, for example cleaning materials and paper, were environmentally acceptable. Then recycling started and the focus shifted to the sorting of waste. Some classes created their own sorting books, using newspaper cuttings and advertising leaflets. The discussions that arose were lively and instructive. What is a package? How do you sort a battery-driven toy, a sledge, a drinking glass or a plate? Perhaps the pupils did not all become environmentally literate at once, but in the long run there is a change. The teachers at the Öjersjö schools try to protect the environment and they see it as a duty to work for sustainable development.

When Öjersjö Storegård applied for and received the Green Flag mark in 1997, environmental work was given a boost. The concept of recycling was put in a wider context. Children of various ages worked on the life cycles of plants, water, metals and milk packets. Where 6-7-year-olds had a more concrete way of working, 16-year-olds were more philosophical in their ideas. They

discussed things in terms of "what a gigantic system the cycle is" and "what will happen in future". When the school had run the recycling theme, it felt as if ten years' environmental work was moving on to a new stage. The concept of sustainable development had reached the teachers and pupils of Öjersjö. It was no longer a only a matter of sorting waste and composting; there was now a wider perspective of how we people see ourselves and our way of working.

In recent years the environmental profile has been further enlarged. The staff felt that it was time to "peer over the edge of the compost", and they decided to move on to lifestyle questions. Environment is not so nature-fixated as previously. The theme "My Lifestyle – Our Future" contains areas such as the route of food from soil to table and back, attitudes and values associated with consumption patterns and products, the importance of exercise to health and the individual's choice of a lifestyle with quality. Development work at the Öjersjö schools has a clear focus on sustainable development. From the very start there has been a firm intention to convey a positive faith in the future.

Website: <http://www.skola.partille.se/ojersjo/>



Adventure in Unknown Waters

Hjällboskolan has its own environmental bus that takes the pupils out into the countryside.

Stellan Petersson, environmental studies and science teacher, reports here on a very special day by the sea.

THE GIRLS' COMPLAINTS of stinking seaweed have stopped completely. Instead a cheerful cacophony of laughter and splashing rolls across the bay. Plankton and a droplet of sea water are being examined under a microscope. The youngsters of class 8 B at Hjällboskolan are on a trip in their specially equipped Environmental Bus.

Today the class has gone out in the school's environmental bus to the seashore at Öckerö to turn up stones and breathe in the salt-sprayed air. The girls from Somalia, who were very reluctant to go into the sea at first, draw their nets to and fro across the sandy bottom with their long skirts stuffed into their waders and they are



The illustrations show an excursion to Färås tjärn and Tulebosjön.

Pupils' comments

On Monday 16 February 2004 the pupils in 8 D are writing down their recollections and experiences of their trip to Öckerö with the Environmental Bus last September.

–I want to go there again. We had such fun together. I went out into the sea looking for crabs with some of my friends. We learned a lot of things that you don't learn at school. We caught crabs and fish and we searched for different sea plants.

It was nice and warm, and I felt happy when I caught crabs.



The TV microscope allows everyone to follow life beneath the surface.

The thing that was most fun was looking at tiny marine creatures in the TV microscope.

We found three different sorts of crabs – shore crabs, spider crabs and edible crabs. What we found most was shore crabs.

On the way home we stopped at a cake shop to buy buns and cakes. (Joel)

–It's much more fun being out at the seaside or in the hills than sitting at home all the time or just being in the yard. It's lovely by the seaside and in the country. (Ann-Marie)

not keen to stop when they are called in for a sandwich break and to examine their catch. The smell of coffee mingles with fizzy drinks and the sandwiches with kebab. The buns and cakes are good too!

After the break, everyone's catch is inspected. Hoots of horror and delight! Ugly fish like bullheads and dangerous starfish tumble out of the nets. And Niclas touches them! The fascination at the teeming diversity that we have all collected always overcomes the fear of the unknown. They are turned over, discussed and displayed, reported and recorded. This is fun and it's good teaching!!

Some of them have been rowing the boat that is always on the roof of the bus. Often these are pupils who have never rowed a boat before, perhaps never sat in one or even seen the sea...

Now they can proudly show off snails and mussels, often even fish, and big clumps of algae crawling with tiny creatures. Water temperature on the surface and at the bottom are measured, and saline content and pH as well. Water clarity is 6.5 metres. Fine clear water today. Can it really be eutrophic?

Other pupils show "their" mussels and jelly fish, bristle worms and pipefish. The beachcombers have found a dead herring gull, and a quantity of beautiful stones and shells.

And harebells and thrift and stonecrop. Flowers can be called just about anything!

The teacher, Stellan Pettersson, tells the pupils that last year somebody found a dead whale. A sensation that appeared in *Göteborgs-Posten* next day. On some occasions the autumn sun and the mild water have inspired thoughts of bathing, sometimes the sea has been raging, another time the whole bay has been full of moon jelly-fish. The sea keeps changing and is always an attraction.

The boat group have been dipping their nets for plankton and a droplet of water is laid under the bus's TV microscope. A peculiar universe of diatoms and cyclops

slides across the screen, like planets and comets. And before today none of the pupils knew what plankton was, still less how important it was in nutrition chains and eco-cycles. Or that jellyfish and people can be plankton...

The day draws on and the odd boy or girl may miss the teacher's final words. The sea is exhausting, as everyone knows, and you get terribly tired after a whole wonderful day at the seaside.

We want biology teaching at Hjälliboskolan to arouse wonder and the desire to learn more. It should rest on an ecological foundation. The pupils should be given a good insight into the great fundamental cycles and also deeper knowledge of some specific ecosystems. We want to show small details and larger contexts. Knowledge of species is always linked to ecological aspects. Book study is interwoven with many practical tasks and with excursions of various lengths.

All the pupils make three whole-day excursions with the Environmental Bus. In year 7 we often go along Lärjeån and study the traces of the ice age in the river delta at Gråbo. We drive past Lake Mjörn to Brobacka, where history supplements geography and biology. The giants' cauldrons there are fantastic, and in May the forest is full of robins, chaffinches and wrens.

In year 8 we more often go to the sea, but the forest can be a worthy alternative, it is good for pupils and teachers to have the choice. In year 9 it is more definite, in fact it has been since 1989, that we carry out an acidification study of 2–3 lakes. We fish with our nets and measure pH, alkalinity, conductivity and aluminium content. We try to understand the connections between people, nature, plants and animals. At best the day becomes a synthesis of the knowledge of nature that the pupils have acquired during their three years at our school. ♠



The environmental bus has a specially equipped laboratory and a mini classroom, providing an excellent base for nature study.

ENVIRONMENTAL SCIENCE ON THE WAY

The environmental bus has been around Hjällibo in north-east Gothenburg for 15 years. It is a converted army bus that a few teachers have fitted out in their spare time as a mobile laboratory, so pupils can now do their own studies and analyses. On the outside it says "Miljökunskap på väg" (Environmental Science on the Way) and the vehicle naturally has an environmentally friendly engine. The bus has a well-stocked library and extensive equipment for collecting and identifying animals and plants. Also an aluminium boat, life jackets, waders, water bags, water goggles,

nets and, in particular, a microscope with a TV screen, pH meter and a photospectrometer for water analysis and determining chemico-physical parameters.

At Hjälliboskolan social studies and general science teachers work together. With the Environmental Bus they can combine, in a clear and realistic manner, the study of history, social studies, geography, Swedish, maths, biology and chemistry, to mention a few examples.

More information may be found on the Environmental Bus website www.miljobussen.nu



THE GLOBE

The cycle of life, which basically consists of birth, procreation and death, is one of the first parts of the biology teaching received by pupils in year 7 at Hjällboskolan.

To give a better understanding of different life cycles we build something we call the globe.

The globe takes the form of a big glass sphere, into which we put plants and small insects before sealing it to make sure that no air or water can get in or out. The pupils themselves collect the plants and insects from outside. The idea of the globe is that the pupils acquire greater understanding of how

the earth functions as an ecosystem and also of how a little ecosystem functions. The interesting thing about the globe is then the work of observing what happens in the cycle. What happens to the insects that die? What happens to the plants if they die? Will plants and insects survive?

The pupils spend a little while each month looking at the globe to see what has happened.

Then we have a brief discussion about it.

Pupils' comments

– When we were talking about ecosystems, we decided to build a globe and investigate how a human-made cycle works. We spent a whole day out beside Lärjeån looking in the river for plants and animals. When we made the globe we took care to make sure that no animals got in that could eat each other. After a few weeks we found that we'd put a spider in by mistake. It must have been extremely small when it got in. We laid clay balls and a lot of soil in the bottom, then we planted loads of plants. Then we poured in 30 cl of water, and finally we shut the globe. We can't open it because if we do we'll destroy the cycle. I think this is a fantastic job we've done in 7 F and we'll have to see how the spider gets on.

– To make a cycle you need life. For life to be able to survive in a cycle you need oxygen from the plants and the plants need carbon dioxide. It goes round and round again in a cycle. A cycle needs energy, sun and water.





Democracy Needs Good Losers

Undemocratic? Me?

No way!

Nobody wants to be called undemocratic. But what actually is democracy? And is more democracy the solution to every problem?

Political scientist Peter Esaiasson writes about the Democracy Workshop project, in which young people talk freely and openly about influence and decision-making.

THE NAME “DEMOCRACY WORKSHOP” refers to the fact that those taking part have a chance to renew their mental apparatus with regard to decision-making. We do not say what people should think, only what they should take into account when they think something.

The project is being run by researchers at the Department of Political Science at Gothenburg University. The original aim was to test whether the methods of thinking of political science are interesting to young people today and whether they can offer new perspectives on the difficult but essential art of deciding together. The results of the first trials, with nearly 200 pupils from years 8 and 9, were so encouraging that we have continued the activity. We are now turning not only to young people but also to adults.

Democracy benefits from critical discussion

The conversations should be open and spontaneous. To bring the debate nearer home we begin by questioning whether democratic decision-making is appropriate in school. One of the most important tasks of the Swedish school is to teach the democratic values on which society is based. The curriculum states that the school should also strive to give pupils a real influence on methods and forms of work and on teaching content. But in practice the pupils cannot decide what they learn, because this is determined by goals defined nationally. There is not, and cannot be, any democracy in the strict sense of the word, i.e. the voices of the pupils cannot count for as much as those of teachers and head teacher. Perhaps it is better to call the prevailing decision-making model “enlightened despotism in a humanist spirit”. It may be felt that we do not recommend democratic majority decisions strongly enough in all situations. In other words that we are too value-neutral. But we ourselves are not anxious about this. We believe that the cause of democracy is best served by being discussed critically.

In the Democracy Workshop we regard democracy as a way of taking decisions on matters of common interest. As once defined in ancient Athens, democratic decision-making is characterized by three principles.

- The first is the sovereignty of the people. (There is no higher power to turn to than the group which is to take the joint decision.)
- The second is political equality. (When the decision is taken, each individual concerned counts for as much as the next. Dennis the Menace as much as the teachers and the head.)
- The third principle is that the majority decide. (Any departure from the majority principle means that the views of the minority are considered more important than those of the majority.)



“The Democracy Workshop made me more tolerant of other people’s opinions. Everybody should have the right to say what they think,” says Mikael Sobczak at Ängsskolan in Skene. On the left Heidi Gustafsson and on the right Ellen Klintonberg.

A method of decision-making where Dennis the Menace means as much as the head teacher may sometimes be good but not always. What we are not prepared to compromise on, however, is the actual circumstances of the taking of the decision. The Democracy Workshop as a method is based on the idea that respectful conversation is the best way of solving the many problems in joint decision-making. Being an enlightened despot as headmaster/mistress implies an obligation to show respect to others and to give good reasons for one’s decisions.

Another guiding principle of the discussions is that democratic decision-making can be applied in any situation where people are to make a decision together. Democracy is not only about political party leaders like Göran Persson, Maud Olofsson and the holders of power but also about the family, the school and the group of friends. Our discussions in small groups are more often about everyday situations such as holiday planning, school trips and compulsory helmets for cyc-



Pupils' comments

– We the younger generation, will soon be running this country, so it's a good thing if we know a bit about democracy.

– The Democracy Workshop got me thinking differently.

– It wasn't clear what we were going to get out of the whole lesson.

– I used not to know much about democracy even if I experience it every day.

– You had to say what you thought without anyone saying whether it was right or wrong.

– You were faced with good situations where you really had to think.

– Make it shorter. It got a bit boring towards the end.

– You saw the problems from different angles so you began thinking about what sort of democracy we really want.

lists than traditional politics in parliament or in municipal councils.

Virtues and dilemmas in respectful conversation

To start off the discussions, a number of fundamental political science concepts are presented: such as four virtues which may be considered characteristic of the good democratic citizen, and four intrinsic dilemmas that are encountered as soon as a lot of people are going to decide something together. The virtues are within the individual's control: nobody else decides whether one is going to live up to them or not. On the other hand the dilemmas have to be handled jointly: they represent insoluble problems that the individual cannot control alone.

By virtues we mean demands that can and should be made of the good democratic citizen. We begin the discussions by proposing four such virtues, all of them connected with the respectful conversation:

- Argue – don't fight
- Listen to the arguments of others
- Use fair arguments
- Be a good loser

At first sight these virtues may appear obvious, but the discussions usually encounter problems concerning them quite soon. What is to be done, for example, if other people do not follow the principles? How much should one "tolerate" before allowing oneself to break them? And is it perhaps true that some people are favoured by the application of these principles (the most gifted rhetorically for exam-

ple)? To put these problems in perspective the discussion of the democratic virtues usually comes round to the question of whether there is any better alternative. The conclusion usually reached is that even if these virtues are far from unproblematic, it is difficult to find better ones.

We have also focused on four points with regard to the insoluble dilemmas which nevertheless have to be dealt with:

- Should the minority ever be allowed to decide?
- Should those who know a lot decide more than others?
- Should everyone who is affected take part in the decision?
- Must one obey the law?

Each of these dilemmas poses a problem for democracy: Of course the majority principle is the democratically correct one, but sometimes it is desirable for the minority to get their way. Naturally both the knowledgeable and the less knowledgeable should count as equal, but it is definitely a good thing if expertise is sometimes allowed to decide. Certainly all those affected by a decision should have a chance to exert an influence, but where is the line to be drawn – and anyway how can it be arranged purely practically? Admittedly one ought to accept a law which is passed in proper order, but what does one do if it is against one's own conscience? Yet if it is felt right to break the law sometimes, then to be consistent one must surely allow other people to do the same thing? For example, shouldn't a street demonstrator

applaud American anti-abortionists who block the entrance to abortion clinics?

As a practical symbol the virtues and dilemmas are summarized on a plastic card like a pocket calendar. This “good democrat’s memory aid” is used as an aid in the small group discussions. The double-sided plastic card is also something tangible to take away afterwards.

Tutor activates and provokes

The participants are divided into groups of four or five at random in order to break up established groupings. During the discussions in the Democracy Workshop the “ceiling is high” and so is the degree of standardization. The group leaders have a common material for discussion and use the same examples to illustrate both virtues and dilemmas. The material also contains a list of the “complications” of these virtues and dilemmas, which ought to be dealt with in the course of the discussions.

The task of the group leader is to activate all those taking part and always to get them to see things from different perspectives. If the group looks likely to agree on a particular position then counterarguments have to be found in favour of the opposite view. The fateful charm of the dilemma is that the perfect solution does not exist!

Evaluation

Every discussion in the Democracy Workshop is systematically evaluated. To gain an impression of the participants’ view of democracy we ask everyone to answer a questionnaire with selected questions, first a few weeks in advance, then immediately after the group discussions. We usually try also to arrange a control group that fills in the questionnaire without taking part in the discussion.

Among the youngsters there are usually a number of signs that the discussions have an effect. A relatively large number become more interested in politics, develop more opinions on matters of democratic policy, de-

fine “democracy” more clearly, and acquire a more discriminating attitude to civil disobedience (regardless of whether initially the person has had sympathy for acts of disobedience or whether he or she has dissociated himself/herself from all forms of illegality).

Lessons for us and for others

A complete Democracy Workshop project is a comprehensive event. With school pupils in years 7-9, we have learned that things work best if the discussions take place outside the normal school environment, preferably in our own premises at Gothenburg University, otherwise there is a risk of the whole thing being treated as a lesson given by a supply teacher.

In its present form the Democracy Workshop is an isolated event, a kind of New Year fireworks display, so to speak. It may be valuable as such in raising important questions, but for it to have a long-term effect, a proper follow-up is needed. One way of developing the project might be to continue in individual school classes, by writing common rules for taking the joint decisions.

We hope that teachers can be inspired by our approach to the difficult questions of democracy. The attitude – democracy is not always good – may help to unravel a number of knotty problems, and the intellectual tools, virtues and dilemmas, can of course be used in other ways.

For schools wishing to run their own Democracy Workshop there is ample material on the Department of Political Science website www.pol.gu.se under the heading Research.

And then there was that memory aid for good democrats. Not that we need it ourselves, definitely not. But there is probably someone round here who may need a reminder? ♠

*Peter Esaiasson, Professor of Political Science,
Gothenburg University*



Pupils' comments – Democracy Ängsskolan, Skene

– When I hear the word democracy I think of the will of the majority, what most people want. The Democracy Workshop was good. You found out what different words stand for. I specially remember the paper with “the golden rules of democracy”. It was very useful.

Democracy is important, I take it more seriously now.

At school we do a lot about democracy and pupils have a big influence. We have a discussion forum, a student committee, and the class has elected representatives to the pupils' council. Even if we can't influence everything, it's like a mini-government. (Heidi Gustafsson, aged 16)

DEMOCRACY IN PRACTICE AT ÄNGSSKOLAN

Democracy and a democratic education go hand in hand at Ängsskolan in the Municipality of Mark. The school has 550 pupils in years 7–9, in 18 classes.

The pupils have attended the Democracy Workshop at Gothenburg University and democracy and influence are a regular and integral part of school work. At the same time the school has built up an organization that gives lets pupils participate and exert influence.

In the parliament all pupils and teachers and someone from the school administration meet monthly to give information and for a question and answer session with those directly responsible for the working environment.

The school also has a students' committee made up of pupil groups for each class, which discusses and takes decisions on course and subject planning, and on different forms of reporting and assessment, with the relevant teachers.

To allow for longer debates and to help pupils practise discussion methods and argumentation there is a discussion forum a few times each term.

As well as the usual class committee and pupils' committee Ängsskolan has a pupils' council that decides on matters arising in any of the school's cooperative forums.

– Democracy – that's when the people decide. I didn't use to know so much about it. The Democracy Workshop was really good! It was interesting and I got a lot of things explained. I was very impressed by Peter Esaiasson – his way of teaching things and leading discussions.

Now I think differently and I've got more tolerance for different opinions. Even racists and fascists should be able to say what they think, as long as they don't threaten people. If they can't say what they think there won't be any questioning and debate either. Everybody should have the right to say what they think. After the Democracy Workshop I became more active and joined the pupils' council. We can't decide everything, but there are a lot of ways where we can have an influence. (Mikael Sobczak, aged 16)

– When I hear the word democracy I think of the fact that everyone should have the right to say what they think. Everybody should be free to express their ideas and choose for themselves.

I think the Democracy Workshop was brilliant. It was really fun to learn to argue and listen to other people's opinions, to discuss taking decisions and problems that arise when a lot of people are deciding together. I used to just talk, now I know how to develop my ideas to get a thing done.

I've got more relaxed about questions involving school. I've got a bit of a temper, but nowadays I think how I'm going to go about it if I want to get something changed. I find that useful when I am on the pupils' council and we're going to decide how we want something to be at school. (Ellen Klintenberg, aged 15)



Role play and simulation are methods which may make the teaching of sustainable development interesting. The storyline method leads the pupils themselves to find the questions and search for knowledge. Their values are tested in role play.



Antiquity Makes Vital Questions Come Alive

One day they go back to antiquity to learn about sustainable development.

They next day they build a city of the future.

At Buråsskolan, in the centre of Gothenburg, role play and simulations increase the pupils' involvement.

WHAT CAN THE people of ancient times teach us about sustainable development? Well, quite a lot, actually. For example, who would have suspected that the Romans suffered from terrible noise problems?

The pupils of class 6–7 E at Buråsskolan have been working on the theme of antiquity for several weeks, within the framework of what is known as a storyline.

Storyline is a teaching method where pupils and teacher together build up an imaginary world where various events take place in accordance with a pre-planned scenario. The children face situations where they have to solve problems together and find out facts. All the pupils play an invented role figure, such as a tradesman, a blacksmith or a farmer, and behave as their role person.

The meeting with the society of ancient times gave

rise to questions of power and different group interests.

“The blacksmiths wanted more war, because then they sold more spearheads,” says teacher Ingela Bursjöo.

The pupils also gained insight into the biggest problems of the people of those times – the bloody wars, deadly disease, the difficulty of keeping food fresh before there were refrigerators, the noise from iron-rimmed wagon wheels rolling along the cobbled streets.

“The vehicles of antiquity were fairly environmentally friendly, but the way they were manufactured wasn’t environmental at all. They chopped trees down and things like that,” says Oscar in class 6–7 E.

In ancient Greece there was no democracy in the modern sense. Only “citizens”, which did not include women, children or immigrants, were allowed to vote on social questions.

“Those pupils who weren’t allowed to take part in decisions when we let the group argue for their views in the classroom got very angry,” recalls Ingela Bursjöo.

Some of them withdrew demonstratively, stopped listening and played with their mobile phones.

“When I explained that the idea was just for them to find out how it felt, they were relieved and just said: “Oh!”

“Being able to have an influence is something that youngsters today take for granted.”

With the storyline method the story is the theme of the learning. The story arouses curiosity and makes learning enjoyable. What will happen next? When the pupils identify with their role figure the questions and the prob-

lems seem more important and vivid, and learning comes automatically, so to speak.

“It’s fun and it’s a good way to learn,” says Hanna in class 6–7 E. “But rather hard work too.”

“It is fun to be able to decide your own character,” says Jonathan.

His classmate Johannes feels that he has learned to work better with a group.

Another advantage is that several subjects can be integrated in one storyline. The theme of antiquity was used to integrate science and civics, art, physical education, modern languages and Swedish. In art the pupils have made jars and masks for the role play, and in the spring there will be an olympiad where the pupils will compete in the classical disciplines.

Teaching for sustainable development requires a good deal of thought on the part of the teachers, believes Ingela Bursjöo. You have to try different methods and allow the learning process to take time.

“It’s as much about changing attitudes as about hard facts, and then it often takes a long time.”

It is important to try and cooperate with colleagues in other subjects, as the questions surrounding sustainable development are so complex and call for different approaches and knowledge, she thinks.

It is necessary to use the pupils’ experience.

“The pupils in my class are 24 different individuals! They see most things from 24 different perspectives, and therefore they can show each other 24 different ways of looking at life.

“And the more different they are from each other, the more points of view we get to work on. Together they know an incredible amount.

How I want to improve the environment!

– Buy good-quality things that last a long time so you don’t need to keep buying new things all the time. Then factories don’t need to make so many new things and there’ll be less pollution.” (Sara Tabtabai, 8b)

– What I can do is try to persuade my parents to buy ecological products. At the moment ecological food is a lot dearer. But if more people buy ecologically then prices will fall and then growers can sell more, and more people can start growing ecological crops. I can also have an influence by not flushing old medicine down the toilet. Not everybody in the world has clean water, so I can remember not to let the tap run while I’m brushing my teeth, and have a shower instead of a bath.” (Elin Lööf, 8b)

If they can just listen to each other and absorb new knowledge their own abilities will grow.”

Which knowledge and experience is most important to pass on in the school’s instruction has to be discussed and chosen in the context of research, current opinion, and the pupils, she believes.



When the pupils improvise on the basis of their predetermined roles in role play, they also have to reflect on their values and their action. Role play experience may also prepare them for facing new situations.

“This is what makes a teacher’s job so stimulating – the fact that it changes, something new is happening all the time, you can have an effect on the future. Our youngsters deserve the best!”

Storyline is one of several different methods employed in the school’s teaching on sustainable development. During the year 2003/04 pupils in year 6–7 have been building a city of the future – a paper model on a scale of 1:200 with housing and transport and sewage systems.

The concept draws inspiration from the interactive computer game Sim City, which many pupils already know. In Sim City you learn to plan and build a city where people can feel at home and create a good life, based on many different needs – comfortable housing and good transport are important, but so are good educational opportunity and an attractive offering of entertainment.

The pupils begin by building roads, bridges, schools, hospitals and houses. Then an infrastructure including water supply, industry, business areas. Finally there has to be transport, so people can move easily between their homes, shops, work, recreational facilities etc.

In their work on the City of the Future the pupils are

very active, and have to solve various technical problems themselves. Like designing a roller coaster from matchsticks for the city’s pleasure park. Nobody wanted queues of cars and exhaust fumes in their city. But how were they to be avoided? Well, the pupils built a mono-rail, an environmentally friendly form of transport powered by water and solar energy, which glides along using electromagnets with a minimum of friction and fuel consumption.

“In this way quite theoretical and abstract knowledge is generated in a natural context,” says Ingela Bursjö.

Integrating theoretical learning and practical work is something that all pupils benefit from, she adds.

“The way to the mind is through the hand.”

In the course of the work new questions and problems arise. Suddenly the pupils find that they have forgotten to build a school! Someone protests about the siting of a nuclear power station in the middle of town.

One pupil realizes that he does not need a car because his role figure lives right in the centre.

“One lesson led the pupils to work out how far they themselves move on an ordinary day, using a map of Gothenburg. Some found that they didn’t need to take the tram because the school was near enough for them to walk. They have also kept exercise and diet diaries to see how healthily they live and eat.”

The essence of the teaching is that the pupils themselves ask questions and search out the answers. Each pupil has a task, e.g. find out what infrastructure is. The fact-finding is done from books, the Internet and interviews with “experts”. The pupil then passes on the newly acquired knowledge to his or her classmates.

“You learn better yourself when you have to express yourself and explain to others. And the pupils listen better to each other than to a teacher,” says Ingela Bursjö.

So that the pupils will be aware of what they have learned and find individual strategies for learning as much as possible, they record their work in logbook entries. They comment on what worked well and what was less successful. What have I learned? What do I still not understand? What shall I do tomorrow?

Ingela Bursjö notices how the children’s interest in the environment has grown while they have been working.

“They talk more about altering their own lifestyle. I know that they talk a lot to their parents at home and try to influence them, for example not to use the car so much.”

At the same time the pupils realize that environmental living sometimes needs a little more effort. For example, being an environmentally minded consumer means that one ought to



Class 6-7E’s city of the future has no cars and exhaust gases; transport is provided by an environmentally friendly monorail, powered by water and solar energy. Naturally the city also has a pleasure park!

avoid buying things that come from a long way from Sweden, they have learned.

“But then I have to start checking the packet to see where the goods are produced!” said one pupil.

Critical thinking is another thing to be taught in relation to sustainable development. The pupils are taught to read the news critically. Who says what and why, when the media reports various events and decisions? The children themselves have had the opportunity to analyse emissions by local companies. They discovered that emissions from one company had increased whereas others had reduced theirs.

“It struck them that it was probably because the company is situated outside the city, where there are fewer people. Then there are fewer protesters. And of course that’s unfair, they thought.”

Quotations from pupils’ logbook entries

– I must think more about how it’s going to look in a hundred years’ time. (Carl)

– I have learned a lot about safety and the environment. (Lovisa)

– I have learned how to make things smaller. (Lovisa)

– The locomotive was quite hard to do because you had to measure the degrees. (Albin)

– Volvo was fun and taught you a lot but he was a bit of a bighead. (Carl)

The classes at Buråsskolan often pay study visits to companies, authorities and organizations outside the school. This brings teaching closer to reality, inspires new ideas and makes learning more exciting. For a historical perspective on town planning and public transport class 6-7 E toured the city on veteran trams as part of their City of the Future project and visited museum exhibitions showing how life in Gothenburg used to be.

When they visited the Volvo Museum of Safety they gained an insight into how car designers think when they are building safe cars and lorries. The pupils have also been to the City Museum and watched how the building of the new Göta Tunnel is progressing, in order to see how the town planners and politicians envisage the future.

The questions surrounding sustainable development for people and the environment are large and complex.

And the threats are many – environmental destruction, war, climate change, poverty. The future may easily appear quite gloomy and difficult to do anything about. So it is important to give the pupils the hope and motivation to take responsibility and to act, believes Ingela Bursjö.

“We need to pass on such good news as exists, such as that the thinning of the ozone layer has slowed down. Getting the pupils to feel that environmental questions really are something that we can do something about.

“The City of the Future is also a positive vision, yet still realistic.”

And the children are more often hopeful than the adults, she believes.

“They are seldom really pessimistic. They see opportunities more than obstacles.” ♣

EDUCATIONAL HINTS AND IDEAS FROM BURÅSSKOLAN

- Use a forum game to dramatize different environmental dilemmas, such as overpopulation, lifestyle questions and gene technology.
- Let the pupils produce their own material on sustainable development. The hand has to work for the mind to become involved!
- Work on the critical examination of the media and how they depict the interaction of humans-environment-technology. The daily paper is a fantastic teaching tool, up-to-date and easily accessible.
- Develop teaching of life skills (a new subject introduced in many Swedish schools in recent years) so that the environment finds a natural

place in lifestyle questions, as well as health, relations and participation.

Suggested links:

www.futurecity.nu
www.storyline.nu
www.winwin.se

Buråsskolan is working for an environmental diploma

Buråsskolan is taking positive steps to obtain the environmental diploma in accordance with the National Agency for School Improvement criteria for an Environmental School. The award is a tool for nursery and elementary schools in their efforts to set environmental targets and attain them. The process begins with the school carrying out an inventory of the

physical and the psychosocial environment and the pupils' influence. This situational description is used to draw up a plan of action, which is then evaluated.

The object is to integrate environmental thinking in all school subjects. Everyone at the school must be actively committed to the work and accept her or his partial responsibility – from pupil welfare staff, school catering staff, caretakers and teachers to pupils.

“It is extremely important to get everybody on board with relation to these questions. We began by getting the idea accepted by the administration and politicians, then by the pupils and the staff,” says Ingela Bursjö.

The environmental questions must not be left only to a few ‘enthusiasts’.

“Sooner or later they will burn out, and then the whole project collapses.”

The school is now planning a study day on the subject of the environmental diploma.

“Then we will be ready to get on with the action plan,” she says.

More information on the Environmental School award is on the website of the National Agency for School Improvement, link address www.skolutveckling.se/utvecklingsteman/miljo/miljoskolor

On Futurehill the Children Decide

“One day I want to be a nurse and look after people and make them well. One day I want to live in Somalia with my grandmother and my cousins. One day, houses will be better and I’ll have a robot to do the cleaning. I live in a detached house with furniture and I’ve got a job so I can buy a car. The house won’t be big, it’s not good for it to be too big.”



THE CHILDREN WHO go to school at Emmahuset in Hammarkullen took a make-believe trip to the Hammarkullen of the future for a term, to Futurehill. Using the storyline method they described their neighbourhood and expressed their feelings about the present and the future. They planned their suburb of the future and took on the practical task of building models of houses. They also found out where all the rubbish comes from and suggested how to cope with the refuse problems.

The Futurehill project encouraged them to think freely and to ask questions about the environment and our resources. The children, who are aged 6 – 12, had to imagine a trip through time, 20 years on, when they were grown up. Then, in 2023, it turns out that there are major problems. The mountains of waste are growing and buildings are collapsing. The children’s task was to

plan how the Hammarkullen neighbourhood might be designed if they were to decide for themselves. The society of the future ought to be as good as possible for people – sustainable and environmentally friendly.

“We wanted to give the children faith in the future and confidence in their ability to influence things,” says Ann Wallsten, recreation instructor in charge of the “architect group” at Futurehill.

“To us it was important to start with the children’s relationship with their local Hammarkullen environment. After all, this is where they live. With their varied experience and knowledge we wanted them to reflect on sustainable development and the forces in society that affect us and create new patterns of consumption.”

The Futurehill project started with two town planners from the future, TP1 and TP2, turning up at Emmahuset. They came in a time machine and with instructions to obtain help from our own time. The children had to apply for planning jobs. They had to write application papers and come to job interviews. Next, they had to create an identity card with their photo, name and occupation. Then they were ready to start functioning and begin acting in their different professional roles.

The terms of the assignment were clear. The solutions had to be “sustainable” and the proposals had to be set out so that others could understand. The frank and challenging questions of the adults in the school stimulated creativity. The children were urged to dream, discuss, plan, interpret and justify.

They drew and then built a large model of the area where they live. Futurehill got more playground space, more gymnasiums, and more gardens than today’s Hammarkullen. For example there were special fruit gardens with fruit that everybody was free to pick. The children also wanted more varied housing – high, low, rectangular blocks of flats mixed with houses. In their future fewer police would be needed, because there were safes with money for the poor, so they no longer needed to steal.

The town planners from the future came back now and then with fresh data. On one occasion TP1 and TP2 sent a letter saying that the recycling stations in the Gothenburg of the future were overfull. The children had to think about why this should be and discuss solutions in groups. Their theories and proposals gave rise to questions about rubbish, primary sorting and recycling. To give them some facts two school information officers from the environmental services department visited to answer questions and explain what should be done and what happens to the rubbish.

After ten weeks’ work on Futurehill there was so much material that the children and adults at Emmahuset felt that they wanted to show their work to a wider audience. The exhibition was quite large, including texts and pictures together with several models made by the children. There was a large model of Futurehill and one of an overhead rapid transit system. In addition the children used Lego to show their idea of the school of the future. Parents, politicians, civil servants and police were invited to the exhibition, which was so successful that there will be several repeat showings. The children’s work and ideas on Futurehill will be on display at both the Environmental Services Department and the Peo-



Parents were invited to the Futurehill exhibition.



In the Hammarkullen of the future buildings are smaller, and there are both flats and houses. Nobody needs to steal, because there are safes full of money for the poor.



Interview with Ebru, age 7, about the future.

– *What will be happening in 20 years. What job do you want to be doing?*

– I'll be 27 in 20 years' time. I want to be a nurse then.

– *What do they do?*

– You look after people, people who are ill, and make them healthy

– *What do you think seems nice about that job?*

– Looking after people.

– *Where do you want to live then?*

– I want to live in Hammarkullen.

– *How do you want to live?*

– In peace. I want to be on my own.

– *Will there be other people living with you?*

– Yes, my children. However many that is.

– *Will there be some things that are better in the future?*

– Having plenty of money so you can buy loads of food. You can buy pets as well, a rabbit perhaps. Enough money for that, and clothes, nice clothes.

Interview with Sagal, age 10, about the future.

– *What did you want to be when we started Futurehill?*

– I wanted to be an architect. Because I wanted to build houses and see where everybody is going to live.

– *Is that what you'd really like to be?*

– No, I'd like to be a doctor.

– *Where will you live in the future?*

– I'll be living in my own country if the war's finished. If not, I'll still be in Sweden. Perhaps in another town, I don't know. I like it here.

– *Will anything be better in the future?*

– I think there'll be less wars than there are now.

– *Will you have a family?*

– Well not yet. A bit after 30 and I'll have a child, or two.

– *Who will be looking after things at home?*

– My husband.

– *Everything?*

– My husband will do the laundry, wash up, make the beds. I'll do the cleaning.

– *Why?*

– I don't like washing up

– *If you have children, who'll be at home with the baby?*

– Me, sometimes my husband.

ple's Hall in Hammarkullen. Meanwhile the future project will continue with practical environmental questions. Sorting of refuse, composting, natural water cleaning and country walks along Lärjeån enable the children to tackle several topical recycling questions.

The children learned a lot from their work on Futurehill and in particular they thought about how the future will be shaped and by whom. Most children at Emmahuset have an immigrant background. Many are refugees. War and insecurity are a part of their lives and those of their parents. To these children the historical and global perspectives are natural and important.

“We want them to have an opportunity to think from a change perspective and to see that things are not static.

We encourage them to compare different periods and countries, and not least we want to give the children a belief in the future. Children often have a brighter picture of the future than adults do, and it is important to make use of that,” says Ann Wallsten.

“When we were planning this work, we began by discussing what we adults ourselves think about sustainable development. What is the future facing humanity? It turned out that we had a lot of doubt. That was rather unpleasant. In that case, what can we pass on to our children? But it turned out that the children had great faith in the future. It was useful and important for us to learn about it,” says Annika Larsson, teacher responsible for the “service group” at Futurehill. ♠

Role play

Role play is a form of improvisation based on an imaginary situation, where pupils play pre-determined roles. While improvising they have to reflect on their own actions, why they are doing what they are doing and what the consequences will be. At the same time as the pupil is learning to reflect, detachment is created by the fact that he or she is playing a role and acting in an imaginary reality. When the pupils' discuss their actions and reflections afterwards, they reveal their ideas about what happened – to themselves and to others. The teachers obtain information on the thinking of the pupils/participants and the pupils gain a tool for learning.

Role play can be used to practise collaboration, decision-making, problem-solving and conflict-resolution. The aim of

role play may be to give new knowledge, consolidate and integrate existing knowledge, or convert theoretical into practical knowledge. It may shed light on problems and conflicts and examine alternative solutions. In role play you can practise communication, decision-making, raising awareness and changing opinions and attitudes. Experience of role play may also give readiness for action in new situations.

Forum game

A forum game is a special type of drama or simulation that starts with the teachers presenting a scenario to the pupils. It may concern, for example, a conflict situation, or a social problem or injustice. The pupils can then go in and influence the scenario, propose ways of changing the course of events. They are not prepared for what happens and

have to act spontaneously.

Themes which can be used for forum games include alcohol and drugs, preventive health, and love.

Storyline

A storyline theme often goes on for 6–8 weeks, and role play is an important constituent. There may also be elements of a shorter forum game in a storyline. But storyline teaching contains many more elements than role play and simulation in an imaginary world.

The cornerstone of the method, which was formulated by the Scottish educationist Steve Bell in the 60s, is storytelling as a tool in the learning process. Throughout history, storytelling has been people's most important means of passing on experience and knowledge. The preset scenario in a storyline

arouses the pupils' curiosity and involvement, and becomes the engine in the learning process.

The method is used in schools all over the world and is based on a constructivist view of knowledge. All the information with which we are confronted is linked to our earlier learning and experience and has to be integrated with our existing knowledge. The storyline method starts from what the children themselves know, and leads them on towards the unknown. The teacher puts questions and the pupils have to express what they know – and then acquire the knowledge that they lack. How was food kept fresh in ancient times? What means of transport were available and how were they produced?

An important aim is to develop the pupils' ability to search for knowledge.



Planet Pilots Keep the Earth in Balance

Is it better to go by bus or by train? What sort of fruit should you choose? Is there any difference between water in a recyclable can or in a glass bottle? In the environmental game the Planet Pilots, 11–12-year-old pupils in year 5 face priority questions about the environment.

Depending on how the class chooses to answer, things start to happen. The vehicle they are sitting in tilts and begins shaking if they answer wrong. They get clear signals that it is time to think again.

IN SPACESHIP EARTH the class goes through many different experiences. An environmentally trained artist and actor takes the children out on an exciting trip into the future. The actor brings the environmental questions to life, seizing the pupils' interest. The keynotes are experience, fascination, knowledge at the right level, participation, interaction, ascending degree of difficulty, group dynamics, collaboration and realism.

School classes can book times at the Ekocentrum and then be Planet Pilots for 90 minutes with the actor, who leads them into important environmental questions in a structured manner.

Cooperation on a future in balance

The class meets challenges on several levels. They have both to apply the knowledge they acquire from the environmental game, and to learn how to balance different points of view, rank arguments and listen to the views of others. And quite soon they learn that an incorrect answer brings a risk of falling out of the vessel in which they are travelling.

A central part of the training is the "Spacecraft", which has room for about fifteen pupils. There is a computerized ride that can move in various different ways. If the class gives the wrong answers to the questions, the whole vessel moves in a way that stops them keeping their seats. The task of the class is to keep the craft balanced – that way they keep the Earth in balance. The



Artistry, environment games and tricky puzzles. The Ekocentrum tries to arouse the pupils' interest and make them more environmentally aware.

pupils experience various light and sound effects according to how they answer.

Experience teaches lessons

To show that the environmental questions are here and now, they are made concrete with the aid of everyday objects. There is everything here from an old moped, a time line, a loudspeaker, an oilcan – to a functioning miniature biosphere. The objects help to create the feeling that it is real. The space vessel, surprising in its size and interactive functioning, is also a good aid to this concretization. The biosphere, which is a closed biological system with earth, air, water and plants in a glass container, is manufactured during the environmental game and the class is allowed to keep it as a reminder of what they have been doing.

Experiencing environmental questions in an entertaining and interactive manner creates the situation where the pupils can really absorb the message and the lessons. For further work in the class when they return to school the class teacher is given hints on follow-up exercises and is also asked to report to Ekocentrum on how the class continues its work.

Positive choices

Schoolchildren are a priority target group for Ekocentrum. Giving children and young people tools with which to handle known and future difficulties is seen as an investment in the future. Interesting the pupils in environmental questions and arousing their enthusiasm leads them to ask questions at an early age about values and behaviour that have an influence on sustainable development. The training of schoolchildren is intended to point to the positive choices that are on offer, to avoid doomsday prophecies and to emphasize really strongly how great the problems are that we are facing.

Schools often have very limited financial resources

for this type of education. As the activity is largely publicly financed (spring 2004), the classes can take the Planetpilot training free of charge. (They have to go to Ekocentrum by public transport.) The biosphere they are given to take back is free. ♠

More information

Pupils describe their experience of Planet Pilot training on Ekocentrum's website. The site also gives preparatory and booking information: www.ekocentrum.nu

For more information about the Planet Pilots by phone, ring 031-705 07 40.

Other courses

Upper secondary school students and elementary school pupils from year 7 upwards can book guided tours of the permanent environmental exhibition at reduced prices. They can also do their own assignments and research. Half-day and whole-day courses for teachers are also offered every year; please contact Ekocentrum for more information.

Ekocentrum – Sweden's biggest permanent environmental exhibition

Stiftelsen Ekocentrum, which was started by the environmental movement in Gothenburg in 1993, is an independent, self-managing non-profit operation. The aim is to spread knowledge and give information and inspiration to the general public, companies, schools and decision-makers on available

environmental technology with a view to speeding up the advent of an ecologically sustainable society.

Ekocentrum owns, manages and develops Sweden's largest permanent environmental exhibition and gives hundreds of short environmental courses every year, usually employing the exhibition as a background to illustrate relevant themes. A large number of good examples from about a hundred exhibitors forge links between environmental problems, consequences and available solutions. The exhibition has an aesthetic aspect, a design and a content that are intended to give visitors and students greater interest in looking for knowledge themselves. Over the years Ekocentrum has had more than 100 000 visitors.

The activities are 95 % self-financing, largely from the courses and from leasing the exhibition positions on an annual basis to selected companies or organizations, who can display examples of products, systems or solutions conducive to sustainable development.

Ekocentrum is under the supervision of the County Administrative Board and belongs to a number of networks.



In groups the pupils discuss various ethical dilemmas. By solving practical and ethical problems together they learn to understand each other better.

Life skills is a relatively new subject that has been introduced in many schools in Sweden. The aim is to strengthen the confidence of the pupils, to promote good relations and to develop their insight and capacity for empathy.

At Ryaskolan the emphasis is usually placed on personal relationships and values clarification.

Gärdsmisseskolan uses separate boy and girl groups, so that nobody will be afraid to talk openly about their feelings.



Game Makes Human Links

The pupils close their eyes and grab each other's hands, at random. Then try and unravel the tangle without letting go, to form a circle. It needs cooperation and teamwork.

Daring to let yourself fall backwards and trust your classmate to catch you. Talking about the risk of HIV and how to say no to cigarettes. This is life skills at Ryaskolan in Gothenburg.

"THE GAMES WE play in life skills are not played only as fun but to learn to be in a group and to respect each other. It is very important to be able to do that in a school."

That's what Linda, in class eight at Ryaskolan, says about life skills. And that is roughly what the teachers at the school thought when they introduced the subject a few years ago.

Ryaskolan is a nine-year compulsory school in Hisingen, Gothenburg. The area is called Biskopsgården, a hilly landscape of terrace houses and high-rise blocks from the 50s and 60s. From the top floor of the



Pupils' comments

– You could talk about what you wanted to know. Nobody said: “Don’t you know that!”

– What I thought was best was that we could ask questions about the subject we were discussing.

– Life skills is good, it’s like a little time to let go and relax during the school week.

– They tell you not to have louts as boy friends and not to be afraid to say that you don’t want sex.

– I think it was great that it was a girls’ group. You could say what you thought and there were no lads making comments.

– I think that we girls have had fun and been able to laugh and nobody has had to feel hurt.

school building the approach to the Port of Gothenburg is visible. The school has 400 pupils, eight out of ten of them with an immigrant background.

A few years ago a number of people at the school, both adults and children, reacted to the disrespect shown by some pupils, the bullying that was prevalent, and the intolerance of different cultural manifestations. The answer was the introduction of a new subject, life skills, which gives pupils knowledge about ethics and morality, personal relationships, drugs, diet, and outdoor life. Since the late 1980s the school had had personal relationships on the timetable, and useful experience could be drawn from that.

“We wanted to equip the pupils to feel well and to function both at school, with their friends, and at home,” says Maud Berndtsson, home economics teacher, who is in charge of ethical and moral education.

All the pupils in years 6–9, just over 230 of them, have life skills on the timetable once a week.

Ryaskolan has divided the subject into three main parts. Ethics and morality, drug prevention, and personal relationships. All teaching is given in half-sized classes and for some parts of the personal relationships unit the boys and the girls are separated.

Exercises allow the pupils to test their tolerance and understanding of others.

“A lot of things in school, and in life in general, require people to be able to trust each other and collaborate,” says Maud Berndtsson.

Values clarification is extremely popular. It confronts pupils with the dilemma of, for

example, seeing a friend being molested and having his/her school bag taken by another pupil.

“The exercise can take the form of a game, “four corners”. How do you act as a friend? Hurry to help – then place yourself in one corner. If you call a teacher, go to a different corner. Ignore it, put yourself in a third corner. If you have an idea of your own, go to the fourth corner.

“All those in the same corner then confer and give reasons for their position to the others,” says Maud.

Exercises of this kind are used in the different parts of the subject. In drug prevention the dilemma may look like this: You are invited to a party, where a lot of people that you like are present. Then older mates come along who want to start passing beer around. How should you say no, and why?

At Ryaskolan they use a Swedish version of the American “Dare to Say No to Drugs” programme. The programme consists largely in informing the pupils of how body and soul are affected by drugs.

Strengthening the confidence of pupils will bring them to the point where they are not afraid to say no to drugs and the violence that often follows in their footsteps.

“We talk about the consequences of starting on drugs. Not only the danger to health but also that it often leads to crime in order to obtain the money it needs,” explains Mona Henriksson Johansson, textile teacher.

“We used to work closely with the local police, who came here during the lessons. The police and the pupils got to know each other and we think that was very useful.”

Personal relationships is another part of life skills. The subject used to be called sex and personal relationships.

“The pupils seemed to expect pornographic films, so we thought it better to change the name!” says Gun Magnusson.

She teaches biology, maths and chemistry, and is also responsible for the personal relationships part of life skills. It is aimed primarily at pupils in year 8, but also affects those in year 9. Instruction is given in small groups of seven to ten.

“First we tried having girls and boys in the same group, but it didn’t work very well, especially bearing in mind all the different nationalities that we have here. So now the groups are single-sex.”

In the personal relationships groups attention is paid to HIV and aids, among other things.

“Pupils often have the idea that HIV is not very dangerous and that anti-viral agents will take care of everything,” says Gun. “We think it’s incredibly important to tell them about the risks and that absolutely anybody can be affected.”

Instruction in personal relationships is given at Ryaskolan with the help of the school nurse, the school welfare officer and the youth recreation leader, and with a psychologist and an educational sociologist from the youth counselling centre in the district. Two female and two male leaders work with the group. This way of working demands resources, but in return it gives very high quality, and the pupils feel secure.

“Quiet, shy youngsters blossom and are not afraid to say what they think and defend it,” says Gun.

“At the first meeting we put the chairs in a circle. We have no table in front of us. Everybody needs room to talk, so we only let one person speak at once. Everything that is said stays in the group.

“Excellent personal contact develops, and it spreads to other aspects of school work,” says Gun Magnusson.

The leaders of the life skills classes hope that when the pupils leave compulsory school at sixteen they will have grown in confidence, learned to work together and realized the importance of respecting each other and each other’s opinions. ♠



The pupil in front leans slowly backwards and is caught by a classmate. How far back the pupil leans is for him or her to decide. It depends how secure you feel! Magnus trusts Deniz.

Ryaskolan’s goals for life skills

The subject should give the pupil the opportunity to

- Function socially
- Understand himself/herself
- Grow in confidence
- Learn to live healthily

Personal relationships – goals

- Improve teenagers’ awareness of their own responsibility in relationships.
- Give information on avoiding spread of HIV/AIDS infection and other sexually transmitted diseases.
- Increase knowledge of means of contraception.

- Discuss the influence of alcohol and drugs at the time of sexual debut.
- Prevent early pregnancies.
- Give information on sex and personal relationships in Sweden and other cultures in order to increase understanding and reduce prejudice among pupils at senior level (ages 13-16) in our multicultural area of the city.
- Give social competence by preparing youngsters for situations they may encounter, to help them make more conscious choices themselves.



There is Only One of You

Each individual is unique, in the whole world there is only one example of the person you see in the mirror. That is the message to the girls of Gärdsmisseskolan when life skills are on the timetable.

EVERY WEEK THE girls of class 5–6 at Gärdsmisseskolan in Bergsjön have a lesson in life skills. They meet at Backen recreational centre close to the school. Today they are going to discuss “on becoming a woman”. The ten girls have all just reached or are about to reach puberty.

“We sit on the sofa with candles and soft music,” says Cecilia Zachrisson, one of the leaders.

Everyone starts by describing something that has made them happy. There is a scratch block in the classroom where they write whatever occurs to them.

“We go on to talk about the best thing about being a girl. What the girls want in their adult lives. There is a cosy

discussion, with a lot of questions coming up about love, children, going to discos, and boys,” Cecilia goes on.

Together with her colleague Siw Jacobsson at Backen Youth Recreational Centre she leads two of the girls’ groups at 11 – 13-year-old level at Gärdsmisseskolan/Siriuskolan. Since the autumn of 2001 the leisure and school unit have been running a joint project where the subject of life skills plays a big part. From the very beginning there has been a wish from the teachers at the school to divide the pupils into boys and girls’ groups. It worked out so well that the division has become permanent.

“The children have the courage to be more frank in separate groups, the boys aren’t afraid to ask questions about girls. We try to create a forum where there is a lot of time for discussion, giving the children the possibility of putting feelings and thoughts into words.”

All intermediate level children are offered boys’ and girls’ groups for about an hour and a half per week. The staff at the recreational centre are the group leaders; there are five more as well as Cecilia and Siw. The aim is to develop and strengthen the children’s self-image, and to give them confidence in both themselves and other people. They will also learn more about a number of important subjects, such as sex and personal relationships, tobacco and drugs.

“We also want to help the children to make good choices, both now and in the future, to resist group pressure and not to be afraid to say no to things that are harmful,” says Cecilia.

When the girls on the sofa have talked for a while about the advantages of being a girl they are bold enough to go on to talk about menstruation and what it really is. What happens to your body when you start having periods? Siw and Cecilia bring various kinds of sanitary products that they demonstrate.

“Every time we have a questions box, where anybody can put their questions quite anonymously. We adults

put questions in, too. In that way nobody need feel conspicuous.

This time we got questions about relationships and about the body, especially the female sex organs. How do we look? How do our bodies work?” Siw and Cecilia showed pictures of the female sex organ.

“We wrote names for the female sex organs on the flip pad. We also talked about how important it is to react when one is insulted with four-letter words and gave examples of how to reply when one is addressed abusively. And how important it is not to behave like that to others.

“You have to talk about things like that, we don’t do that in school,” says Vanesa, one of the girls at today’s lesson.

“When Cecilia and Siw tell us things, I understand better than if I read about them,” says Nora, another pupil.

Cecilia Zachrisson and Siw Jacobsson and their colleagues have drawn up annual plans for both boys’ and girls’ groups. This means that they know exactly what they are going to work on in years 4, 5 and 6. Several of the subjects crop up repeatedly and run like a theme

Aims and objectives of Gärdsmisseskolan in the subject of life skills

- Develop and strengthen the children’s self-image
- Develop and strengthen the children’s confidence in themselves and in others
- Work to help the children find alternative strategies for resolving conflicts and problems
- Give information about a series of important subjects such as sex and personal relationships, tobacco, drugs etc
- Help the children both now and in the future to make good choices, stand up to group pressure and not be afraid to say “no”.
- Work to prevent bullying and other harassment
- Enable the group to function together without conflict

Comments from the girls

– *Why is it important to discuss being a woman, how the body works, what menstruation is?*

– So you can say no to bad things.

– Because I'll need it in my life.

– I need to know everything.

– *What is best about being in the girls' group?*

– Learning new things and being able to say almost whatever you think.

– You can talk about a lot of things you wonder about and it's nice when there are only girls there.

– You learn a lot about things you don't talk about in school.

– *What have you learned today?*

– That you only lose about three tablespoonfuls of menstrual blood every month.



The girls in years 5-6 at Gärdsmisseskolan have formed a dance group. They create their dance themselves and perform when they have the opportunity.

through all the forms. It is also possible to go back to earlier subjects when situations arise that need this, like bullying. Naturally the plans vary a little according to the composition of the group. The boys' and the girls' groups work a little differently.

“In the boys' groups we always start with a period of relaxation, everybody lies on the floor and we turn the lighting down. A lot of the lads need this to calm them down, and we notice that it has a very good effect. Otherwise we take up roughly the same things in all the groups. Of course you have to take account of the maturity of the group concerned.”

“It's amazing how much two groups of the same age can differ in maturity. One of the school's most important functions is to let

each individual pupil find his or her unique individuality. This may of course happen in different ways. Siw and Cecilia chose the following for this particular lesson. All the girls were given a pear, to symbolize the womb, and two almonds, to symbolize the ovaries.”

“We told the girls that two million sperm were racing to reach the egg first. And it was the sperm that won the race that eventually became them. This underlined the point that every individual is unique,” says Cecilia.

“When we finished the lesson we had prepared a treasure chest with a mirror inside. The pupils were sent out of the room one by one. Go into another room, open the chest and look inside – to see something that is the only one of its kind in the world.” ♡



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On school development in the City of Gothenburg

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The big questions of the world's future concern all countries and all people. To tackle poverty, arrest climatic change and cut off the fuel supply to conflict and terrorism we must understand the connection between these problems and their interdependence.

The concept of sustainable development implies a holistic approach to questions of the world's destiny, and combines the need for social development and financial security with ecological consideration – for all the earth's people. It therefore acts as a unifying basis for international discussion of world development.

This book seeks to arouse interest in sustainable development as a perspective in teaching, and to help establish it in our schools. The reader will also find advice on teaching and examples of the work that is being done in nursery, compulsory and upper secondary schools in the Gothenburg region. These concern everything from work on the value basis of gender equality and democracy to learning about sustainable consumption, outdoor education and conflict resolution.

A historical background to the emergence of the sustainable development approach is given by way of introduction. The book also gives an account of the policy documents which are relevant to the area, from UN agreements to national curricula.