

Environmental Education in the People's Republic of China: Features, Factors and Trends

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A B S T R A C T

The genesis and development of environmental education in the People's Republic of China is described. Background information about the education system and about environmental issues are summarised. Some key factors which have proven to be obstacles to progress, in terms of environmental education, are identified and some thoughts about future prospects are outlined.

Introduction

China's environmental problems mirror those of many countries that have maintained a predominantly rural economy for many years but which now find themselves caught in the grip of rapid economic development. Some of the problems that China faces result from environmental and geographic factors whereas others are the result of human agency – at a macro-cultural or micro-cultural level. As in many such countries, education is seen, by some, as a key strategy to improve the quality of life and the quality of the environment.

The Government of the People's Republic of China has devoted much attention, in recent years, to environmental education. Environmental education has recently been (re-)promoted by the different levels of education authorities and in schools. However, as environmental education develops, it faces problems that are influenced by factors outside the education system. This paper summarises the current situation in environmental education in China, and gives a brief analysis of those factors that cause the major problems.

Background

China's environmental problems arise partly because of its enormous size and growing population. The relaxation of its well-known one child per family policy means that China's population is likely to rise from around 1.2 billion now to around 1.5 billion by 2050 (Bradbury & Kirkby 1996, p. 98). Some of the more common problems faced by the Chinese people include earthquakes, flooding and typhoons. Bradbury and Kirkby point out that the recent rapid growth in urbanisation, similar to that which happened in the 1950s, has resulted in 'the loss and degradation of agricultural land, inadequate resource supply, poor waste disposal and low infrastructural provision' (1996, p. 99). Unlike countries such as Australia and the UK, mechanisms for the public to have a voice in environmental decision-making are not common. The role of formal and informal education in raising awareness of issues and strategies is, however, taken seriously at all levels of society.

Formal education in China is composed of 4 stages: Pre-school education for children aged 3-6; Primary education for pupils aged 6-12; Secondary education for students aged 12-18 (equally split into junior and senior) and higher education for those who pass appropriate entrance examination. School is compulsory for the 9 years of primary and junior secondary education, known as basic education. Basic education is governed and funded by local government and the curriculum and the syllabuses are determined by the State Education Department. Detailed guidelines for each subject are drawn up by provincial education commissions (Stimpson, 1997). The guidelines lay out the introduction, teaching objectives, contents, teaching principles, teaching implementation and evaluation and relative objectives and contents for each academic year. Educational evaluation is usually made by inspectors from the local educational authority, educational research institutes, schools and even universities. Evaluation focuses on the achievement of aims and objectives as well as the content - including aspects of cognition, skills and emotional development.

Higher education consists of training colleges (2-year courses) and universities (4 years for bachelors degrees, 2.5 years for master degrees, and 3 or more years for PhDs). Most higher education is funded either by the provincial or by the municipal government although some well-known major universities are funded by both. These universities are more autonomous in curriculum decision making and educational assessment and evaluation than the more provincially controlled institutions.

Developments in environmental education

In 1979, a conference on environmental education in basic education was organised in Beijing by the Environmental Education Committee of the Chinese Association of Environmental Science (CAES) (Chen 1981). The conference recommended that environmental education should be undertaken at both primary and secondary stages. This event marks the official birth of Government sponsored environmental education in China. Subsequently, several schools, in a range of cities and provinces, were selected to implement a 3-year pilot launched by the CAES in 1981, aimed

at finding a way to implement environmental education into the existing basic education system (SEPB 1991, p. 237).

Writing in 1981, Chen argued that 'there are conventionally two kinds of environmental education in China. One is for the preservation of nature (environmental conservation), the other is for pollution control (environmental protection)' (Chen 1981, p. 37). Yiqui went on to describe that what happened in the early 1980s as 'a new discipline' based on the emerging holistic concept of environment. Chen labelled this new discipline as 'environmental science education' (1981, p. 39).

In 1985, after several years of piloting, the State Environment Bureau and the State Education Commission held a nationwide meeting in Liaoning Province about environmental education. In 1989, the Government held a similar meeting in Guangdong Province. Teachers from various regions attended the meetings to exchange their experiences of environmental education activities. After the conferences, a range of documents were published to spread the teachers' experiences throughout China.

In 1992, the Evaluation Committee for Primary and Secondary Teaching Materials, organised by the State Education Commission, evaluated and approved the teaching syllabus of various subjects in the compulsory stage of school education. The document stated that, 'In order to inform the students of the national policies in the aspects of population, resources and environment, environmental education must be paid attention to in such subjects as nature, social studies in primary education, and physics, chemistry, biology, geography, etc. in secondary education'. Since then, environmental education has maintained its formal position within the compulsory education stage.

In 1994, in response to the spirit of the World Environment and Development Conference (UNCED), the State Council issued *Chinese Agenda 21* (the State Council 1994), which emphasised that:

the essential way of avoiding poverty and developing economics is the science and technology's progress and labourers' level of competence. Educational development is a fundamentally important project towards the sustainable development.

The Council required educators 'to reinforce the inculcation of the thought of sustainable development,' and 'to infuse such contents as resources, ecology, environment and sustainable development into primary and secondary curriculum.' Hence, after 1992, environmental education in China has been oriented towards sustainability, particularly in the light of Agenda 21. (More details of initiatives in China during this period can be found in Kwan and Lidstone 1998.)

Current Situation

1. Pre-school Education

The Educational Compendium in Pre-schools points out that: 'The arrangement of Kindergartens' environment must be paid

attention to. The campus should be made green in a planned way so that children can live in a clean, tidy and beautiful environment which has educational significance' (SEPB 1991, p. 273). According to this philosophy, environmental education, at the pre-school level, makes full use of children's surroundings, with the aim of developing an appreciation for a living and protected environment.

In practice, many kindergartens integrate environmental education into their teaching activities. For example, in the teaching of *General Education*, such aspects of environment as water, air, noise and their relationship with human beings are infused into the curriculum. Teachers may use specimens, models and pictures, so that children can develop a positive and vivid understanding.

2. Primary Education

At present, environmental education in most primary schools is integrated into the existing subjects, such as Chinese, mathematics, social studies, geography, science, nature study, art and so on (Xu & Zhu 1996, p. 213). Nature study is a core subject for environmental education, including such basic topics as air, water, soil, noise, plants and animals, food-chains and ecological balance, etc.

'Teachers guide their students to participate in activities aimed at developing their pupils' initial awareness'

Primary schools also implement environmental education through extra-curricular activities. Teachers often guide their students to participate in such activities as tree or flower planting, hiking and mountain-climbing, aimed at developing their pupils' initial awareness of protecting and improving the environment through observation and experience.

3. Secondary Education

In most secondary schools, environmental education is infused in subjects such as chemistry, physics, biology, geography, civics, Chinese and social studies. Chemistry, biology and geography are the major subjects that are used to achieve environmental education objectives.

Some schools, at the senior stage in particular, establish a specific subject, such as *Environmental Protection* or *Environmental Knowledge*, which is formally listed on the timetable and brought into normal teaching programme. Such subjects are usually elective courses. Textbooks for these courses are usually compiled by the teachers who are responsible for the courses so as to relate to the local environment.

Secondary schools also pay attention to developing environmental education through extra-curricular activities. Teachers can organise subject-groups, such as the 'geography

lovers' group, 'biology lovers' group, etc. in which students can go a step further to develop their environmental knowledge or do some relevant experiments. For example, in 1990, the biology and geography lovers group formed by students of Junior I and II in No. 6 Secondary School in Tong County, Beijing, were organised by their teachers to investigate the water quality at the source of the Great Canal (China Environmental Daily, 6 March, 1990). Many schools also make efforts to disseminate environmental knowledge by holding exhibitions, lectures or forums on the local or national environmental situation.

Higher education, particularly Beijing Normal University, is involved in producing materials for primary and secondary schools (see for example, Xu *et al.* 1997). Unesco plays a key role in such work, often in collaboration with other agencies including the National Environment Protection Agency (NEPA). One of the authors is involved with a current Unesco initiative, the UNDP-funded - Capacity Building for Environmental Education in Primary and Middle Schools Project which has produced interactive teaching materials. Inservice training has been held for teachers, introducing them to the new lessons. The project envisages that after trialling in 100 primary and 100 secondary schools, the materials will be published in 2000 and distributed to 1000 primary and 1000 secondary schools. The WWF and other NGOs have taken an active role in teacher education and materials production for many levels of the education system.

4. Higher Education

Since the late 1980s, most higher education institutions have shown concern for the development of environmental awareness in students who will enter such fields as economics, law, science and technology, art, journalism and publishing, and whose work will indirectly affect the urban and rural environments. Many institutions offer elective courses that develop specific environmental knowledge and concepts in accordance with particular specialities. For example, they might offer such courses as 'pollution and living things' or 'environmental sanitation' for the students of a biology department; 'natural conservation' or 'protection of resources' for the students from a geography department; 'environmental management' or 'environmental law' for the students from a politics department. These courses are designed to broaden the environmental knowledge of students of various disciplines, strengthen their environmental awareness and develop appropriate environmental values and attitudes.

In order to equip university students with environmental knowledge, skills, awareness and values and attitudes, many institutions have infused environmental education into foundation courses instead of setting up a single course on environmental aspects. These institutions pay much attention to related specific environmental problems in the basic courses. For example, in an analytical chemistry course, teachers might explain how to prevent iron from endangering humans and their environment; in a physical geography course, teachers might introduce the issue of natural resources and

conservation. Such actions have the advantage of relating basic theory to practice. A few institutions offer students regular lectures from a range of specialists. These lectures are non-degree courses, but they aim to improve students' understanding of the environment from different perspectives

5. Teacher Education

In China, there are two kinds of pre-service teacher training institutions. One is the 'normal school' which belongs to the secondary education phase, and which enrolls students who have just finished junior secondary education. The duty of the normal school is to prepare primary school teachers. The other type of institution is the 'normal college', which is part of the higher education sector. Normal colleges enrol students who have just finished senior secondary education and prepare them to be secondary school teachers. In both institutions, environmental education has been integrated into the existing subjects so that the students can receive environmental education through their daily learning. On the other hand, the teacher training institutions pay attention to the students' understanding of the relationship between their specialities and environmental education. Students are guided to explore the links between the two fields, so that when they graduate, they not only have strong environmental awareness and 'correct' attitude, but they are also prepared to implement environmental education through their own teaching subjects.

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In order to train the future teachers to be skilful in integrating environmental education in their relative subjects, several institutions have begun to set up a course of environmental education for those who are working for diploma or degrees of education. For example, from 1996, the Department of Education in Hangzhou University set up a course named *An Introduction to Environmental Education* for students on the Bachelor of Education degree programme. Such a course does not involve gaining specific environmental knowledge and concepts, but involves the pedagogic principles of environmental education, the aim of which is to equip those would-be educationists with some theoretical knowledge of environmental education as a field of research.

Recently, efforts have been put into raising the profile of environmental education within institutions of teacher education. For example, both authors took part in a seminar for teacher trainers on environmental education, jointly organised by the State Education Commission, the Great Britain-China Centre and the Institute of Environmental Sciences, Beijing Normal University in 1997.

Some factors that are hindering the promotion of EE

Although there have been many initiatives in the field of environmental education in China, some unavoidable problems have hindered progress. There are three specific issues that we would point to as being of particular concern. [We should point out here that, in our view, environmental education, in an ideal world, would not simply be about learning enough about the environment to make sense of issues such as global climate change or recycling. Rather, we believe that it should provide ways of thinking and doing that allow people to (re)construct how their everyday lives, cultural, political and social, are interlinked with a range of factors both within and beyond their direct control.]

1. Historic factors and the exclusion of EE

From the end of the 19th century to mid-20th century, China has experienced a bitter history which included being invaded by many industrial countries. In 1949, the People's Republic of China was founded, and the Chinese leader Mao Zedong exhorted: 'Chinese people stand up!', inspiring the whole nation. But the new republic faced poverty and backwardness and people looked forward anxiously to catching up with developed countries. Such slogans as 'combating nature' and 'conquering nature' became a national philosophy.

The ideal situation that many Chinese people longed for is epitomised by the popular slogan 'a forest of chimneys and a sea of dense smoke'. The main content of the different levels of education was industrial and agricultural scientific knowledge. The praises of 'labour heroes' who had 'conquered' nature were sung. The main thrust of the curriculum through the whole educational system appeared to be anti-nature. As for environmental education, nobody thought of integrating it into the curriculum.

During the 1980s, the Chinese government pursued a more open policy, which again made Chinese people recognise the distance between China and the developed countries. Despite the national policy of environmental protection, a great upsurge in economic construction took place throughout the country. Since the 1980s, China has made great progress towards economic development, but the cost has included the exacerbation of environmental problems. In order to acquire benefits, people seldom consider whether their behaviours are sustainable or not (SEPB 1991, pp. 215 & 325). Such economic models and lifestyles require an education system to impart the knowledge that could foster the economic development, and environmental education, therefore, was excluded from school education. *Chinese Agenda 21* points out that, 'the economic model in China has long been an unsustainable model, the result of which is the exclusion of environmental education in various levels of education' (The State Council 1994). The unfettered pursuit of economic growth is the main reason that environmental education has not achieved a stable position so far.

2. The pursuit of higher education

China has been deeply influenced by Confucianism for nearly 2,000 years. In spite of several social innovations and changes, Confucianism deeply affects the nation's mental state. One important philosophy is that 'a good scholar will make an official', hence the essential aim of education, for centuries, was to prepare officials. Schooling was the ladder towards the upper class. In order to gain access to higher education, leading to a higher social position, one had to pass a strict entrance examination. Thus education was aimed at preparing students for the examination. Such education only paid attention to book knowledge and examination technique, and seldom paid attention to values, attitudes or even the application of knowledge.

At present, education in China is by no means only for the preparation of officials, but gaining a higher education still results in relatively easy access to a good social position. Since the numbers of higher education institutions has been limited, only the minority of candidates who graduate from secondary schools, and who do well in the entrance examination, can enter universities and colleges. For this reason, only those secondary schools that send a high proportion of their students to higher education are regarded by the public as schools of high quality. As a result, the secondary schools are only concerned with the subjects that are included in the entrance examination and ignore those that are excluded. It is not surprising that teachers care for nothing but the mastery of knowledge and of examination technique (Zhu 1995, pp. 106-7).

Environmental education involves the development of environmental awareness, values and attitudes as well as the dissemination of environmental knowledge and skills (Xu & Zhu 1996, p. 35; Gough 1997, p. 70). It is worth pointing out here, that some research has intimated that because of the particular social ethic of conformity, obedience and suppression of personal beliefs commonly found in China, some people with 'little indication of pro-environmental attitudes and a perception that their actions would not be effective' would act in environmentally responsible ways (Suk-lin & Stimpson 1997).

'the Government and educational authorities have been calling for environmental education initiatives'

Because of the influence of the traditional perspective outlined above, environmental education is often ignored by school managers and teachers. Recently, however, the Government and educational authorities have been calling for environmental education initiatives. In response, some schools have established such subjects as 'environmental studies',

'environmental science', 'ecological studies', etc. (although they are not environmental education in its broadest sense, they represent major progress). But even such subjects, which have mainly focused on knowledge and skills, are often only arranged at grade 1 - far from the important examination, and they are usually optional subjects.

Some schools have recognised that environmental education is an educational process: that it should be integrated into various subjects and teaching activities. This notion has been supported by other initiatives from educational authorities. For example, in Guangzhou province, the education authorities have put a strong emphasis on values teaching in school geography, but teachers did not take it seriously and the teaching strategy adopted is still mainly content-based (Lam 1993). The schools and teachers would rather spend the time in training their students to be skilful in taking examination instead of exploring ways to integrate environmental education or co-ordinating the contributions that various subjects could make to environmental education (Zhu 1995, pp. 106-7).

3. The influence of standardised educational administrative management on schools' and teachers' initiatives

For centuries, the Chinese educational administration has mainly been centralised. Even in the 1980s, the curriculum, subjects, syllabuses, teaching materials and even the teaching methods were determined by the central educational authority, and provincial and local educational authorities only supervised and guided implementation. Recently, the State Department of Education transferred some of its powers to the provincial authorities. Some provinces, for example, can, under the framework made by the central educational authority, compile textbooks appropriate to the local needs. But schools and teachers are unable to decide what to teach, the pace of their teaching or what teaching strategies to use. Bradbury and Kirkby describe public administration in China as being affected by a 'deeply entrenched "verticality"' (1996, p. 103). The need for approval from above, for all aspects of change, has slowed down educational reform as well as other aspects of public life.

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Such a situation weakens and restricts schools' and teachers' initiatives. Each school and each teacher may wish to utilise local resources to implement environmental education, according to the community needs and an individual student's developmental status. But the teachers, in order to finish the tasks stipulated by their educational authority, have no time to research the methods of environmental education in the

relevant subjects, and have no time to consider how to educate their students *for* the environment and *in* the environment.

Other Problems

1. The content of environmental education

Many secondary schools regard environmental education as a theme that belongs to the natural sciences (Xu & Zhu 1996, p. 223). Consequently, environmental education is seen as the work of the teachers of such subjects as physics, chemistry, biology, geography, etc. However, a more inclusive approach to environmental education would advocate an emphasis on the issues of cause and effect of problems which are greatly related to human views and behaviours. Subjects in the natural science themselves do not solely constitute environmental education, only a part of it, excluding, for example, social and natural scientific aspects. So to achieve the aims and objectives, environmental education should be integrated into the whole educational process (Benedict 1991, p. 19; Unesco 1978, p. 27).

2. Teachers' inability to implement environmental education

Primary and secondary school teachers in China have little time to explore how to implement environmental education through their own subjects. If pushed, teachers often simply add some environmental content to their subjects, which actually increases teachers' and students' burden. Meanwhile, schools only pay attention to how their teachers are implementing their own subjects instead of thinking of a way to co-ordinate the contribution that each subject can make to environmental education, therefore, there is usually poor co-operation between teachers (Xu & Zhu 1996, p. 227).

3. Lack of assessment

There is a major recognition in the West that assessment has great significance in education. To assess effectively, educational aims and objectives need to be clear and realistic (Xu & Zhu 1996, p. 228; Lee 1998, p. 207). In China, environmental education only has general aims, for example: increasing students' environmental awareness; equipping them with environmental knowledge and skills; rectifying their environmental attitudes and values, etc. But until now, no standards have been established to describe the degree of those aspects that students of various levels should attain. Without anything more specific, no objective results of assessment can be gained.

Recent developments

Various levels of educational authorities have realised that the strategy should be to integrate environmental education into the whole educational process rather than to establish a single subject. The authorities now require schools to orient their daily teaching towards the objectives of environmental

education. They plan to compile and publish different sorts of supplementary reading materials involving environmental contents and issues, hoping to help and promote environmental education.

Integrating environmental education into the whole educational process does not mean simply adding some environmental content to each subject. We would argue that it should be a holistic process. In primary and secondary schools, a team will be organised in order to co-ordinate the contribution that each subjects and educational activities can make to environmental education.

In the end, the teacher is the critical element in the development of environmental education. In recognition of this, environmental education will also be initiated in both pre-service and in-service teacher-training institutions. Students in normal universities and in-service teacher-training college will be taught the content of environmental science and the theory of environmental education, so that they can be both good instructors and researchers who are going to find ways of achieving the aims and objectives of environmental education.

In order to accelerate the development of environmental education in China, some universities have already established specific institutes, such as a Centre for Environmental Education Studies. The duty of these centres might include researching the theory of environmental education, including the establishment of theoretical frameworks, the development of curriculum, the approaches of teaching strategies, comparative studies, etc.

Environmental education is now paid much attention by various levels of educational authorities and schools. The problems mentioned above have specific causes which involve national values and ideas and even some national systems, so it is not easy to solve them. With the strengthening of international exchange and the development of Chinese society, some traditional values which are not adaptable to the future needs of society will be weakened. Such moves affect subjects other than environmental education, of course (see, for example, Adamson 1995). Nevertheless, environmental education in China has made great progress, and the future is bright. We are reasonably optimistic that with continuing attention from the Government and with public support, environmental education in China will improve rapidly.

The future

As China becomes less isolated from the West, more co-operative ventures are likely to be started. The Chinese Environmental Global Alliance (CEGA) China, is a partnership 'through which environmental education textbooks developed in America will be translated for use in Chinese schools' (<http://www.pnl.gov/china/envcoop.htm>, 15 May 2000). Such initiatives, supported in this case by China's

State Science and Technology Commission (SSTC), do not seem the best way to develop culturally sensitive material – and some might argue that the US is not a good model for environmental educators to follow.

GLOBE, the project that many associate with Al Gore, the US Vice-President, has taken root in China (see <http://www.usembassy-china.org.cn/english/sandt/Globeweb.htm>):

On the Earth Day, 1996, four schools in China, including the Experimental High School attached to the Beijing Normal University became the first GLOBE schools in China. In October, 1996, eight schools scattered across China joined the GLOBE program. In April, 1997, Vice President Gore visited the GLOBE school at the Experimental School Attached to Beijing Normal University. By Earth Day, 1998, there were twenty-eight Chinese GLOBE schools. Another eight schools will become GLOBE school during 1999. By the close of 1999, each of the 32 provinces, autonomous regions and municipalities and cities directly under the central government will have at least one GLOBE school. These thirty-six GLOBE schools will be regional GLOBE Program centers responsible for training GLOBE teachers and organizing the local GLOBE program.

Our worry is that such projects do not address either the needs of China's students or the problems of the Chinese environment. ☹

Acknowledgements

We would like to acknowledge the thoughtful comments and helpful suggestions of the three anonymous reviewers.

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