Environmental Education in Sweden

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Summary

Schools and higher education institutions in Sweden have developed a wide range of innovative and demanding curricula to meet the objectives of Sweden's environmental policy. Environmental education in compulsory schools is taught principally through biological sciences, although social studies are beginning to occupy a substantial component of the environmental curriculum. Upper secondary schools offer more opportunities to develop environmental awareness, understanding and practical skills than comparable sixth form and post-secondary colleges in England. In Sweden there is a strong emphasis on practical work developed through projects based on contemporary environmental issues and their resolution. The development of environmental education has been well supported by a substantial input of new resources, especially materials developed by the Swedish Environmental Protection Agency and Industry. Universities have also begun to adopt new organisational structures to help develop inter-disciplinary teaching and research teams. Several universities are experimenting with 'common core' courses, parts of which comprise environmental elements.

Introduction

In 1992 the authors visited seven Swedish Universities and five schools to see how these were helping students develop an understanding of their environment. The aims were to discover whether students understood the environmental effects of industrial processes and practices as well as to determine the extent to which they were gaining competence in evaluating and solving environmental problems. In this article some aspects of the Swedish provision which could be of interest in Britain and elsewhere are highlighted.

Sweden has a land area of 329,000 km² and is inhabited by 8.5 million people of whom 1.8 million are under 18 years of age. Forty percent of the population live in the three largest cities of Stockholm, Gothenberg and Malmo. Many responsibilities of government are delegated to the 24 provinces (counties) or the 284 Kommuns (municipalities). The latter are responsible for child care services for children under 7, compulsory schools for ages 7-16 and upper secondary schools attended by 90 percent of 16-19 year olds.

The Environmental Context

Sweden has a sophisticated and wide ranging environmental monitoring service. This also provides a service to the neighbouring countries. The Swedish Environmental Protection Act of 1969 gave county boards and other supervisory authorities powers to make companies monitor the effects of their environmentally hazardous activities.

Universities

Royal Institute of Technology, Stockholm;
Institute of Zoology, University of Uppsala;
University of Agricultural Sciences, Ultuna, Uppsala;
University of Gothenberg;
Chalmers Institute, Gothenberg;
University of Umea.

Compulsory Schools

Bargarmoskens Skola, Stockholm;
Hjulstaskolan, Spanga, Nr Stockholm;
Hyllingeskolan, Spanga, Nr Stockholm.

Upper Secondary Schools

Hvitfeldtska Gymnasiet, Gothenberg;
Angereds Gymnasiet, Gothenberg.

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These authorities can ensure coordination over large areas such as an entire river system. Since 1987 funds have been provided to monitor the environmental impact of farming, particularly in areas of intensive agriculture.

Its geographical location makes Sweden vulnerable to environmental pollution from other countries to the east and west as well as from within. Measurement of long term environmental trends, such as declining oxygen levels in the Baltic Sea and increasing acid rain, gave rise to the establishment, in 1978, of a national environmental monitoring programme. The Swedish Environmental Protection Agency operates this programme through contacts with universities, independent research and other non-governmental organisations at an annual cost of about £10 million (or 100 million Kroner).

The main objectives of Sweden's environmental policy, as set out in The Swedish Government Bill (1990/91), are "to protect human health, maintain biological diversity, manage natural resources to ensure their long term use and preserve both the natural and cultural landscapes". These objectives are pursued through an extensive and expanding platform of environmental legislation. In addition the government believes that all aspects of society should have a sense of responsibility for the environment and the management of resources: the 1990/91 Bill stresses the importance of education in "enabling environmental awareness to permeate all types of activities". Environmental issues are to be integrated into the education system at all levels so that they become a major feature in compulsory and upper-secondary schools. It was acknowledged that these changes would put greater demands on teacher education and on in-service training for teachers. The Bill also indicates that greater emphasis would be placed on the environment in higher education programmes, including the provision of special courses in waste management. In addition, a shortage of environmental specialists, particularly of municipal environment and health and safety officers, was to be met by appropriate expansion of provision at targeted university departments. The Bill also supported the effective dissemination of knowledge and understanding of environmental concerns through the adult education system.

The Education System

Compulsory Education (Ages 7-16)
There were 4,700 compulsory 'comprehensive' schools catering for nearly 900,000 pupils in 1990. During their senior three years students take extra science, their own elected subjects and undergo a period of work experience (Stenholm, 1984).

Post-Compulsory Education: Upper-Secondary Schools (Ages 16-20)
About 90 percent of students who complete compulsory schooling continue into further education, choosing from a range of 25 study programmes (or lines), some of which are vocational (Stenholm, 1984). Programme lengths vary from two to four years but this is being rationalised from 1993 to three years with fewer lines. There are 200 upper-secondary schools attended by some 290,000 students. Both academic and vocational lines offer a common core curriculum including Swedish, English, careers, religion, mathematics, science, sports and health. Programmes are intended to prepare students for entry after three years' academic study to higher education or after two years' vocational study to work. Some changes are about to be made. The number of graduates rose from 71,000 in 1979, to 91,000 in 1987.

Higher Education
There are six traditional universities and seven other research and teaching institutions of equivalent status (Scott, 1991). In addition, there are 53 other specialist colleges funded by the State. With the exception of the Stockholm Business School, there is no private sector to higher education.

Over one third of upper-secondary school graduates in Sweden proceed to higher education with a first year enrolment of about 40,000. The total higher education student population is around 191,000 with an average entry age of 23, for comparison, somewhat higher than that in the UK. Most students are on one of some 100 general study programmes established by parliament. Courses vary in length from 1 to 5.5 years and fall into five broad areas:

- Technical
- Administrative, economic and social work
- Health
- Teaching
- Information, communication and cultural.

The scope of each programme is measured using a points system. One point is equivalent to one week of full-time study. One academic year therefore consists of 40 points and the year is divided into two terms or semesters. Courses are usually assessed on three levels - fail, pass and pass with distinction.

Environmental Education in Schools

Compulsory Schools
An environmental dimension to the curriculum originated in the early part of this century in subjects