

Antti Rajakorpi & Hilikka Rajakorpi (eds.)

SUSTAINABLE DEVELOPMENT
IN SCHOOLS AND EDUCATIONAL
INSTITUTIONS?

Evaluation 7/2001

National Board of Education

© Opetushallitus

Layout: Sirpa Ropponen

ISBN 952-13-1189-4

ISSN 1238-4453

Yliopistopaino, Helsinki 2001

PREFACE

This publication is a summary of the Finnish report *Antti Rajakorpi & Kaija Salmio 2001: Toteutuuko kestävä kehitys kouluissa ja oppilaitoksissa. Arviointi 3/2001. 344 s. Opetushallitus. Helsinki*. The original Finnish publication is about the theme evaluation arranged by the National Board of Education (NBE) during the years 1999–2000 concerning the state of sustainable development in Finnish schools and educational institutions. The publication consists of two parts, Part I: Evaluation, consisting of the results and Part II: The State and the Future, consisting of specialist articles and schools' own examples describing how sustainable development can be included as part of curricula and their targets. The contents of the original report are included as Appendix 1. This English version is a summary of the Part I, evaluation and its results.

The editors of this English version have dealt the work so that Hilikka Rajakorpi has edited the chapters 5.2.1 and 5.2.2 and translated the text from Finnish into English. Antti Rajakorpi has edited all the other parts of this report. We thank Mr George Davidson for the linguistic revision.

Vammala May 1st 2001

Antti Rajakorpi

Hilikka Rajakorpi

CONTENTS

PREFACE	3
1 INTRODUCTION	5
Antti Rajakorpi	
1.1 Evaluation of education	5
1.2 The definition of sustainable development	5
Antti Rajakorpi & Kaija Salmio	
1.3 The basics of the evaluation of sustainable development	7
Antti Rajakorpi & Kaija Salmio	
2 THE AIMS OF THE EVALUATION OF SUSTAINABLE DEVELOPMENT	8
Antti Rajakorpi	
3 THE REALISATION OF THE EVALUATION	9
Antti Rajakorpi	
4 THE STATE OF SUSTAINABLE DEVELOPMENT	11
4.1 By school types	11
4.2 By municipality groups	12
4.3 By language groups	14
4.4 The importance of the sustainable development programmes and education of the schools	14
5 SUSTAINABLE DEVELOPMENT IN THE EDUCATION OF OTHER COUNTRIES	17
Antti Rajakorpi	
5.1 Scotland and Tanzania as standard points of comparison	17
5.2 International co-operation	21
Marja Hahtola	
5.2.1 Posio upper secondary school Lingua-project	21
George Davidson & Hilikka Rajakorpi	
5.2.2 Sustainable development in Peebles High School, Scotland and Vammalan lukio, Finland	25
Kaija Salmio	
5.2.3 Environmental education projects	31
Antti Rajakorpi & Kaija Salmio	
6 SUMMARY	
6.1 Results	35
6.2 Conclusions	48
7 SOURCES	55
8 APPENDIX 1	59

1 INTRODUCTION

Antti Rajakorpi

1.1 Evaluation of education

The legislation concerning the educational system, coming into force at the beginning of the year 1999, contains regulations on arranging evaluation. The Basic Education Act 21.1§, the Upper Secondary Schools Act 16.1§, the Vocational Education Act 24.1§, the Vocational Adult Education Act 15.1§, the Free Adult Education Act 7.1§ and the Initial Art Education Act 7.1§ define the purpose of the evaluation of education: the purpose of evaluation is among other things “to support the development of education and improve the preconditions to learning”. The 2nd moments of the above mentioned paragraphs of the laws are obligatory to the provider of education: “The provider of education must evaluate the education it gives and its effectiveness and take part in the outer evaluation of its operation”(see legislation references Ranta 1998).

The duty of the NBE is to develop evaluation and arrange external evaluations. For this task the NBE has developed a national evaluation system which consists of national schooling indicators, the evaluation system of learning results and projects with varying subjects (Opetus-hallitus 1998).

Sustainable development was included in the theme evaluation of the result agreement made between the Ministry of Education and the NBE in the year 1999. The task was to launch evaluation both in the educational actions taken to carry out the promotion of sustainable development as well as in other daily activities.

1.2 The definition of sustainable development

Attention was paid to the deterioration of the global environment and failing development projects due to wrong type of technology as early as in the 1972 UN's Development Conference in Stockholm. The concept of sustainable development was defined for the first time in the Brundtland Commission Report, the World Commission on Environment and Development, *Our Common Future* in the year 1987: “Sustainable development is development which satisfies the needs of the present population without endangering the possibilities of future generations to satisfy their needs” (Ulkoasiainministeriö 1988, Ojalampi–Wamai 1997).

The principles of sustainable development were included in the Rio Declaration of the UN's Environment and Development Conference in Rio de Janeiro in 1992. Agenda 21 was drawn up as a functioning programme for the 21st century. Since then, several UN environment and development conferences have gone deeper in the interpretation of sustainable development. For example the Population Conference of Cairo in 1994 set as the target of its sustainable development functioning to slow down population growth and to bring it in harmony with the sustainable use of natural resources. In the year 1997 UN special conference made sustainable development strategy set for all countries by the year 2002 as its target. To fulfil this obligation the Finnish Government has drawn up a sustainable development programme (see Ympäristöministeriö 1998).

The Finnish National Commission on Sustainable Development has defined sustainable development as “a global, regional and local continuous and guided social change which takes the limited capacity of nature into consideration and aims at securing good possibilities for living both for present and future generations” (Suomen kestävän kehityksen toimikunta 1995).

The three basic elements of sustainable development are *ecological*, *economic* and *socio-cultural* sustainability. Some of the important challenges of ecological sustainability are slowing down climatic changes to a level endured by the ecosystems, securing biological diversity and a sustainable use of natural resources. With economical sustainability we mean growth which is balanced both in its contents and quality, which is not in the long run based on indebtedness or destruction of resources. In socio-cultural sustainability the aim is to secure the transfer of prerequisites of welfare from one generation to another. Economical and social as well as cultural actions must be of the kind that they promote ecological sustainability (Ympäristöministeriö 1998, Lähdesmäki 1999, Raumolin 2000).

Antti Rajakorpi & Kaija Salmio

1.3 The basics of the evaluation of sustainable development

Framework Curriculum for the Comprehensive School (Opetushallitus 1994a) and Framework Curriculum for the Senior Secondary School (Opetushallitus 1994b) contain the promoting of sustainable development duty in the chapters about the school's value basis. Likewise sustainable development is an important educational target in the core curricula for the vocational education (Opetushallitus 1995a, 2000). Sustainable development is included in the adult skills examination as part of required vocational skills (Opetushallitus 1995b).

Upbringing is a central factor in the forming of students' value basis and in the guiding of behaviour so that actions are in harmony with nature i.e., one has to learn to live to the model of sustainable development where "it is essential to adapt human economy to nature's preconditions and at the same time increase people's own capacity to cope with life and possibilities to act in their own communities as well as promote the sustaining and developing of the cultural milieu" (Opetushallitus 1994a and 1994b).

Leinonen (1999) has stated that educators and teachers have a special responsibility to understand that sustainable development cannot be based on the continuous and endless growth of economy. According to Åhlberg (1998a) teachers and schools have a vital task in promoting the high-standard learning of sustainable development, good environment and good life. Good environment is largely defined as ecological, economic, social and cultural surroundings which is healthy and beautiful and makes sustainable development possible. Sustainable development, good environment and continuous improvement of quality are the instruments promoting people's good life. It is the duty of the school to act according to its educational aims so that teaching and daily actions support the reaching of the targets aiming at sustainable development (see Lähdesmäki 1999).

Alongside with the core curricula and the annual objectives and results agreement between the Ministry of Education and the NBE in 1999 the evaluation of the state of sustainable development in schools and institutions is based on several decisions, documents, programmes and publications made in the 1990s. Some of the most important publications linked with this evaluation are shown in the original report (pp 21–23), one of them being Programme for Furthering Sustainable Development in the Years 1998–2000 (Opetushallitus 1997).

2 THE AIMS OF THE EVALUATION OF SUSTAINABLE DEVELOPMENT

The aim of the evaluation of sustainable development launched by the NBE was to identify how the principles and targets of sustainable development described in curricula and separate promoting programmes are carried out in schools. Simultaneously information on the state of the teaching of sustainable development was brought up. In this sense the following items have been clarified:

- 1) What is sustainable development in the *written curricula*? Here attention is particularly paid to if the schools' own curricula have the three basic principles of sustainable development – ecological, economic as well as socio-cultural. Separately has been asked whether the community and school have a separate promotion programme for sustainable development.
- 2) What is sustainable development in the *realised curricula*? The target of evaluation is to identify
 - how sustainable development is taken into consideration in the subjects included in the curriculum
 - how sustainable development is realised in different subjects and their teaching (theme days, subject entity, integration, optional or compulsory course) and in the field-specific application of the vocational institutions
- 3) How have people *schooled* themselves for carrying out sustainable development and what kind of *co-operation* is done to reach it?
- 4) What are the *daily activities* in schools to carry out sustainable development? The evaluation identifies
 - the visibility of sustainable development in the daily actions of schools and in the purchases as well as in the commitment and attitudes of the personnel groups
 - participation in projects promoting the issue
 - issues promoting and harming sustainable development
- 5) How are the principles of sustainable development carried out in *schools in other countries*?
 - Comparative information has been received from a few co-operation projects that Finland has been involved in from Scotland and Tanzania, two countries entirely different in their society development.

3 THE REALISATION OF THE EVALUATION

According to the annual objectives and results agreement between the Ministry of Education and the National Board of Education in 1999 the NBE arranged a theme evaluation on the state of the sustainable development in schools and institutions. In February 1999 all the schools under the NBE were sent instructions and recommendation for the self-evaluation of sustainable development (Tiedote 8/99. 05.02.1999), and in April 1999 500 schools, selected by a stratified random sample, were sent the questionnaires for carrying out an external evaluation to collect the estimation data (Kysely 10/99. 13.4.1999). The sample consisted of 74,2 % general education, 14,4 % vocational education and 11,4 % free adult education schools. The schools represented all provinces, EU areas and community groups. 91 % of the schools were Finnish speaking and 9 % Swedish speaking.

There were four pre-tested questionnaires for each school unit: for principals, teachers, non-teaching staffs and students' unions. The lower stage of comprehensive school 6th year pupils had a questionnaire of their own. The questionnaires were answered by 85,4 % general education, 80,6 % vocational education and 94,7 free adult education schools. The number of schools answering the questionnaires was 429 i.e. 85,8 % of the whole sample (see school types in TABLE 1).

TABLE 1. The number and types of answering schools in the evaluation of sustainable development.

GENERAL EDUCATION		VOCATIONAL EDUCATION AND TRAINING		FREE ADULT EDUCATION	
Lower stages of comprehensive schools (lower stages, grades 1-6)	173	Initial vocational education schools	42	Folk high schools	18
		Specialized vocational schools	5	Adult education centres	22
Upper stages of comprehensive schools (upper stages, grades 7-9)	68	Special vocational school	1	Other free adult education	14
		Vocational adult education centres	10	- Music schools (n = 9)	
Special schools (grades 1-9)	26			- Sports institutes (n = 3)	
Upper secondary schools	50			- Study centres (n = 2)	
Schools total (N)	317		58		54

Ten case schools were chosen from the reply schools. It was agreed that they would write articles to be included to the evaluation report. The principle was that they should represent as different units as possible and carry out the principles of sustainable development more actively than schools on an average.

International comparison was collected from five Scottish and five Tanzanian schools by using adapted versions of the questionnaires that were used in the Finnish evaluation. The participation of these two countries was based on the links one of the sample schools had created to Scotland under a Lingua E project and the same sample school having a development co-operation project to support general education at a Tanzanian girls' school. The Scottish co-operation partner drew four other schools from the Scottish Borders Council's area to join. The Tanzanian Ministry of Education granted the permission to carry out the questioning in five schools, nominated by them, in the areas of Morogoro and Dar es Salaam. Four of these answered the questions. One private school from Dar es Salaam joined the group. Both the Scottish and the Tanzanian schools correspond to the Finnish upper stage of comprehensive education classes 7–9 and upper secondary school. An example of environmental co-operation of a Finnish and Italian school is included.

To gain comparative data also other natural science projects, launched by the NBE, linked with teaching were used. Such were for example Globe, Baltic Sea, OECD/ENSI and The Northern Ecosystems and Education Projects. In addition to that there are specialist articles by two researchers in Part II of the original report.

Antti Rajakorpi

4 THE STATE OF SUSTAINABLE DEVELOPMENT

4.1 By school types

School types are compared in the following with the help of the means of the sustainable development parameters. In developing the parameters OPLM software was used (Verhelst etc. 1995). The material consisting of the replies of the principals was standardised and classified as 0–1 variables (standard point $< 0 = 0$ and the standard point $> 0 = 1$). After that the parts whose correlation to the sum was below 0,20 or which were not logical were removed. In this way 20 variables were received from the central questions in the principals' questionnaires (see the original report, p. 227) the sum of which is here called the parameter of sustainable development. In this publication the sustainable development parameters of school types are the averages of the sustainable development parameters of individual schools.

Statistical significances are in this report marked as follows:

- = not statistically significant $0,05 < p$
- * = statistically almost significant $0,01 < p < 0,05$
- ** = statistically significant $0,001 < p < 0,01$
- *** = statistically highly significant $p < 0,001$

The parameter of vocational schools is the biggest and it differs statistically almost significantly from that of the general education and significantly from that of the free adult education. The parameters of the general education and free adult education do not differ significantly from each other (Fig. 1).

In the general education group the parameter of the upper stages is the biggest and the parameters of the special schools and lower stages are statistically significantly smaller. The difference between the upper level of comprehensive education and upper secondary education is not significant. In vocational basic education the average is the highest but the differences between the schools in this group are not statistically significant. In free adult education the parameter of the folk high schools is the biggest and that of the adult education centres the smallest. Even this notable difference is not statistically significant in a small sample. The result of the adult education centres can be explained with the fact that their operation forms and operation environment are very different compared to those of the other schools. Several smaller adult education centres work for example in hired premises and only the biggest have their own school premises.

4.2 By municipality groups

When the entire material is grouped according to the municipality grouping, the parameter of the sustainable development for schools is the biggest in urban municipalities and the smallest in the rural municipalities. The difference is statistically almost significant (Fig. 2). The sustainable development parameter for schools in semi-urban municipalities does not differ significantly from the result of the two others. The inner variation of general and vocational education is not statistically significant. The difference between schools of the urban and rural municipalities is due to the fact that the sustainable development parameter in the schools of free adult education in urban municipalities is almost significantly bigger than in the rural municipalities. The sustainable development parameter in urban vocational schools is smaller than that of the two other municipality groups' schools but because of the small material the differences do not have statistical significance.

FIGURE 1. Sustainable development given as sum averages of the parameters formed from the principals' answers. The statistical significance of the differences: All schools: Vocational/free adult education **; vocational/general *; general education/free adult education -. General education schools: upper stage/lower stage **; upper stage/special schools **. Vocational schools: -. Free adult education schools: -.

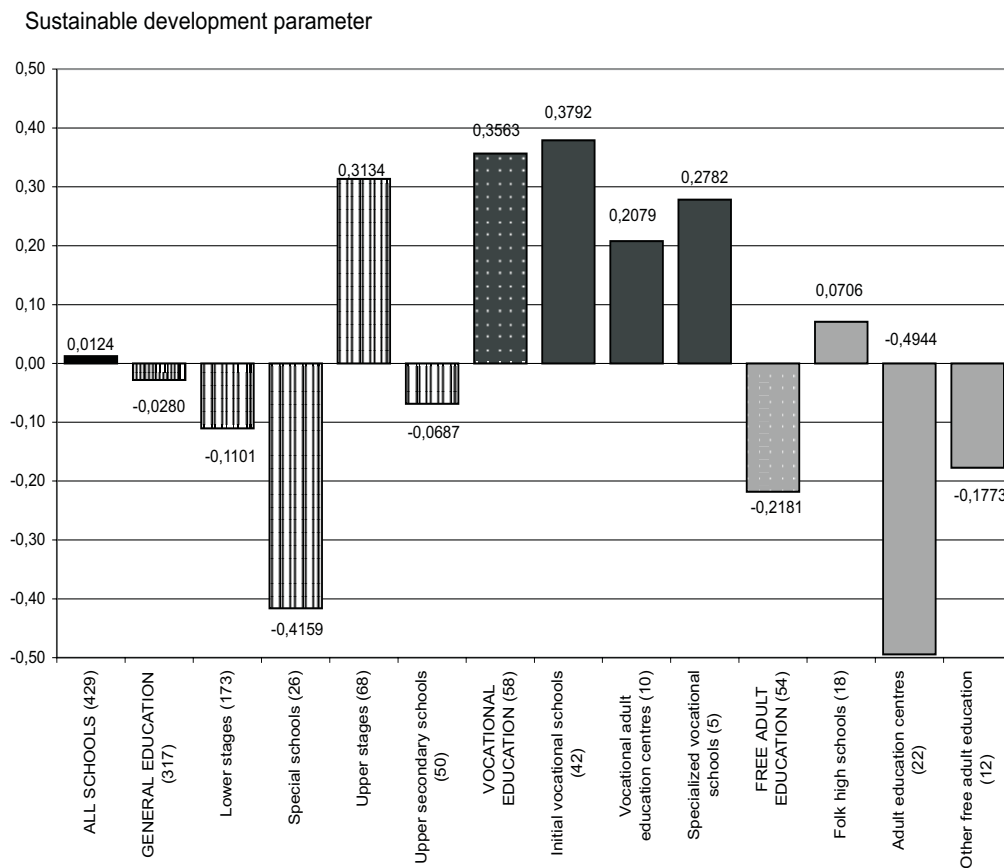
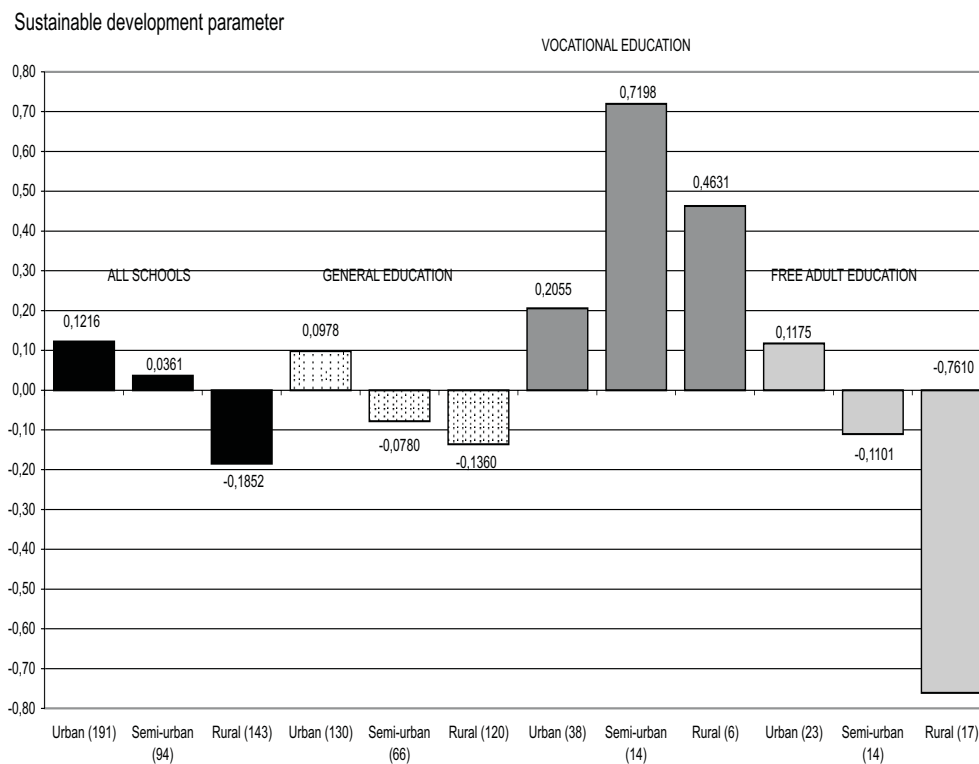


FIGURE 2. Sustainable development in the schools of urban, semi-urban and rural municipalities. The statistical significance of the parameters of the schools in urban and rural municipalities *.

A similar result to the one above was got when studying the principals' answers on the number of communal programmes for sustainable development. The schools that informed their municipalities had individual sustainable development programmes were statistically significantly more in urban and semi-urban municipalities than in rural municipalities. The making of communal sustainable development programmes had only started at the time of the questioning. The bigger municipalities have had better resources to start this work, which will be taken up by many rural municipalities with delay due to both scantier economic and personnel resources, also confirmed by this result. Instead, schools in different municipality groups had on an average the same amount of sustainable development programmes of their own in this principal questioning material so urban schools are not ahead of rural schools in this issue. Nor were there any statistical differences in the schooling of sustainable development between municipality groups.



4.3 By language groups

With the help of some questions taken from the principal material some comparison was made between the answers of Finnish and Swedish speaking schools in Finland. In the amounts of communal and school specific sustainable development promotion programmes, participation in the schooling of sustainable development or co-operation with outer bodies, the differences between language groups were not statistically significant.

4.4 The importance of the sustainable development programmes and education of the schools

Programmes: Schools' own sustainable development programmes have had a clearly motivating effect on their daily sustainable development actions. According to the answers of the principals, schools that have made sustainable development programmes take these principles into consideration statistically highly significantly better in cleaning, kitchen work, waste management as well as in the management of the premises and in machine and equipment purchases and teaching almost significantly better than the schools that have no such programmes.

The same trend was emphasised in the teachers' answers because the differences of the actions mentioned above were statistically highly significant in these two school types. This is the case even in traffic arrangements and answers concerning the care of schoolyards. Only in the actions of offices, in teaching and in the purchases of machines and equipment and in the use of materials used in teaching the differences were significant or almost significant.

According to the answers given by the non-teaching staffs, carrying out sustainable development was statistically highly significantly more efficient in waste management, significantly better in the kitchen and teaching in the schools that had separate sustainable development programmes. In other actions the statistical significance in differences was smaller or didn't exist. Even if the students' unions also considered the purchases and daily activities to be more efficiently carried out if the school had a sustainable development programme, the differences compared to the schools without programmes had hardly any statistical significance.

The same activating effect was also seen in the follow-up of consumption and waste management between the two school groups compared above. The reply averages of the programme schools' principals were statistically highly significantly bigger in the follow-up concerning recycling, sorting and pile-up of waste. There was no statistical difference in the follow-up of other subjects. Instead, the reply averages of the teachers in programme schools were in all the issues that were followed statistically highly significantly bigger than those in the group with no sustainable development programme. There was no statistical significance difference in the answers of the students' unions.

Training: The principals from the schools that had participated in sustainable development training had without exception bigger reply averages than the principals of the schools that had not when asking *How are sustainable development principles taken into consideration in the purchases and daily activities of your schools?* The biggest differences were found in waste management (***), office actions (**), cleaning, kitchen work (*) and teaching (*). The reply differences of the teaching staffs were not equally big but the reply average of the teachers whose schools had participated in training was, however, statistically significantly bigger and the average concerning the management of the premises almost statistically significantly bigger than the reply average of the teachers from non-participating schools.

The reply averages of the principals whose schools had participated in sustainable development training differed in matters of consumption and waste management follow-up from those of non-participating schools only in terms of the sorting (**) and the pile-up of the waste (*) and recycling (*). Despite the fact that the reply averages of the teaching staffs in schools participating in sustainable development training were to some extent bigger than those of the non-participating teaching staffs, statistically significant differences were only seen in the follow-up of the sorting of waste (**) and recycling (*).

Based on the results above the schools' own sustainable development programmes and related training have a positive impact on the schools' actions. Sustainable development as a training subject is still limited in Finland. Based on the answers of the principals and teachers only about 30 % of schools have taken part in the training about the carrying out of sustainable development. As the information on sustainable development increases, so does the demand for training and education. Increasing research and training is a national target (Ympäristöministeriö 1998). UNESCO's (1997) report takes education as the most efficient means to meet the future challenges in society: "Education, in short, is humanity's best hope and most effective means in the quest to achieve sustainable

development". It is not enough that the issue looks good in curricula. Information and skill to open the text into practical action are also needed. In the original report in chapter II:1 Eloranta doubts that the Finnish comprehensive schools do not offer enough aesthetic approach to nature and in chapter II:9 Åhlberg emphasises the importance of environmental education and research as factors improving and confirming the quality of the schools and institutions. Raumolin (2000) has published a suggestion for the criteria and indicator of sustainable education. However, he thinks that no school in reality can fill them all but that they give a guideline for the schools of the future in sustainable development.

5 SUSTAINABLE DEVELOPMENT IN THE EDUCATION OF OTHER COUNTRIES

Antti Rajakorpi

5.1 Scotland and Tanzania as standard points of comparison

Scotland: Five Scottish schools volunteered to answer corresponding questionnaires as the Finnish sample schools. According to them paying attention to sustainable development in curricula and teaching can be characterised as modest. It has not been written in the curricula and the sample schools do not have school-specific sustainable development programmes. However, social and cultural sustainable development is taken into consideration well. In teaching sustainable development is to some extent integrated in the contents of different subjects the major subjects being biology and geography.

There is no schooling for sustainable development, personnel groups have little co-operation for the benefit of the subject and participation in carrying it out in their schools. Thus, for example, the personnels think that sustainable development doesn't show *at all* in their schools' operations. One reason for this is the fact that the schools do not have nominated responsible persons or teams for environmental and sustainable development issues. The principles of sustainable development are taken into consideration in purchases and daily activities at best only *to some extent*. According to the principals the consumption of energy is followed *fairly regularly* but the follow-up of other forms of consumption is *occasional*. There is *hardly any* follow-up of the sorting and accumulation of waste and the collection of useful waste is mostly not arranged except paper collection, which is done in three of the five schools. However, hazardous waste is being taken to appropriate collection tanks in all the five schools.

Based on the very few examples received from the schools, the concrete actions taken by the personnel groups for the promoting of sustainable development are mainly restricted to collecting paper and aluminium cans as well as campaigns against littering. Very few projects on the theme have been carried out and at the moment there seems to be no such plans for the near future. The most commonly mentioned obstacles for realising sustainable development seem to be the lack of time due to schedules, the lack of money, expertise and knowledge.

Based on the few examples it seems that sustainable development is not internalized in Scotland as well as it has been done in Finland. The quantitative analysis showed that the carrying out of sustainable development is at a modest level being mainly restricted to the collection of some waste articles and the recycling of paper. However, Scotland does have some special eco-schools and too much generalisation should be avoided because of the small number of reply-schools. A thing to be noted is that Scotland has a rich cultural heritage, which is cherished with care.

Tanzania: The five Tanzanian schools didn't either have written principles of sustainable development in their curricula. However, three schools informed of having school-specific programmes for sustainable development. Based on their answers sustainable development is taken into consideration in teaching *to some extent* in a more versatile way than in Scotland, but basically integrated within different subjects. The subjects that best paid attention to these things were social studies, environmental and natural science subjects, biology and geography. Students were hoping to have more courses on the subject. The thing the students found most vital to handle were nature protection, environmental management, poverty, birth control and forestry, all very topical and central things in a developing country facing various problems.

There has been no schooling in sustainable development for Tanzanian principals, teachers or non-teaching staffs. However, three schools had teams and two a nominated responsible person answering for environmental and sustainable development things. According to the non-teaching staffs sustainable development was seen in the activities of the schools *to some extent*, but the opinion of the students was close to *rather much*. Based on the answers the attitudes towards sustainable development were more positive than those of the Scottish schools. Participation in carrying out sustainable development is more active, so is co-operation between personnel groups, commitment to the topic and the follow-up of consumption. Sectors where sustainable development is *not* carried out *at all* are traffic arrangements, waste management and machine and gadget purchases. The collection of hazardous waste is partly unattended and they are dumped with the rest of the waste because of the lack of appropriate collection tanks. There is also very little collecting and sorting of reusable waste: only two schools out of five claimed to have arranged the collection of paper, cardboard and glass.

Despite the fact that the personnel in the Tanzanian schools informed that concrete activities in carrying out sustainable development are fairly few, it is noticeable that school surroundings are considered very important. According to the principals the equipping and tending of the

school yards are *rather well* looked after in the schools' daily activities. Students take part in keeping the school surroundings tidy, in fighting erosion by planting trees and other plants, in looking after the school garden and domestic animals. Schools also have projects, many of which are linked with the improving of the school surroundings.

The co-operation, commitment and participation of both teachers and students promote sustainable development. Economical obstacles are the most common restricting factor, others are, for example, the ignorance of the principles of sustainable development, the lack of recycling centres and inadequate technical readiness.

Based on their answers and observations during the visits to the schools, the Tanzanian control schools have, on the whole, positive attitudes towards sustainable development. However, all the schools, except one, taking part in this evaluation were chosen by the Tanzanian Ministry of Education and Culture and accordingly of very high standard in Tanzania. Bearing in mind that the material prerequisite for giving education is in many schools very poor, which makes sustainable development not one of the priorities. Schools concentrate on their own natural targets like surroundings and culture.

The wish from the students to receive more education in things linked with sustainable development, like poverty, birth control, taxation and employment are in accordance with the fact that poor developing countries have particularly emphasised the social aspect of sustainable development. In the developed countries the emphasis has been on the ecological sustainable development (Wiman 1999).

5.2 International co-operation

Marja Hahtola, Posion Lukio

5.2.1 Posio upper secondary school Lingua-project

Posio Upper Secondary School participated in EU's Lingua E-function of Sokrates programme. Lingua is a language programme which contains a co-operative project for young people to promote their practical language skills. Our co-operating school, *Instituto Tecnico Commerciale e per Geometri – Jean Monnet*, is located in Ostuni in southern Italy.

Before realizing the plan, there were preparatory visits in 1997 and the actual exchanges were in 1998. The preliminary object of the project was agreed to be **culture and traditions**. Participants in the project were comparing the differences between the two areas located in different sites of Europe, especially the differences and the similarities between Posio and Ostuni concentrating mostly on comparing the structures of the sources of livelihood, environmental factors and recycling.

Nature and recycling

Posio is situated in Lapland where the soil consists mainly of podsol and the climate is cold and damp. The most important resources of Posio are forests (coniferous forests) and water. In Posio there are 3000 ponds and lakes which make 14 % of Posio's area. The biggest lakes are Lake Kitka and Lake Livo.

Posio features 13 state-owned environmentally protected areas that cover one sixth of its surface. National parks represent a significant part of these protected areas and for those who want to have access to them there are several cabins and paths; the latter being marked by signposts to prevent tourist from getting lost.

In Posio there are many crystal clear lakes that cover a large part of its area. Two of Posio's attractions are also Riisitunturi National Park which extends over 76 sq km (Posio's largest National Park) and Korouoma Canyon which is 30 km long and 100 m high.

The two main crops in **Ostuni** area have always been grapes and olives. Unfortunately, grape growing is disappearing, leaving olive growing as the main form of agriculture. The olive tree has ancient origins and probably comes from Southern Asian coasts, especially from Syria. The cultivation of olive trees in Ostuni goes back to the 9th century when the Arabs arrived in Italy. Olive growing has been increasing in Ostuni for centuries, thus becoming its main resource. Olive growing has recently changed due to the introduction of new techniques such as inorganic-fertilization, irrigation and the use of pesticides.

Recycling in Posio

The municipality of Posio has started a recycling project and a workshop for young people as its first major project. They do woodwork there and in the future they are going to renovate and repair old furniture and motor vehicles. The Recycling Centre is going to be situated in the dumping area of Posio. There has been an opinion poll on recycling in Posio High School students' homes in winter 1998. Here is a summary of the results.

A large number of the participants (44,2 %) recycle their household waste. Decomposed waste is taken to a compost heap or to a litter bin. Plastic waste is taken to a litter bin. 55,8 % of those polled put all waste in their litter boxes. 67,5 % of those polled don't put their waste paper and paperboard into a garbage can. They either burn them or take to a waste paper collection site. In Posio there is only one place where people can bring their waste paper.

One question was how people get rid of their old or used things. Here are the answers. Most of the used batteries are taken to a collection site. Two shops in Posio receive used household batteries. Some of the batteries are taken to the dumping area. Gas stations and car services receive most of the waste oil and deliver it to a bigger company. Car batteries are taken to car services or the collection point because they contain poisonous substances. Most of those polled take their old medicines to a chemist's, which is common in Finland. Some people put them with other rubbish to a litter box or flush them down the toilet. All recyclable cans are taken to a shop's collection point. Recyclable cans have been in use for several years in Finland. Glass bottles are still the most popular type of container. People take their recyclable lemonade and beer bottles to shops' collection sites. Some of the bottles are reused almost in every home. Jams and different kind of canned foods are preserved in glass jars or in tins. Only 60,5 % of those polled buy things from second hand shops because in Posio there is not a good second hand market.

Although the recycling project has been going on just a few years, people in Posio have recycled for many years. A couple of years ago shops received only glass bottles. Now the situation has improved and people can take plastic bottles, cans and batteries there too. Many people have compost heaps at their homes. Recycling in Posio is not yet well developed but improving all the time.

Recycling project in Ostuni

The project concerning recycling started in Puglia about 3 years ago. Until now, rubbish has been collected without sorting, despite the fact that part of it is made of recyclable and reusable materials. The rest contains noxious and polluting substances, which cannot be disposed of along with regular urban rubbish.

At this point, this haphazard way of rubbish disposal is both a serious threat to the environment and also wasteful of resources that could be profitably recycled. Ecological “islands” (collection points) have been created with the purpose of enabling citizens to deposit all selected rubbish at the same place. Each of these islands will have a skip for cans; flat batteries, date-expired drugs and for T (toxic and noxious) or F (inflammable) labelled containers.

Ecological islands, therefore, represent a further opportunity for the families to make sorting of waste a commitment towards both the environment and its own city. Once the project started, 12 % of Puglia’s communities organised their own urban waste disposal services, starting up and strengthening sorting. Guaranteeing considerable quantities of highly sorted waste is a crucial element for the smooth running of the composting plant in Brindisi. The underlying principle for each citizen is that he must contribute personally, in his daily life, to reduce the waste produced every day.

The sheer number of citizens living in Ostuni should lead people to think of how serious the problem is of the enormous quantity of waste produced every day. Ostuni produces an average 30 tons of waste a day, 1,3 kg a day per person. Therefore it is long overdue that serious action is taken to prevent this becoming so serious a problem as to endanger our health and security.

Similarities and differences in recycling

There are very many similarities between recycling in Ostuni and in Posio but there are differences, too. Recycling projects have been going on in both Ostuni and Posio for several years. Before the projects, waste was not sorted and all waste was delivered to a dumping area. Since the recycling projects, people are reusing their paper, plastic and glass. In Puglia there is a recycling centre only in 12 % of communities. In Lapland the situation is better. In 80 % of the communities there is a recycling centre. In Finland, bottles are recycled and people take them to a shop but in Italy bottles are taken to a dumping area. There are some laws in Finland which require communities to recycle. In Italy there are recycling laws too but they are not adhered to so much as in Finland.

George Davidson, Peebles High School & Hilikka Rajakorpi, Vammalan lukio

5.2.2 Sustainable development in Peebles High School, Scotland and Vammalan lukio, Finland

A second successful JEP ,under Lingua E, has been completed between Peebles High School and Vammalan lukio. The Finns visited Scotland from 7–20 June 2000 and the Scots returned to Finland from 10–23 August 2000. The JEP title *Sustainable Development in Peebles, Scotland and in Vammala, Finland* proved to be most interesting and enlightening.

Sustainable development serving other curricular areas

The language component of the JEP is important to the Finnish school and whilst the challenge and fun of trying to learn a completely new language (Finnish) was obviously part of our JEP, it was equally important to consider areas of curriculum which may be of more general interest. The subjects of Business Management, Biology, Geography, Chemistry and Modern Studies are all touched in some way or other by the chosen JEP topic of Sustainable Development. However, we think that in a broader “European and World Citizen” sense, the students have been made aware of how Sustainable Development affects them as individuals.

Before both groups made their respective visits, each student completed a “Home Lifestyle Survey” to make them aware of day-to-day issues that affect them directly. They were encouraged to examine their own household habits in, for example, water consumption, sorting of waste and the use of energy and look for ways of making their lifestyles more environmentally friendly. They also found out about public transport services, recycling centres in their home towns as well as recycling and waste management schemes in their respective schools.

As for the future professional needs of the students, we think visiting any other European country would have served to make the students more aware that Finland and Scotland (as part of the United Kingdom) are both members of the European Community. They found out for themselves that, despite the language and cultural differences, Finland and Scotland share many similar problems in restructuring their economies towards hi-tech industries as well as fighting pollution and trying to find sustainable solutions for preserving nature for future generations. This awareness may make a difference in their later professional lives .

Undertaking an exchange as a JEP

Conducting the exchange as a JEP gave a structure to the programme. The joint activities relating to the JEP topic of Sustainable Development were the visit to Loch Katrine in Scotland (how clean water improved the public health in Glasgow) and to the forest around Jämijärvi (biodiversity in the forests of the area) in Finland. Likewise visits to landfill sites in Scotland and in Finland as well as the paper recycling plant in Turku, Finland were both shocking and thought provoking.

Other project related visits in which a lot of information was given to the groups were: Dynamic Earth Exhibition in Edinburgh (all aspects of sustainable development); St Abb's Head Nature Reserve (the condition of the sea in relation to bird populations); Drygrange Centre (habitat improvements on Tweed tributaries); St Andrews (coastal erosion and how to prevent it); Glasgow (Clyde River purification and urban regeneration); Pori, where the purification of the river Kokemäenjoki has brought salmon back and made Kirjurinluoto island a recreation area with swimming facilities in the centre of the town. In Finland, during a boat trip to Ellivuori, the number of summer dwellings on lakesides as well as fields sloping towards the lake were discussed in terms of the threats they cause to the lake and the importance of pollution control.

The main purpose of the JEP was to raise the awareness of sustainable development topics in both partner countries of Scotland and Finland. The students in both groups completed a "Pre-JEP Knowledge Questionnaire" at the outset and repeated the same questionnaire as a "Post-JEP Knowledge" test. Both groups have substantially increased their knowledge of sustainable development topics as a result of this JEP. Both schools started with an average knowledge of 29 points out of a possible 90 and finished with 49, Peebles High School and 54, Vammalan lukio. We think we can safely claim to have achieved our aim of "raising awareness of sustainable development".

Five Scottish schools in the Scottish Borders Region completed some questionnaires for the Finnish National Board of Education as part of a national programme currently being run in Finland. The JEP group of students in Peebles was also involved in that work.

Students representing both groups took part in a presentation on sustainable development topics to several classes of Finnish students. A video is made of the final discussion for further use in both schools. This rounded off the whole project and the students gave good accounts of themselves and their knowledge of the topics on which they spoke.

Sustainable development in both schools

Vammalan lukio had a target plan for the school year 1999–2000:

1. To equip each classroom with a special box for recyclable paper.
2. Staff try to reduce the use of paper by taking exact number of copies and using both sides.
3. To put all laboratory waste from chemistry, biology and art classes to appropriate waste containers.
4. To try and abandon individually packed butter and margarine portions in the school canteen.
5. To find out about the composting possibilities of the kitchen waste that can't be sent to pig farms.
6. To ask school bus drivers to avoid idling their engines when waiting outside the school.
7. To arrange a glass collection point.
8. To evaluate the curriculum for ways in which ecological, economic, social and cultural sustainabilities are taken into consideration.
9. To make Sustainable Development the topic for the JEP project between Vammalan lukio and Peebles High School in the year 2000.

The aims set for the school in the school year 1999-2000 have in principle been achieved. The school has a nominated person to take responsibility for sustainable development. Each classroom has a box for recyclable papers, the number of copies taken by the staff has reduced, a hazardous waste collection point has been arranged, kitchen waste is now being sorted and there are no longer individually packed butter/margarine portions. The students' union has a well-established bottle bank. In addition to those activities there has been more integration between different subjects with reference to sustainable development. The school has participated in the national evaluation of *Sustainable Development in Schools and Institutions?* launched by the NBE.

The situation in Peebles High School is that:

1. At present, there is no nominated person for sustainable development affairs.
2. Aluminium drinking cans and paper are recycled.
3. Periodic reminders to staff and pupils are issued on environmental matters such as recycling of paper and disposal of litter.
4. Sustainable development is included in subjects such as Geography, Biology, Business Management and Modern Studies.
5. Peebles High School is not yet an "Eco-School" participant.

6. The school's laboratory assistants are responsible for the correct disposal of waste from the science departments
7. Present reforms in the examination system have given a lower priority to sustainable development. This situation is currently under review.
8. As yet, there is no legislation to compel schools to address sustainable development.
9. There are many charity shops in Peebles where clothes, books and other household goods are recycled and the proceeds donated to good causes.

Some tangible results of the project

When the topic of Sustainable Development was first suggested, even the participating teachers realised they had a lot to learn about exactly what this involved. The students of both schools have acquired lots of information on the issues affecting the state of the environment and the effect of their daily choices on nature. More emphasis is given to the tidiness of one's environment after seeing how general neglect can affect their own living environment.

There were also areas where it was difficult to compare the use of resources in the two countries. One of these was the consumption of water. Both countries have rich water resources but, due to the way people pay for their water consumption, the differences in use are great. In Finland there is a payment for each litre used, whereas in Scotland the consumption of water is not metered and is paid through local taxation.

Movement towards recycling in Scotland is not yet at the same level as in Finland because it is not considered economically viable. This aspect of recycling is also an issue for Finland. However, an awareness of the need for recycling and other sustainability issues has grown during the past few years. An indication of this is the dramatic growth in Scotland of wind-generated electricity in recent years.

If Vammala is ahead of Peebles in environmental issues, the same cannot be said about cultural issues. This was seen during the Finnish students' guided Town Walk in Peebles as well as the Manor Valley Walk. Some students from Peebles High School put a lot of time and energy in collecting the information and publishing the book "The Source of Manor". The tradition of the ceilidh in teaching younger generations Scottish country dances is also an indication of how cultural traditions are important to the Scots.

When thinking about the project as a whole, the level of commitment of both staff and students to the project is the single most important factor for success. The staff and students on the JEP discovered that Scotland and Finland have a great deal in common. Both countries have large areas of sparsely populated wildernesses with all the same problems that this brings. In general, however, we felt that the Finns and Scots are very much alike – warm, friendly nations coping with the problems of the 21st century.

Kaija Salmio

5.2.3 Environmental education projects

Globe Project

Globe Project is an environmental project with the target to increase people's environmental awareness all over the world, to improve the standard of science and mathematics studies and to produce new information on environment. The aim is also to try and increase students' understanding by using scientific methods. The results of the project are used in scientific research and in actions that are based on environmental issues. The project is based on the target programme of Rio Agenda 21 participated by 95 states from all continents. Globe Project contains five sectors: atmosphere, flora and the covering of the ground, surface water and hydrology as well as satellite location by GPS system. At fixed times material is collected from each sector according to instructions. Schools send the material by e-mail to the United States from where the project is led. Teachers and students have free choices of the themes and part programmes and work them the way they like as well as network themselves with the kind of schools with whom co-operation is expedient. To increase co-working, annual international and national training events are arranged in most countries. Experimentation and working in nature are part of each course's programmes. The vast data material is free for each Globe school to use. The project is evaluated by external evaluation carried out by an external neutral assessor in the United States.

The curriculum theme is being consciously emphasised in the projects. The aim is to make both teachers and students understand that the projects with their different contents could be means to realise the curriculum. The target is also to emphasise intergrative thinking and work between subjects with environmental issues.

The Baltic Sea Project

The Baltic Sea Project within Unesco is an international environmental education project with the target of an attempt to improve the state of the Baltic Sea with the means of education and to provide schools with working methods that are in accordance with sustainable development principles. The Baltic Sea Project is participated by all its coastal countries. There is co-operation between the region's schools, institutions, teachers, students, authorities and research centres as well as businesses and organisations. The co-operation is based on the schools' own basis and organised by them. Networking is real and functional.

The target is to increase students' awareness about environmental problems and to teach them to understand the relation between man and nature by paying attention to social and economic development together with ecological development. A personal and sustainable interest in nature and environment are hoped to be awoken in students. The students also learn to know different cultures with international co-operation. The target is to act so that the students learn to take responsibility for themselves and the future generations, learn to influence environmental issues and use correct paths in it. The project works both in a built and a non-built environment.

The basis of the Baltic Sea Project are the international environmental agreements that countries have committed themselves to. The project is part of the sustainable development project of the Baltic Sea region - Baltic 21, the aim of which is to promote sustainable development by the help of regional forums and networks.

The Baltic Sea Project is a vast project with seven different sub-projects. Schools and institutions choose the ones they want to be active in. Students work actively and make observations and study samples using methods suitable for natural sciences.

The Northern Ecosystems and Education Project

The aims of the Northern Ecosystems and Education Project as part of the Russian Programme are learning to know the diversity, ecology, socio-economy and culture of the northern forest ecosystem, to be aware of sustainable forestry and silviculture, to exploit the forest diversity on ecological grounds, to identify forests damaged in their ecosystems and to know the harvesting possibilities, to increase the cultural awareness of the participants and to improve language skills.

The project work is done by working according to their own plans in school pairs one school being from Finland and the other from Russia. The schools have chosen their partners and arranged common camp schools and other meetings in each country. During the meeting the guests have lived in families, which has promoted the understanding of the daily life in the neighbouring country. The project has included several study trips which include training and field work in Russia and Finland. A number of national meetings have also been held. The students' active work is an important part of the project. All the meetings have included increase in substance knowledge, the use of the language of the hosting country and information of the country's culture and history. Scientific expertise is received from the universities of Turku, Moscow, Novgorod and St Petersburg.

OECD/ENSI Project

OECD/ENSI Project of schools – (Environment and School Initiatives Project) has a visible status as a means of developing environmental education in many countries. The international development themes of the ENSI Project are ecoschools, learnscapes and teacher training.

The ecoschool theme means the development of daily activities and teaching in the schools towards ecological direction. It is important that all the working sectors of the school participate and that there is co-operation between the school and the community. The target of the learnscape theme is to develop, according to the curriculum, the school's inner and yard surroundings so that they encourage the use of different learning methods. The aim of the teacher training theme is to use the experiences of the ENSI Project in developing teacher training and in transferring the newest innovations in teacher training.

Building co-operative knowledge in the framework of the above mentioned themes is vital in the fourth phase of the ENSI Project (in the years 2000–2002). The project's working tool is Knowledge Forum data base with the help of which corporative building of knowledge is studied (see Åhlberg in the original report II:9, fig. 1). The expertise of the teachers, university researchers and postgraduate students within the project are utilized in the project joining the know-how of different levels. The aim is to together build and test new thinking and action models for environmental education. Additionally, the participants develop their own sustainable development practices with the help of self assessment within the framework of the ENSI themes.

The importance of the projects

The projects have increased the use of different working methods based on research. Experimentation and the use of natural science methods, so important for the natural sciences, have been carried out in these projects. The participants have received valuable nature experiences at the excursions and study visits, which have added the students' interest in nature.

The aim of the project is to affect school specific curricula through the output. The increase of integration and the widening of aspects are seen in the fact that teachers of different subjects take part in the tasks of the project with their own expertise and using their own lessons. The projects were participated by several subjects, such as biology, geography, art, chemistry, mathematics, physics, history, foreign languages, mother

tongue, IT and philosophy. The principles of sustainable development are wanted to be transparently visible in the activity thus creating different forms of readiness for the students. It is also important that both parties have active roles in the carrying out of the project.

A notable result is the progress and development of international co-operation. Teachers' and students' active interactive operations are emphasised in it. When students prepare to act in a foreign language in a foreign culture it gives them more self-confidence to cope with new situations. In this part the basic task of the projects is successful.

The international projects produce learning material. The Baltic Sea Project has produced four teachers' guides and the fifth is in the making. The projects have also produced videos and a newspaper of their own is being published. The Globe Project is publishing its own paper twice a year. The project has also produced four videos. As a result of the Northern Ecosystems and Education Project a fairytale book written and illustrated by the students has been produced in Russia. A Finnish fairytale book on the same principles is being carried out early in the year 2001, as well as a teachers' guidebook on the forest theme both in Finnish and in Russian in the year 2001. Concrete examples about the carrying out of the co-operation project, about working instructions, experiences, results and the terminology for the basic concepts are being collected. The project will also produce an evaluation publication of the schools' results.

The target of the environmental projects is also to increase the students' awareness of nature's diversity and its interdependence. Man's possibilities to influence and their consequences to the environment are discussed. Special attention is paid to these targets in the OECD/ENSI Project in which the Knowledge Forum data base is an important tool. With its help co-operative data building and critical observation are studied as a process.

All the projects in Finland are participated by primary, upper stage, upper secondary, vocational and adult education schools, both Finnish and Swedish speaking. The participation of different school stages in the same project widens both the teachers' and the students' perspectives. The primary school teachers have good possibilities to provide their students with truthful concepts of the surrounding nature because they have a comprehensive hold of their students and the students are more ready to act according to the given instructions. The process should be started early and likewise experiences about nature.

6 SUMMARY

6.1 Results

Sustainable development in the core curricula

General education: The three dimensions of sustainable development, ecological, economic and socio-cultural, are included in the core curricula for comprehensive and secondary education even if the terms are not used. The contents of the ecological dimension is the most extensive but it is worth remembering that since the core curricula were published (1994) sustainable development has greatly expanded towards social aspects.

Sustainable development is introduced at two points in the core curriculum of the comprehensive education, as part of the school's value basis and as a subject entity called environmental education. The concept as such has been given a very general definition (Opetushallitus 1994a). For example, economic sustainable development is not mentioned by name but human economic adaptability to suit nature's condition is emphasised. This may have affected the carrying out of measures taken for economical sustainability. Upper secondary education does not have finished subject entities in its core curriculum but schools can establish them according to their own targets.

In both forms of general education different subjects have an established position in the core curricula and most subjects contain elements of sustainable development that can be integrated. It is for the teachers to decide to what extent this is done. The core curricula do not take a stand in students' motivation or set of values but there is a gentle strive towards raising active citizens.

Vocational education: The concept of sustainable development is well established in the core curricula for vocational education. The aim of sustainable development, written in the curricula (Opetushallitus 1995–1997) is to take care of both ecological and social sustainable development including man's spiritual and ethical growth as well as maintaining and passing cultural diversities to the next generations. The carrying out of sustainable principles in daily activities and students' attitudes was paid great attention to.

The core curricula for all vocational education are being or have been reformed in the years 1999–2001 both in general studies and in vocational skills studies. Environmental skills belong both to common studies and also vocational skills requirements and therefore concrete measures are being suggested for vocational study entities. The evaluation of environmental effects and the ethical aspect are included in the new core curricula. Both are crucial elements in carrying out sustainable development.

Sustainable development in the school curricula

The written curricula of the schools are in accordance with directions. In carrying out principles of sustainable development ecological sustainability is traditional and most common (57 %) in the chapter concerning the set of values and their functional principles. However, according to this material, based on principals' answers, socio-cultural sustainability has been presented as equal (59 %) in the curricula. Socio-cultural sustainability are best seen in the curricula of general education schools (61 %). Economical sustainability is best carried out in vocational education (55 %) and a little less in general education. Taking responsibility of environment must not be connected with the educational system but it must be seen as a set of values that everyone must carry out personally. Man's responsibility has been clearly written down, best in general education (46 %) and the least in vocational education.

Communal and school determined promote programmes

About 1/3 of the schools declared that there is a programme to promote sustainable development in the community. Schools and institutions have much fewer programmes of their own than the communities despite the fact that the National Board of Education has (Opetushallitus 1997) advised schools to draw up these. The programmes of schools and institutions are rarely included in the local sustainable development programmes. Only 15 % of the sample schools said they have drawn up sustainable development programmes of their own. The percentage in vocational education was the highest (26 %).

In vocational and adult education the programme of sustainable development is part of the quality system of the school, which binds the carrying out of sustainable development to the normal every-day functions of the schools. The same process is sought in the drawing up of environmental plans for individual schools. Thus with the carrying out of sustainable development the quality of the school is also being improved.

The carrying out of sustainable development in different subjects and in studies

General education schools: The opinion of the principals of general education was that in the subjects that are **common to all** like environmental studies, biology and geography principles of sustainable development are *rather well* carried out, in music, foreign languages and mother tongue only *to some extent*. At the lower stages sustainable development is best carried out in environmental and natural studies, in biology and geography at the upper stages and upper secondary schools. Home economics at the upper stages was estimated to be taking sustainable development *rather well* into consideration. **Among the optional subjects** biology was emphasised both in the upper stages and upper secondary schools in the estimations of the principals because more than 40 % of the principals of both schools considered that subject to carry out these principles *well*.

According to the principals, the four subjects that best carry out the principles of sustainable development are: 1) environmental and natural studies (lower stages and special schools) and biology (upper stages of comprehensive school and upper secondary school); 2) handcraft (lower stages), biology (special schools) and geography (upper stages and upper secondary schools); 3) handcraft (lower stages), geography (special schools), home economics (upper stages) and history and chemistry (upper secondary schools); 4) mother tongue (lower stages), chemistry, physics (special schools), chemistry, home economics (upper stages) and physics (upper secondary schools).

The student unions' estimation of the four subjects that best carry out sustainable development principles are almost unanimous with those of the principals. However, upper secondary school pupils considered geography clearly the best and biology equally clearly the second best subject in the field of sustainable development. The student unions at the upper stages estimated chemistry the third best subject in this respect as did the upper secondary students. In addition to that their opinions differed from those of the principals estimating social studies to be on the fourth place.

Vocational schools: 48 % of the principals in vocational education considered that in **vocational basic studies** sustainable development was taken into consideration *rather well*. This opinion was shared by the teaching staff only by 32 % and about 63 % considered it being carried out only *to some extent*. 78 % of the teaching staff of adult education considered sustainable development to be carried out only *to some extent* in the basics of vocational studies.

In the orientation studies a third of the renewable natural resource sector principals considered that sustainable development was carried out *well* and on an average *rather well*. Also the average of the principals in hotel, catering and home economics as well as culture was *rather well*. Estimated by the teaching staffs sustainable development is carried out on an average *to some extent* in vocational orientation studies.

In the **common studies** of the vocational schools 12 % of the principals considered sustainable development being carried out *well* in natural sciences, 30 % *fairly well* and 30 % *to some extent*. A fairly big number of vocational school principals had also chosen the option *I can't say*.

Both principals and students' unions had answered particularly little to the question of the four subjects that best carry out sustainable development ideas. This was also the case with institutions of **free adult education**.

Study entities of the vocational schools: The teaching staff of vocational schools gave examples of study entities where sustainable development was being carried out. The examples were closely connected with educational sectors but common to the answers were comments on environmental study entities. Practical working periods were mentioned as carrying out sustainable development well.

The realisation of sustainable development in teaching

The teaching of sustainable development in all types of schools is mainly dealt with as *integrated* to other teaching (84 %). According to the teaching staff 90 % in vocational, 87 % in general and 65 % in free adult education schools. In the last group the integration proportion informed by the folk high school was 83 %. As part of *study entities* sustainable development is taught by approximately 45 % schools and as *theme days* by 44 % of all reply schools. General education institutions have the most study entities and theme days. Vocational education, especially in initial vocational education offers most training as *courses* in sustainable development compared to other types of schools. From the schools that answered in this group 61 % replied that they give training in sustainable development in optional courses and 39 % in compulsory courses.

Subject and study entities and courses that were carried out: The teaching staffs from all the school types gave a great number of examples of subject and study entities where *particularly the ecological aspect was emphasised*. In general education economic as well as social and cultural sustainability were included in international and family education,

art projects, entities concerning population growth and urbanisation. From vocational schools particularly arts and crafts institutions as well as free adult education schools carry out study entities with cultural sustainability in a central position.

Student unions' idea of the teaching of important subjects: The twelve crucial questions concerning the identification of ecological factors were answered by 90 % from the general education, 2/3 from the vocational and approximately half of the free adult education student unions. The student unions of the general education had identified most subjects clearly better than those of vocational and free adult education schools. Based on the answers, only recycling, which was the best known concept to all groups and environmental legislation had been handled in vocational schools a little more than in the others.

Of all the students' unions that answered 26 % thought that there were *too few* courses available on sustainable development, 38 % *rather few*, 24 % *can't say* and 12 % thought that there were *rather many* courses. The idea that there are *too few* courses covering sustainable development was shared by 36 % vocational students' unions, by 24 % of those of general education and 19 % from free adult education. In addition to that the students' unions that answered shared the opinion of *rather few* as follows: general education 38 %, vocational education 31 % and free adult education 52 %. Recycling, other cultures, population growth, hazardous wastes and individual possibilities to influence were the most often mentioned subjects that student unions thought should absolutely be discussed. Environmental legislation, which students' unions thought was handled least, was most often mentioned among the subjects that should be dealt with to some extent.

Education

The organising of education: In all the vocational schools that had answered 32 % had arranged additional environmental education. This kind of activities had been common to adult education centres and specialised vocational schools. 24 % of folk high schools had arranged specific sustainable development training in the school year 1998–1999 and 25 % of adult education centres had offered courses and public lectures. Some kind of sustainable development training had been given by 63 % of the folk high schools and 62 % of the adult education centres, in addition to which also public lectures and other training had been arranged.

Participation in education: Of all the sample schools that answered, 30 % declared to have participated in further training on carrying out sustainable development. The attendance percentage to similar education was 48 % from vocational and only 27 % from both general and free adult education schools.

Considering the number of schools participating in the evaluation, the total number of persons (801) that had received further training in sustainable development was small. 89 % of them had had short-term training (1–5 days), 7 % 2–14 credit units, 3 % 15 credit units and only 2 % 35 credit units or more. 71 % of the people attending further training had been teachers, 9 % principals, 6 % cooks and cleaners each and the rest of other members of the staff. Teachers and principals were the ones with the longest training. The rest of the staff had participated in short term training.

Of the vocational schools that answered, 31 % had trained their teachers to carry out sustainable development, the percentage of the general education being 17 % and that of the free adult education 7 %. The number of vocational education principals attending this training was the biggest, 16 %, of general education 14 % and free adult education only 9 %. In the group of vocational education schools the biggest training activity was in initial vocational education, in general education schools it was the upper secondary schools and in the group of free adult education adult education centres. The schooling stage was clearly the biggest in vocational institutions when considering the number of trained people related to the institution (6,17). This figure was only 1,28 in general education institutes and 0,69 in the free adult education.

The contents of education and training: The training had mainly been general environmental education and therein particularly connected with the solutions of teaching and pedagogical aspects. Only 5 % of the representatives of the teaching staffs that had answered had got actual training in sustainable development.

Organising the furthering of sustainable development

Only 1/3 of the schools had a nominated team (in 20 %) or responsible person (in 18 %). Vocational schools had arranged this relatively the best, free adult education the worst. However, there was rather big variation within school types and, for example, according to the information received from folk high schools 53 % had no-one responsible for the developing of environmental affairs or sustainable education, but in folk high schools the percentage was 82 %. An average team consists

of two teachers, a student and a non-teaching staff member and half of them has the principal as a member. The most important tasks of the teams or the responsible person are communication between different groups (86 %), promoting sustainable development (81 %), improving the curriculum (79 %) and the planning and responsibility of events (77 %).

Participation in carrying out sustainable development

28 % of the teaching staff and 34 % of the students' unions were of the opinion that teachers take *rather much* part in carrying out sustainable development in school communities. The average of the participation is *to some extent*. Estimated by the teaching staff next are principals, cooks, cleaners and students, the same is true in the estimations of students' unions but the order was cooks, cleaners, principals and students. The student unions in general education, vocational and free adult education estimated that their personnel groups took part in carrying out sustainable development more actively than what teachers or other staff did, but even in their estimations the average *rather much* is reached only by the cooks, cleaners and teachers of vocational schools.

In carrying out sustainable development, principals are in charge of, plan, delegate and take care of relations outside school. Teachers plan, teach, guide and give advice. Students also take part in the planning and take part in many practical activities, like the staff according to their own job description.

Co-operation in sustainable development

The personnel groups of the schools estimated that **mutual co-operation** was done *to some extent*. Differences between school types were not big. The opinion average of lower stage teachers was the biggest, 2,55, which means that there is *rather much* co-operation. Teachers had estimated co-operation to be on an average the highest and the other staff the smallest. The most common form of co-operation is daily discussion, planning and integration between different subjects. This is the type of co-operation that was most common in general education schools (30 % of the group's answers) and the least in vocational schools (15 %). The second most common form of co-operation was by agreeing on common procedures, publicising them and giving directions to them. Ecological sustainable development was the most important topic for co-operation. In principle the answers of the teaching staff were not contradictory with those of the students' unions or the non-teaching staff.

According to the principals, 39 % of all schools had **co-operation** within sustainable development with some **outside party**. The general education schools had the most co-operation partners, 52 %. Of vocational schools 42 % said they had co-operation partners and the corresponding percentage in the free adult education was 37 %. According to the principals, local community offices and office holders were the most important co-operation partners but almost equally important were day care centres, schools and other educational institutions. The non-teaching staff named this group in particular as the most important co-operation partner.

As co-operation bodies supporting schools financially or in some other way teachers most often mentioned the Ministry of Environment, the provider of education and homes, but also principals had been mentioned as supporters of sustainable development. The outside support for promoting the principles of sustainable development received by the students' unions had been fairly modest. The support received was mainly information, material and training.

According to the principals most central co-operation took place in the form of training, exchanging information and specialists. Common activities and theme days emerged as the second group in the answers. Based on the short answers of the personnel groups, this was also important in co-operation on waste management. The teachers and principals emphasised the same forms of co-operation and ecological sustainable development was the most important theme.

Sustainable development in everyday activities in schools

The non-teaching staff and the students' unions estimated **the visibility of sustainable development** modest with the estimation *to some extent* but the opinion averages of the non-teaching staffs were a little higher than those of the students' unions. According to the answers of the non-teaching staffs sustainable development was best seen in the collection and sorting of waste. This was mentioned by 22 % of the entire non-teaching staff. One of the most important specified ways of sorting (16 %) was the sorting of paper. Most collecting and sorting was carried out in vocational schools. Saving and recycling were also important visible ways of carrying out sustainable development principles. The collecting and sorting of waste was the most visible way of sustainable development in the student unions' answers concerning daily activities in schools.

The principals and students' unions estimated that the principles of sustainable development are being taken into consideration in **purchases and daily activities** in the same way and clearly better than what the

teachers and particularly the non-teaching staff had estimated. The principals and students' unions of all the schools considered that sustainable development in waste management and in the kitchen was carried out *rather well* whereas the teachers and the non-teaching staff considered it to be only *to some extent*. According to all groups, the principles of sustainable development are taken least into consideration in traffic arrangements. The estimation of the others in this respect was *to some extent* but that of the non-teaching staffs was *not at all*. The principals, teachers and the non-teaching staffs of the vocational education group estimated the consideration of the principles of the sustainable development to be on an average at a higher level in their schools than those of the general education and free adult education thought being the case in their respective schools.

The purchase of machines and their use, as well as minimising the number of copies and attitude training in teaching related things and recyclebility of office materials, are the most often mentioned **examples** of taking sustainable development into consideration. In cleaning and in the kitchen the nature friendly quality of the cleaning agents as well as sensible material purchases are things worth considering. Sorting, recycling, paper collection and composting are the most important factors in waste management, and saving energy and avoiding unnecessary drives in traffic arrangements in the maintenance of the premises. In equipping yard areas, general satisfaction with the surroundings is taken into consideration.

Principals felt that they could **affect purchases** so that the principles of sustainable development are taken into consideration *rather well*, mostly in free adult and vocational education and the least in general education. According to the estimations of the personnel groups, their possibilities to affect the purchases diminished from principals to teachers, non-teaching staff and students' unions. When considering the school types of the samples as a whole, it was only the principals that felt they could affect *rather much* the other groups *to some extent*.

Monitoring consumption: According to the principals, there is on an average a *fairly regular* follow up of the use of paper, consumption of water, room temperatures, recycling and sorting of wastes. Only in the follow-up of the accumulation of wastes, the average of the whole sample school lot is equal to *occasional* follow-up for the principals. Generally the differences in follow-up between school types were small, but the average concerning the sorting of wastes was 0.3 units bigger among the vocational school principals compared to that of the general education principals. However, the follow-up in both groups was *fairly regular*.

Teachers' opinion averages were smaller in all follow-up subjects and only the use of paper, energy consumption and room temperature follow-ups reached the rank *fairly regularly*. In other subjects follow-up estimated by teachers was *occasional*.

The follow-up averages of the students' unions were close to those of the principals in the use of paper, recycling, sorting of waste and waste accumulation. The average variation between the students' unions in different school types was, however, bigger than that of the principals. In the follow-up of energy consumption the opinion average in the whole material was almost the same as that of the teachers. In the follow-up of water consumption and room temperatures the estimates of the students' unions were the lowest. The student unions in free adult education schools considered the follow-up of different targets to be clearly more efficient than the teachers in the same group considered.

Waste management and sorting: The collection of paper is well arranged in all types of schools. Of the total principal group, 96 % told that useable paper is being collected. The corresponding figure in the vocational schools that answered the questions was 100 %, being 98 % in free adult education and 95 % in general education schools. In this group, the upper stages and upper secondary schools collect 98 % of their paper but the lower stages 94 % and special schools 92 %. The sorting of paper according to its quality is less frequent as only 23 % of the principals informed that white paper is being separated. White paper is being taken into safekeeping best in free adult education schools (34 %). Cardboard is being collected by 78 % of all schools: 89 % of vocational, 78 % of free adult education and 76 % of general education schools. Glass is collected by 58 %, metal by 51 % and plastics by 30 % of all schools. The collection of glass is most efficient in free adult education schools (66 %), that of metal in vocational schools (71 %) and plastics in free adult education schools (42 %), particularly so in folk high schools (63 %).

A quarter of all schools transport food leftovers to a landfill site, 30 % of them compost it and 38 % transport the waste food to pig farms. A responsible attitude is taken to hazardous waste because 91 % of the principals informed that they are transported to appropriate collection tanks. As representatives of the non-teaching staffs estate managers and caretakers, in practise those who take responsibility of hazardous wastes, have informed in their answers that this subject is appropriately dealt with.

Commitment to the carrying out of sustainable development: The teachers and non-teaching staffs didn't give a high grade to the commitment of personnel groups to sustainable development in schools' daily activities. According to the teachers' opinions there is commitment *to some extent*, which is also shared by the non-teaching staffs, but the averages of the teachers' averages were regularly smaller in all school types (free adult education 1,83 – special schools 2,32) than those of the non-teaching staffs (special schools 2,11 – free adult education 2,40). According to the examples given by the teachers commitment is best seen in the cherishing of ecological and economic sustainability, in the general attitudes towards commitment to targets, initiative and willingness to co-operate as well as in concrete activities in the teaching and in different projects. In the answers of non-teaching staffs the emphasis was in the cherishing of ecological sustainability and particularly so in the answers of the non-teaching staffs in vocational schools (35 %).

Factors promoting and preventing sustainable development

The concrete **actions promoting** sustainable development mentioned by the teaching staffs concerning the actions taken by personnel groups were mainly centred on ecological sustainability. The teaching staffs, together with students, considered themselves to carry out recycling schemes notably better than the others. The sorting of waste is clearly best taken care of by the non-teaching staff representatives according to both teachers and the non-teaching staff themselves. The principals were the most active initiators, teaching and non-teaching staffs on the other hand most efficient savers.

In daily practises the waste management, recycling and saving promote the carrying out of sustainable development the most and co-operation with interest groups in waste management is profitable. According to all personnel groups the most important factor was a positive attitude to sustainable development not forgetting a good team spirit. Course availability in teaching was by teachers considered an important promoting factor, theme days to some extent.

Many prejudiced attitudes **prevent** the carrying out of sustainable development, like indifference, ignorance and distorted attitudes. A lot of attention should be paid to the improvement of attitudes. The biggest factor preventing carrying out sustainable development is, according to the teachers and non-teaching staffs, the lack of money and other resources. General education suffers particularly from the lack of money and vocational education from the lack of time.

Students and sustainable development

The awareness of sustainable development facts and concepts of **students' unions** was measured with fourteen statements, of which they had to define whether they belonged to ecological, economical or socio-cultural sustainability. Ten concepts were solved so that at least 80 % of the student unions in the schools that answered had chosen the expected alternative. Two statements from social and cultural and two from economical sustainability seemed to cause difficulties, which became obvious in the big deviation of answers. Differences between school types were small.

The teaching staffs estimated students' attitudes *to some extent positive* so that the highest opinion average was in the general, almost as high in vocational and the lowest in the free adult education group. However, the teachers and non-teaching staffs of free adult education estimated their students' attitudes to be the highest compared to all other groups of schools. The opinions of non-teaching staffs were lower than those of the teaching staff, with the exception of the free adult education group. In the entire material the difference was 0,2 units, so also the non-teaching staff's estimates about the students' attitudes towards sustainable development were in averages *to some extent positive*.

Both the teachers and the non-teaching staffs estimated the attitudes of their students to have changed towards sustainable development *to some extent* and there were no opinion differences between school types. The examples given of the change emphasised ecological sustainable development and within it the different forms of exploiting useful waste. However, 8 % of the teaching staffs that answered had observed changes towards economical sustainable development due to increased saving.

Students' unions themselves described their activities for the promoting of sustainable development by examples. The answers were mostly given by the student unions of upper stage and upper secondary schools. Recycling was the most common form of activity, voluntary work in cleaning and theme days came in second. Students' unions had also shown initiative in drawing up proposals for sustainable development activities.

The relation to sustainable development of **the sixth year pupils in basic education** was studied with their own questionnaire. About a fourth of the student groups who answered didn't know who would pay for the discarded and broken things at school. Of general education students, 56 % and 70 % of special school students were of the opinion that parents pay for them. 11 % of the replies said that the rest of society does not interfere with destroying and vandalising the surroundings. The importance of saving the environment is understood well as a factor that supports all life.

The sixth year pupils' activities at school and at home were compared with a few daily actions linked with sustainable development. The assessment scale had three alternatives: 1. *never*, 2. *sometimes* and 3. *always*. They are clearly more careful in putting rubbish in wastepaper baskets at home than at school, but the average in both exceeds figure 2,5. Home is also the place where the sorting of waste and litter is more carefully carried out, but the average is *sometimes*. The usefulness of sorting had been well understood and concrete examples of that were given, like the possibility to reuse and recycling, the reduction of waste, preventing nature from getting polluted and saving natural resources.

Recycling as a concept had been well understood and it was also carried out in reality because the students returned almost *always* bottles and aluminium cans into shops. Plastic carrier bags were in 95 % of cases reused, most often as rubbish bags and for shopping.

In turning off the lights the students were clearly more careful at home than at school (averages being 2,48 and 1,82). Water tabs were *always* turned off both at home and at school but closing windows and doors met with more careless attitudes. Here, again, homes were the places where they were more careful (averages at school *sometimes* 2,32 and at home *always* 2,61).

Projects of sustainable development

The concepts sustainable development, environmental education and project were, based on the answers, not understood by all. Most answers came from general education schools and they listed a number of things linked with carrying out sustainable development but which were not actual projects. For example sorting and recycling as such are not projects but they were mentioned as most general themes in general education and more recycling sites were sought. In vocational education the most emphasised factor was environment friendly purchasing. Hazardous wastes are generally well taken care of. The projects promoting the carrying out of sustainable development were differently emphasised in the answer groups, each to suit their own tasks or occupation.

The most important environmental education or sustainable development projects in the schools for the school year 1999–2000 are mainly linked with the carrying out of basic things in sustainable development. Vocational school with the building up of their environmental system, a real separate project, is an exception.

6.2 Conclusions

The take-up of the schools taking part in the NBE's evaluation of the state of sustainable development was quantitatively covering in terms of school types and different areas of the country. Yet the fact that about 70 schools did not fill in the questionnaires weakens the reliability of the evaluation. Not all schools had internalized the responsibility to participate in the evaluation of their external activities launched by the NBE, which is written in the school law coming into force at the beginning of 1999 (com. Rajanen 2000). For the non-answering schools it can only be guessed at, rather than evaluated, to what extent the principles of sustainable development have been adopted. That is the reason why we in this theme evaluation concentrate on building a picture of how the principles of sustainable development are carried out in the reply-schools.

The aim of the evaluation was to clarify how sustainable development is included in the written curricula of schools. Sustainable development is discussed in the section concerning the value basis of the school in the core curricula both in comprehensive and upper secondary schools, in that of the comprehensive school also as a separate subject entity. The core curricula of both the school forms are strongly subject oriented documents which is the fact that gives the possibility to carry out sustainable development as the targets denoting sustainable development are versatile and include its different aspects, of which ecological sustainability is clearly emphasised in the natural sciences. As the curriculum system offers several possibilities for organising school work, so too does the consideration of sustainable development vary in different schools.

The reformation work done on the core curricula of initial vocational education has strengthened the position of sustainable development in the basics of vocational education themes in general and in field-specific studies. Their principles are the promotion of field-specific environmental knowledge, the consideration of the ecological, economical as well as socio-cultural dimensions of sustainable development. Sustainable development has been brought closer to practice than in general education because, in vocational skills, concrete environmental competence is expected. In the basics of adults' skills examinations, sustainable development is paid attention to as well as in initial vocational education.

Sustainable development becomes evident in the core curricula for vocational education clearly better than in general education. Free adult education, on the other hand, has no core curriculum. Based on the questionnaire material, this order between school type groups repeats itself in the written curricula of the schools. The vocational schools, for

example, have more individual sustainable development programmes than the other school types and they are also included in the value system of the vocational school. School specific programmes promote the carrying out of sustainable development principles: When comparing the estimates concerning the consideration of sustainable development in daily activities and purchases of the principals, teachers and non-teaching staffs of the schools with a programme with those without one, the opinion averages of the first mentioned personnel groups were statistically highly significantly or significantly higher than those of the latter personnel group. The same observation concerns the follow-up of consumption and waste management.

The value aspects, referred to by, for example, Aho (1999), do not come up in this material. In the background of the carrying out of sustainable development there is no given set of values that one can personally choose and accept. This can be interpreted that there is no requirement to take responsibility. Sustainable development will not be carried out even with good knowledge or skills without the will to carry out the values considered important.

The second target was to explain how the written principles of sustainable development are carried out in the subjects and teaching of the schools. The answers given by the principals showed that they generally perceive sustainable development as ecological, linked with the subject of environmental education. The concept as such cannot be considered wrong: ecological sustainability is a central basic element in sustainable development but together with that, and important partial sectors supporting it are economical as well as socio-cultural sustainable development. According to the opinions of the principals sustainable development is carried out *rather well* in the teaching and contents of natural science studies but the subjects cherishing cultural tradition get the mark *to some extent*. However, 61 % of the principals of the general education reported that socio-cultural sustainability is considered in the written curricula. For example, art subjects have great possibilities to promote cultural sustainability which is very likely to happen in practise. Cultural sustainability is just not generally identified as belonging to sustainable development.

The principles of sustainable development are not likely to be carried out in practise quite as well as could be expected based on the written curricula even in vocational education. Even if the principals think that sustainable development is carried out on average *rather well* in vocational basic studies, in the orientation studies and common studies, the opinion of the teachers was on average one grade lower, being *to some extent*.

Vocational, general and free adult education schools informed that the most common way in teaching sustainable development was integration between subjects (84 %). This may mean that the studying of the theme remains haphazard. As, however, nearly 45 % of all the schools that answered, suggested that sustainable development belonged to part of subject entities and equally many claim to carry it out in teaching in theme days, particularly so in general education schools, the subject is being carried out *to some extent*, in initial vocational studies a little better than in the rest. Yet as much as 36 % of the students' unions in vocational education thought that there was *too little* teaching linked with sustainable development.

There is need to intensify the teaching of sustainable development because 26 % of all the answered students' unions informed as their opinion that there were *too few* courses available, linked with sustainable development and 38 % thought that they were *rather few*. What the schools reported as subject and study entities and courses that had been carried out strengthened the idea that ecological sustainable development is the one of the part of sustainable development that is best carried out in teaching.

Defining the amount of training for the carrying out of sustainable development was one of the targets. When only 30 % of the reply schools informed of having participated in such training, nearly 90 % of which was of short duration and the target group being only the teachers, the situation cannot be considered very good. On the other hand, the provisions of training linked with sustainable development have so far been few. The representatives of the teachers who had participated had got general training about environmental education issues and only 5 % had attended actual sustainable development training. Vocational schools take better care of the training of their staff than general or free adult education schools. Nearly half of them have taken part in schooling supporting sustainable development the corresponding amount from the general and free adult education being only a little over a quarter. Despite that, in general education the teaching staffs' estimations of their own and their principals' participation in concrete actions promoting sustainable development were relatively higher than the views of the vocational education teachers concerning their own and their principals' participation in corresponding activities.

An undisputed evidence of the importance of training was received when, based on the answers of both the teachers and the principals, many daily activities linked with sustainable development are carried out statistically highly significantly, significantly or almost significantly better in the schools that had taken part in schooling than in the ones that have not done so. Training is thus seen as a crucial means to promote adapting the

principles of sustainable development to be also seen in practise (comp. Åhlberg, in the original report, chapter II:9; Raumolin 2000). Training must be emphasised and it has to cover all personnel groups in the school.

There are generally weaknesses also **in organising the carrying out of sustainable development and environmental issues** as only 1/3 of the reply schools had nominated a team or a responsible person to attend to these things. The lack of teams and responsible persons explains the results according to which the personnel groups of the schools estimated participation linked with sustainable development, commitment to it and the amount of mutual co-operation with the grade *to some extent*. As the teams also have student members, this is the way how students' unions' attitudes could be encouraged and motivate them to work more for the benefit of sustainable development. The teachers and non-teaching staffs had estimated the students' attitudes towards sustainable development to be *to some extent positive*.

One of the major targets of the evaluation was to identify how schools carry out the principles of sustainable development in their daily normal activities. For example, in waste management and kitchen activities, the principals answered *rather well* and the follow-up of many consumption related things being *fairly regularly*. Such items are, for example, the use of paper, energy and water as well as room temperatures, recycling and the sorting of wastes. In the examples written by principals, the majority were linked with waste management but there were also a lot of comments about the use of environmentally friendly material, the economy of purchases and reduction in the use of disposable items. Waste management and sorting are well taken care of. Reusable paper is almost regularly collected and the safekeeping rate of cardboard is good, that of glass and metal moderate and hazardous waste is excellently taken to appropriate collection tanks. This is reality despite the fact that the non-teaching staffs had very seldom mentioned the collection of hazardous waste in the open answers relating to what extent sustainable development is shown in schools.

The students' unions estimated these things almost in the same way as the principals but the teaching and the non-teaching staffs were statistically highly significantly or significantly more careful in their estimations. The personnel groups' differentiating ideas of the stage sustainable development is carried out in their own schools would demand an audit supporting the questionnaire study as part of external evaluation.

Sustainable development is a vast concept with several dimensions. Students have understood a little better than teachers and the non-teaching staffs concepts like dematerialization and immaterialization as part of sustainable development. Reduction in consumption should also be seen as an investment in the future, part of which is also taking global responsibility.

It seems that schools carry out sustainable development very traditionally. It is most often linked with concrete actions like recycling and sorting. These activities are in many ways linked with the targets of sustainable development but the basic idea has not always been appreciated. Projects and realised actions linked with the social and cultural sustainable development, like increasing the pleasantness of school yards, were very little discussed despite the fact that in the written curricula social and cultural sustainability are well established. It is obvious that social and cultural sustainability is not generally understood widely enough, nor man's part in it.

The attitudes of the sixth year pupils in basic education were observed in their outlooks on a few sustainable development daily activities both at home and at school. The research shows that the students have understood the importance of sorting, recycling and the saving of energy as well as nature protection well but at home the attitudes towards waste management and the saving of water and energy are statistically highly significantly or significantly more careful than at school. A sign of the indifference of the rest of the community is revealed by the fact that 11 % of the ones who replied stated that nobody interferes if they destroy or spoil their surroundings.

The attitudes of the students towards sustainable development issues are more indifferent at school than home, which is a challenge to educators at both ends. Eloranta refers in his article (see the original report II:1) to the fact that school should offer their students enough aesthetic experiences and respect for the beauty of nature. It is important that the right attitude education takes place early enough and that it would also be given in homes. This is a good forum to promote co-operation between homes and schools in teaching, which is also required in 3.§ of the Basic Education Act (L6281998).

International co-operation greatly motivates even more the schools that have already adopted the principles of sustainable development. Hopefully this enthusiasm has a transfer effect on schools that have not yet launched their activities to improve the issue in their own surroundings. The evaluation showed that in Finnish schools sustainable development is carried out better than in the foreign comparison schools and that the

Finnish partners can help their co-operation partners to get started. The projects that are connected with the environment – domestic as well as foreign – give their students and teachers information and readiness, to participate in international projects. They have given both students and teachers valuable nature experiences, which are needed in forming personal sets of values. This was clearly demonstrated in a Joint Educational Project between Vammala (Finland) and Peebles (Scotland) in the year 2000 when sustainable development was the project theme.

Finally: Based on the sustainable development parameter created for the analysis of this material, the principles of sustainable development are on an average best taken into consideration in vocational education schools, the next best in general education schools and the least in free adult education schools, when the answers are studied from the principals' replies. The sustainable development parameter in vocational schools is statistically almost significantly bigger than that of the general education schools and significantly bigger than that of the free adult education schools. The result of the general education group is not, however, statistically significantly better than that of the free adult education schools.

When the principals' answers were studied with the help of the sustainable development parameter in defining differences between municipality groups, the parameter of urban schools was statistically almost significantly bigger than that of the rural schools. The difference is explained by the fact that it is the free adult education schools in urban areas that have a higher parameter than in the rural schools. Thus the evaluation does not bring forth any worrying regional differences.

The evaluation showed that in schools and institutions, from basic to adult education, there is enough work in promoting sustainable development, even in the most successful school group. This is told by the many *to some extent* answers given by personnel groups. Vocational schools are further ahead, both on the curriculum level and in their actions in practise, than the general education school. From the heterogeneous free education group folk high schools are in many respects comparable to the general education group in sustainable development. The articles of the school published in the second part of the original report prove that exemplary work is being done in the field of sustainable development in all school types.

When according to the information recently published of the communes in Finland (Järventaus 2001, see also Järvinen 2000) only 270 communes are building their own sustainable development operation programmes and more than a hundred have finished them – often with meagre results

– it is understandable that the same work has not yet been started in many schools. The National Board of Education is preparing, together with other specialists, criteria and contents for the evaluation of the quality of sustainable development programmes for schools and institutions. A system in which a school can educate itself and get profiled as a sustainable development school based on an external evaluation is also in process. This is a good means to improve the state of sustainable development and to increase knowledge about it. Additionally, communes and other providers of education should take schools and institutions into consideration in their sustainable development agendas.

Evaluations collect information that is needed both at national and local level for developing education. Evaluation and projects benefit the NBE when their results are interpreted and exploited in curriculum work and in supplementary education, which are the most important means of information guiding given by the NBE. The results offer means of developing curricula for the providers of education and the schools themselves.

7 SOURCES

The sources published in Finnish are translated into English in the square brackets.

Aho, Leena 1999: Finnish Explorations in Environmental Teaching and Learning at Primary Level. (edit.) M. De Paz & M. Pilo (edit.). In: European Project for Environmental Education. A Curriculum for European Schools Genova 1999.

Järventaus, Kaarina 2001: Kestävä kehitys kiehtoo jo pörssiyhtiöitäkin. [Sustainable Development attracts even Exchange-listed Companies.] Helsingin Sanomat 7.1.2001. Helsinki.

Järvinen, Eija 2000: Paikallisagendatyö tienhaarassa. [Local Agenda at the Crossroads.] Ympäristö 5:2000. Ympäristöministeriö ja Suomen ympäristökeskus. Helsinki.

Kysely 10/99.13.4.1999. [Questionnaire] Opetushallitus.

L628/1998: Perusopetuslaki. [Basic Education Act.].

Leinonen, Matti 1999: Voiko kestävä kehitys luoda perustaa kasvatukselle ja opetukselle? [Can Sustainable Development form a basis for Education and Teaching?] In: Lähdesmäki, Seija O. (toim.) 1999: Kestävä kehitys ja koulutyö. Kehittyvä koulutus 3/1999. Opetushallitus. Helsinki.

Lähdesmäki, Seija O. (toim.) 1999: Kestävä kehitys ja koulutyö. [Sustainable Development and Schoolwork.] Kehittyvä koulutus 3/1999. Opetushallitus. Helsinki.

Ojalampi-Wamai, Sanna (toim.) 1997: Mikä maa – kehitysmaa. [What Country – a Developing Country.] Helsingin yliopiston maantieteen laitoksen opetusmonisteita 39. Helsinki.

Opetushallitus 1994a: Peruskoulun opetussuunnitelman perusteet. [Framework Curriculum for the Comprehensive School.] Helsinki.

Opetushallitus 1994b: Lukion opetussuunnitelman perusteet. [Framework Curriculum for Senior Secondary School.] Helsinki.

Opetushallitus 1995a: Ammatillisen koulutuksen opetussuunnitelman perusteet. [Framework Curriculum for Vocational Education.] Helsinki.

Opetushallitus 1995b: Työelämän tutkintojen perusteet. 1994–2001. [Basics for Working Life Exams.] Helsinki.

Opetushallitus 1997: Kestävän kehityksen edistämishjelma vuosille 1998–2000. [Programme for Furthering Sustainable Development in the Years 1998–2000.] Helsinki.

Opetushallitus 1998: Koulutuksen tuloksellisuuden arviointimalli. [A Framework for Evaluating Educational Outcomes in Finland.] Arviointi 7/1998. Opetushallitus. Helsinki.

Opetushallitus 2000: Ammatillisen peruskoulutuksen opetussuunnitelman ja näyttötutkinnon perusteet 2000. [Framework for the Vocational Initial Education Curriculum and Skills Examination 2000.] Helsinki.

Rajanen, Jari 2000: Selvitys koulutuksen paikallisen tason arvioinnin tilasta. [The State of the Evaluation on the Local Standard of Education.] Arviointi 11/2000. Opetushallitus. Helsinki.

Ranta, Hannu 1998: Opetustoimen lainsäädäntö 1999. [Legislation of the Educational System.] Kauppakaari Oyj. Lakimiesten kustannus. Helsinki.

Raumolin, Jussi 2000: Towards Sustainable Education in Europe. A Proposal for Criteria and Indicators for Sustainable Education. Report to the SUSDEED Project. University of Helsinki. Institute of Development Studies. Kotka.

Suomen kestävän kehityksen toimikunta 1995: Kestävä kehitys. Lähivuosien toimenpiteitä Suomessa ja Suomen kansainvälisessä yhteistyössä. [Sustainable development.] Helsinki.

Tiedote 8/99. 05.02.1999. [Announcement.] Opetushallitus.

Ulkoasiainministeriö 1988: Yhteinen tulevaisuutemme. Ympäristön ja kehityksen maailmankomission raportti. [Our Common Future. The World Commission Report on Environment and Development.] Ulkoasiainministeriö, Ympäristöministeriö. Helsinki.

UNESCO 1997: Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action. International Conference, Thessaloniki 8–12 December 1997. Environment and Society: Education and Public Awareness for Sustainability.

Verhelst, N. D., Glas, C. A. W., Verstralen, H. H. F. M 1995: One-Parameter Logistic Model OPLM. CITO. Arnhem.

Wiman, Ronald 1999: Putting People at the Center of Sustainable Development. Proceedings of the Expert Meeting on the Social Dimension in Sustainable Development. Volume 1: Policy Themes – A Synthesis. STAKES. National Research and Development Centre for Welfare and Health. Finland.

Ympäristöministeriö 1998: Hallituksen kestävän kehityksen ohjelma. Valtioneuvoston periaatepäätös ekologisen kestävyuden edistämisestä. [The Finnish Government Programme for Sustainable Development.] Suomen ympäristö 254. Helsinki.

Åhlberg, Mauri 1998a: Kestävän kehityksen pedagogiikka ja yleisdidaktiikka. [The Pedagogy and General Didactics of Sustainable Development.] Joensuun yliopisto. Kasvatustieteiden tiedekunnan selosteita. N:o 71. Savonlinnan opettajankoulutuslaitos. Joensuu.

In addition the following sources were used in the original evaluation report:

de Corte, E. 1993: Learning Theory and Instructional Science. Paper presented at the Final Workshop of the ESP-Programme "Learning in Humans and Machines" St. Gallen, Switzerland, 5.–6. March 1993.

http://www.edu.fi./opettajan_tyokalupakki/itsearviointi/Toiminta-ajatus_ja_tavoitteet

<http://www.europa.eu.int/comm/environment/actionpr.htm>

Hyytiäinen, Jukka; Hämeenoja, Eeva; Hänninen, Tapani; Leinonen, Esa & Tenhunen, Risto 1999: Kestävä kehitys oppilaitoksissa – Ekoauditoinnin opas. [Sustainable Development in Educational Institutions – A Guide to Ecoauditing.] Opetushallitus. Helsinki.

Kippo-Edlund, Päivi 1999: Elinvoimaa yritysten ja kunnan ympäristöyhteistyöllä – kokemuksia, ideoita, yhteistyömalleja. [Vitality with the Environmental Cooperation between Businesses and Municipality – Experiences, Ideas, Cooperation Models.] Paikallinen agenda 21 -projektin julkaisu. Suomen Kuntaliitto. Helsinki.

L1138/1996: Laki ammatillisen lisäkoulutuksen rahoituksesta. [Act on the Financing of Further Vocational Training].

Laurén, Jari 1993: Osaavatko peruskoululaiset luonnontietoa? [Do the Comprehensive School Pupils know Natural Sciences?] In: Linnakylä, Pirjo & Saari, Hannu (toim.) 1993: Oppiiko oppilas peruskoulussa? Peruskoulun arviointi 90 -tutkimuksen tuloksia. [Does the Pupil learn in Comprehensive School? Results in the National Evaluation of Comprehensive School.] Kasvatustieteiden tutkimuslaitos. Jyväskylän yliopisto. 105–120. Jyväskylä.

Opetusministeriö 1996: Koulutuksen ja korkeakouluissa harjoitettavan tutkimuksen kehittämissuunnitelma vuosille 1995–2000 Koulutus ja tutkimus 2000. [Education and Research 1995–2000. Development Plan.] Opetusministeriö. Helsinki.

Rajakorpi, Antti 1999: Kestävän kehityksen koulu- ja oppilaitoskohtainen arviointi. [The School Specific Evaluation of Sustainable Development.] In: Lähdesmäki, Seija O. (toim.) 1999: Kestävä kehitys ja koulutyö. Kehittyvä koulu-tus 3/1999. Opetushallitus. Helsinki.

Rauste-von Wright, M-L. & von Wright, J. 1994: Oppiminen ja koulu-tus. [Learning and Education.] Juva: WSOY.

Tilastokeskus 1999: Oppilaitosluokitus ja -luettelo 1998. Oppilaitostyyppiluokitus 31.12.1998. [Institution Classification and List 1998. School Type Classification 31.12.1998.] Tilastokeskus. SVT. Koulutus 1999:5. Helsinki.

Tilastokeskus 2000: Koulutuksen järjestäjät ja oppilaitokset. [The Providers of Education and Schools.] Utbildningsanordnare och läroanstalter 1999. Koulutus 2000:3. Helsinki.

Tynjälä, P. & Laurinen, L. 1999: Aktiivisen oppimisen kokeilu kasvatustieteessä. [Experiment of Active Learning in Pedagogy.] In: S. Honkimäki, (toim.) 1999. Opetus vuorovaikutus ja yliopisto. Jyväskylän yliopisto. Koulutuksen tutkimuslaitos. Jyväskylä: Jyväskylän yliopistopaino. 203–223.

Åhlberg, Mauri 1998b: Arviointi ympäristökasvatuksen laadun varmistajana ja edistäjänä. [Evaluation as the Guarantee of the Quality of Environmental Education.] Ympäristökasvatus 5:2/98.

8 APPENDIX 1

The contents of the original report, Antti Rajakorpi & Kaija Salmio 2001: Toteutuuko kestävä kehitys kouluissa ja oppilaitoksissa? [Sustainable Development in Schools and Institutions?] Arviointi 3/2001.Opetushallitus., are here given in English.

CONTENTS

ABSTRACT (in Finnish)
SAMMANDRAG
ABSTRACT (in English)
PREFACE

PART I: EVALUATION

1 INTRODUCTION

Antti Rajakorpi

- 1.1 Evaluation of education
- 1.2 The definition of sustainable development

Antti Rajakorpi & Kaija Salmio

- 1.3 The basics of the evaluation of sustainable development

Antti Rajakorpi & Kaija Salmio

2 THE AIMS OF THE EVALUATION OF SUSTAINABLE DEVELOPMENT

Antti Rajakorpi

- 3 THE REALISATION OF THE EVALUATION
- 3.1 Evaluation plan
- 3.2 The processing of material

4 RESULTS

Kaija Salmio

- 4.1 Curricula and sustainable development
- 4.1.1 Sustainable development in the core curricula
- 4.1.2 Sustainable development in the school curricula
- 4.1.3 The municipal and school specific promoting programmes of sustainable development

Antti Rajakorpi

- 4.2 The realization of the sustainable development principles written in the curricula
 - 4.2.1 Sustainable development in different subjects
 - 4.2.2 The ways of carrying out sustainable development in teaching
- 4.3 Training linked with sustainable development
 - 4.3.1 Training arranged by schools themselves
 - 4.3.2 Participation in training arranged by others
- 4.4 Organising the furthering of sustainable development in schools
 - 4.4.1 Teams and responsible persons
 - 4.4.2 Participation in carrying out sustainable development in school communities
- 4.5 Co-operation in sustainable development
 - 4.5.1 Co-operation between personnel groups
 - 4.5.2 Co-operation between other schools and outside parties
- 4.6 Sustainable development in everyday activities in schools
 - 4.6.1 The visibility of sustainable development
 - 4.6.2 Purchases and daily activities
 - 4.6.3 Monitoring consumption
 - 4.6.4 Waste management and sorting
 - 4.6.5 Commitment of personnel groups to the carrying out of sustainable development

Kaija Salmio

- 4.6.6 Factors promoting and preventing sustainable development in school communities

Antti Rajakorpi

- 4.7 Students, pupils and sustainable development
 - 4.7.1 Students' unions and the awareness of sustainable development facts and concepts
 - 4.7.2 The attitudes of students and pupils to sustainable development
 - 4.7.3 Opinions of students and pupils on sustainable development
 - 4.7.4 Everyday activities of the sixth year pupils in basic education

Kaija Salmio

- 4.8 Participation of schools in sustainable development projects
 - 4.8.1 Projects on environmental education or sustainable development
 - 4.8.2 The most important sustainable development projects in the school year 1999–2000

5 SUSTAINABLE DEVELOPMENT IN THE EDUCATION OF OTHER COUNTRIES

Antti Rajakorpi

- 5.1 Scottish control schools
- 5.2 Tanzanian control schools
- 5.3 International co-operation

Marja Hahtola

- 5.3.1 Nature and Recycling. Co-operation between Posion lukio, Finland and Istituto Tecnico Commerciale e per Geometri "J. Monnet", Italy (in English)

George Davidson

- 5.3.2 Sustainable Development in Peebles High School, Scotland and Vammalan lukio, Finland (in English)

Hilkka Rajakorpi

- 5.3.3 Vammalan lukio and Peebles High School furthering sustainable development

Kaija Salmio

- 5.3.4 Globe Project
- 5.3.5 The Baltic Sea Project
- 5.3.6 The Northern Ecosystems and Education Project
- 5.3.7 OECD/ENSI Project
- 5.3.8 The importance of the projects

6 DISCUSSION AND CONCLUSIONS

Antti Rajakorpi

- 6.1 The state of sustainable development
 - 6.1.1 By school types
 - 6.1.2 By municipality groups
 - 6.1.3 By language groups