



From Practice to Policy in Environmental Education

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Abstract

This paper briefly describes an experimental environmental education course introduced into the school curriculum in a mountainous, rural area of Uttaranchal state in Northern India. The rationale for this experiment was the perceived need to try alternative approaches to environmental education to those mandated by existing government policy. The course is a joint venture between a local NGO and the central and state government departments of education. Following a 15-year development and testing phase, the course is being incorporated into the curriculum of all government schools in the state since 2002.

The implications of the results of this experiment for future environmental education policy are discussed. In essence, the experiment has been a collaborative learning experiment among policy makers, educational administrators, curriculum planners, textbook writers, teachers, children and parents. New ways of thinking and doing have emerged and are owned by all participants. The process involves questioning all our existing assumptions about education, science, history and, in general, the contemporary global cultural model. The paper concludes that at present environmental education policy could most usefully focus on fostering a variety of such experiments with the expectation that they will lead to more effective policies and practices in the long run.

Introduction

School environmental education policy in India has, following the lead of the international community as articulated at the 1972 Stockholm Conference and the 1977 Tbilisi Conference, promoted what is termed 'infusion' (National Council of Educational Research and Training, 1988). This is a process of introducing discussions of environmental issues into existing school textbooks, mostly science textbooks. In general it has been an ad hoc exercise in which environmental subject matter has not been integrated into the existing text, but simply added on. Recent analyses of these 'infused' textbooks reveal several major difficulties (Kumar, 1996; Jackson, 2002b). The first is that many statements in the infused environmental subject matter contradict the scientific and development paradigms that feature prominently in the rest of the textbooks. Attempts to remove these contradictions are unsuccessful and only create confusion. The second is that environmental problems are not adequately defined. Physical, chemical and biological explanations of environmental problems are offered, but their political, social and economic determinants are not mentioned. Students therefore do not understand who has created them and why, and who will have to solve them and how. Third, with the existing standardised textbooks catering to the whole country, or at least an entire state, discussion of

specific local environmental problems is not possible. And, finally, while the ‘infused’ textbooks improve awareness of environmental problems, they do not provide the conceptual tools or the practical skills that are needed to solve them.

While infusion was the main focus of the country’s environmental education policy, the Department of Education of the Government of India also announced (in 1987) a scheme called an ‘Environmental orientation to school education’ to provide financial support for innovative work in the field of environmental education, thus recognising that additional thinking and experimentation are necessary to future policy formulation. The Uttarakhand Environmental Education Centre (UEEC) in Almora (in Uttaranchal state) designed and tested a three-year course of environmental education as a separate subject in the curriculum for grades six to eight in state government schools under this scheme (see Table 1).

The state government Department of Education collaborated with us in this experiment. The course was designed on the premise that the existing treatment of environmental problems in the curriculum was too diffuse to be effective – it was unable to focus on local problems in a holistic manner (see Table 2).

In the following section the more novel and problematic aspects of this course are explained and discussed. Mention will also be made of the problems of course implementation, the ways in which the course challenges existing school curricula and conventional pedagogy, and the impact so far on policy. In the last section, the implications of these problems and challenges for future environmental education policy formulation will be considered.

More about the Course

The community and the school

The UEEC pursues environmental education programmes with both communities and schools (Pande, 2002), and our aspiration from the beginning has been to integrate the two. Our inspiration for the school course came from the example of the aims and programmes of village women’s groups in the hill villages of Uttaranchal. These groups have, in some cases, formed spontaneously and have then been helped along by the small grassroots NGOs working with us (Jackson, 2000; Pande, 2002). The women come together to work towards ecological security and greater land productivity through community effort. The concepts, information and skills learned by students in the environmental education course are also those needed by village women to pursue their aims. There is substantial potential synergy between the community and the school, only part of which we have so far taken advantage of.

In theoretical terms our model of environmental education in rural areas of India envisages a process of joint, reciprocal learning among teachers, children and adult community members (see Figure 1). This implies a radical departure from existing classroom-bound, textbook-centered pedagogy, and has understandably proved problematical in practice. Briefly, school teachers must become motivated by an alternative and enlarged vision of education to adopt this new pedagogy. The pre-requisite for achieving such motivation is a transformative learning process.

Important in this context is an adequate definition of community. Such a definition must have both physical and social components: i.e. a recognisable land area and a social grouping

based on shared traditions, local history and current economic interests. Our concept of the 'village as an ecosystem' meets this requirement and appears more useful than other definitions, which depend upon only one of these components such as 'watersheds' (i.e. catchments) or 'user groups'. The former can give rise to difficulties because a 'watershed' may include several villages, and also parts of villages (Baviskar, 2003), and, where community-owned land and water resources are important, specialist user groups within the community cannot assume the authority needed to deal with them.

Table 1. Hamari Dharti, Humara Jiva (Our Land, Our Life): A school course of Environmental Education

As elsewhere in India, the most pressing rural environmental problem in the mountainous region of Uttaranchal is land degradation, i.e. thinning of forest cover soil erosion, and the drying up of natural water sources. The production of life-supporting materials like food, fodder and fuelwood is decreasing, and water scarcity is increasing due to inadequate groundwater recharge, and this in the face of increasing human population. The general impact of modernisation, including school education, has alienated young people from the land; they all want well-paid jobs in the city and an urban, westernised lifestyle. Very few, however, can achieve this, and large numbers of educated young people remain in the village with no vision of a better life for themselves on the land, and none of the skills that are needed to achieve such a vision.

In 1987 the Uttarakhand Environmental Education Centre, Almora, launched an environmental education course in government schools of the region to address these problems. The course deals with land and village forest rehabilitation and natural farming, and the importance of the community to achieve these. Students systematically study their local village ecosystem, learn traditional land, water and animal management techniques from village residents (i.e. their own parents and neighbours – who are given legitimacy as teachers by the course), and learn to interpret all this information within a framework of current ecological concepts (i.e., ecosystem, species diversity and adaptation, ecosystem health, ecosystem constraints and carrying capacity; and also the idea that the community is an integral part of the village ecosystem). They also learn village land and water use planning through participatory, democratic community effort. Overall, an attempt is being made to foster the alternative view of a future of the village in which dignity, environmental security increased livelihood security, and improved levels of well-being can be achieved through local self-help effort. The guiding concept is not 'development', but ecosystem health. Students learn to diagnose it, and how to improve and maintain it.

Between 1987 and 2002 the course was developed and tested in about 600 schools, involving some 1 000 teachers and 70 000 students in grades six, seven and eight (aged approximately 12 to 14 years). From July 2002 it has been integrated into the general school curriculum by the Uttaranchal State Department of Education. Also from July 2002, the course was extended to the plains region of the state, necessitating a separate edition of the course workbooks and a separate teacher orientation workshop module. Plans are being made to extend the course to the high school level (i.e. grades nine and ten). Jackson (2000), Pande (2001) and Pande (2002) have given fuller descriptions of the course.

Table 2. Design features of the UEEC environmental education course

- A discrete course for environmental education would be designed and tested. The Uttaranchal State Department of Education found a slot for the course in the curriculum; it would replace optional courses that were not very popular or relevant to local circumstances.
- The course would focus on improved (ecologically sound) land, village forest and water management to achieve ecological security and greater productivity. It would at the same time be both environmental and vocational.
- The course would emphasise practical work directed at gaining a qualitative and quantitative understanding of a specific village ecosystem. Sampling, measurement and interpreting skills were to be learned.
- Students would learn land, forest and water management skills.
- The conceptual framework would be the ecosystem and its subordinate concepts of species diversity and adaptation, ecosystem health (progression, regression, equilibrium), ecosystem constraints, carrying capacity and the human community as a functional part of the village ecosystem.
- Modern and traditional knowledge were both to be critically assessed in relation to the goal of creating and maintaining a healthy village ecosystem.
- The residents of the village studied by students were to be requested to help in conducting the course, by providing information and help with measurements (e.g. spring flow, fuelwood consumption, compost production and human and animal numbers). They, in turn, would benefit indirectly from the course by developing greater awareness of the problems of land degradation and of the possibilities and techniques for correcting them.
- Small group learning for investigative work and a classroom discussion mode of teaching/learning. Workbooks to replace conventional textbooks.
- In-service teacher orientation workshops. Orientation meetings for school principals and state education department administrative and supervisory staff.

The village ecosystem concept makes the concept of 'locale-specific environmental education' practically possible. At the same time it ensures a holistic approach to the management of village affairs – social, environmental and economic. Prakash and Richardson (1999) describe such a successful community-cum-school educational project in an urban setting.

The localisation of environmental education would require a radical decentralisation of the writing of school texts and teacher orientation modules to the level of eco-zones where it would be the responsibility of local educational administrators, teachers, textbook writers and community members. As things stand today in rural India, most of these do not have adequate knowledge or skills for these tasks.

Transformative learning

In formulating the UEEC course we were conscious that it embodied assumptions that are at odds with those of contemporary global culture, but did not realise that unless those assumptions (or concepts or values) are recognised as valid the course would make little headway. We found that alternative assumptions cannot be seen as valid unless existing assumptions are questioned and found wanting. Learning, as we visualised it in this course, thus demands a willingness to question one's existing point of view – and to change it if necessary. An effective way of fostering this is still very much a matter for experimentation, an activity that takes up more and more of our time and effort as we proceed. The name 'transformative learning' for this process was suggested to us only recently by Yuka Hashimoto (December 2002, pers comm.).

Others too share this concern. Bob Jickling relates that he too

...began to ponder various questions: What if environmental thinking needs to transcend the boundaries of conventional thinking – needs to encounter more radical ideas? How do we enable our students to push beyond the bounds of our own best thinking or the conventional wisdom of the day? How do we ensure that they can be exposed to additional alternatives? (Jickling, 2003:21)

Stephen Sterling says he came to the concept of transformative learning as a result of some three decades of involvement with environmental education in varied capacities. He distinguishes between ordinary learning '...which takes place within accepted boundaries (and ...leaves basic values unexamined and unchanged' (p.15), and transformative learning that results in '...a deep awareness of alternative worldviews and ways of doing things' (p.15). He argues that transformative learning and transformative change in society must proceed hand in hand (Sterling, 2001).

In discussing the subject of transformative learning it is helpful to consider student and teacher learning separately. In the UEEC experience teacher learning is more problematic. Only if a breakthrough with teachers is achieved can student and community learning become possible. In themselves children respond readily, indeed, enthusiastically, to a more participative, questioning pedagogy.

Teachers learning

Our in-service teacher orientation workshops feature informal group discussions of local environmental and livelihood issues in which teachers are confronted with facts and opinions that contradict, or show the inadequacy of, the mainstream thinking they assume, and which expose the internal contradictions in such thinking. The objective of all this is to create what Martin Haigh (2001:172) terms 'cognitive dissonance' – that is contradiction between the picture of the world the learner holds in her mind and empirical facts and alternative pictures that are normally ignored or somehow discounted. In theory, when the intensity of cognitive dissonance rises to a threshold level, a breakthrough occurs to transformational learning. In

practice, in a five to ten day workshop teachers can only be given the initial nudge that may initiate, with some individuals, a self-sustaining process of transformative learning.

We have experimented with a more formal approach by adapting the workshop activities suggested by Fien (1995). We found, however, that this is to some extent counterproductive, setting a fixed point of departure and a format for discussion. What seems to be necessary is to allow participants to initiate the discussion by saying what is on their minds, and saying it in their own ways. The discussion leader then responds. Needless to say, the discussion leader must be skilled and have herself questioned her assumptions and must have attempted to formulate alternatives.

Evaluation of the performance and attitudes of teachers involved in this experiment reveal that about one third of them have to a considerable extent continued on their own the personal transformative learning exercise initiated in our workshops. It takes about two years for this process to result in observable differences in attitudes and performance, and we have found that it needs to be facilitated by refresher/progress evaluation meetings and school visits by our staff to give encouragement and to sort out problems. The enthusiasm and creativity of these teachers is unmistakable. Some of them have even enriched our shared experience by further innovating on their own. A bonus has been that these qualities are seen to persist in the teachers who have subsequently moved up in the education department hierarchy.

What is the alternative and empowering vision of the future that these teachers construct for themselves? In general, it is that the individual and the village community of which he/she is a member can become agents determining their own future. It draws on a traditional cultural model which is their inheritance, but which has been overlain by the model of global culture that they have been trained to assume in their public and professional integrations. Their vision springs from the same source as that of village women already referred to.

To fully appreciate the magnitude of the challenge of transformative learning with teachers, we need to contemplate the reasons why two-thirds of them seem not to respond – and conduct the course with little real understanding or effectiveness. As in all post-colonial societies, the educational process, its goals, content and methodology has been harnessed to the ‘development’ (and now globalisation) agenda. That agenda is never questioned. It is not surprising therefore that, however enthusiastically teachers participate in our orientation workshops, at the end they often relapse into their pre-existing attitude: the only legitimate goal of school education is to train students to ‘fit into the system’ – that is, to pass standardised, information-based examinations in order to get admission to university and, after several more years of the same, secure a well-paying job. The majority of teachers are helplessly locked into the mindset that legitimises the *status quo*. They already suffer the cognitive dissonance caused by the fact that 80 or more per cent of rural school leavers do not gain university admission or paid employment, and the frustration of their desire to find a satisfying transpersonal meaning in their professional lives, and yet they do not see themselves as ‘agents of change challenging the dominant values of the day’, as some South African educators have also found (Lotz-Sisitka, 2003). We assume this is because they may not know or see how to do it.

Here is where we seek to intervene. The challenges thrown out in the workshop initiate the process, but to help it along we also provide a leading alternative idea – that the village is an

ecosystem in the broad sense I have indicated earlier. We have found that this can form the conceptual foundation for a practical alternative vision of the future. For most teachers it is also necessary to help them see that the present marginalisation of rural communities is a result of systematic national and global policies. Some South African educators see a problem here: they worry that suggesting alternative ideas introduces 'bias', framed by the agenda of the teacher educator (Lotz-Sisitka, 2003). But if new ideas are not suggested by the teacher educator, teachers' unaided efforts to cope are 'poorly conceived and superficial'; and often they are overwhelmed by the challenges (Lotz-Sisitka, 2003:8). This agrees with our experience. However, we feel that sharing leading ideas is justified by the energy and creativity released in many teachers. They are enabled to move forward; later they will, hopefully, be capable of critiquing these very ideas if necessary.

Orientation workshops are as important for headmasters and principals as for teachers if the course is to run smoothly. Initially we invariably invited both teacher and headmaster/principal from each participating school to our workshops. Later, with an increase in number of schools and our limited capacity, we instead organised separate one-day meetings for headmasters/principals. This has proved inadequate.

Children learning

Children in our part of rural India do not find much meaning in what they are presently expected to learn at school. That is, they are unable to relate it to their everyday world. The only meaning it has is the one constructed by adults, which is that if they master the syllabus they can get a job. Krishna Kumar (1991:63) sees this lack of real meaning as an important reason children memorise: 'Children everywhere protect themselves in classrooms with the help of memorised reproduction when they are faced with concepts and material they cannot grasp or find meaningless'. What children learn in the UEEC course is found meaningful because it fits with their out-of-school life experience.

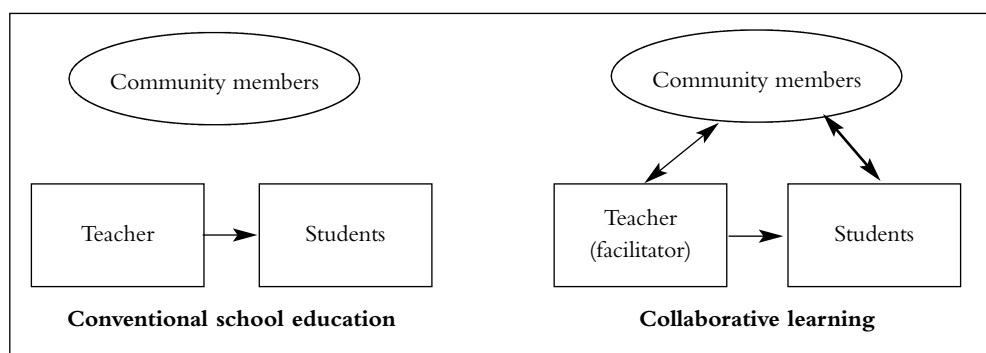
As the worldview of global culture has not yet 'crystallised' in children, there is nothing to 'unlearn' or transform. We must, however, provide them with an opportunity for learning that does not, as a matter of principle, delegitimise traditional culture, and that is questioning, participative – and tentative.

Adult community members

Older village women, as already noted, are tentatively seeking to rebuild their communities, all but destroyed by modernisation and 'development', achieve ecological security and emancipate themselves from the oppression of traditional village life. They have already begun to chart a new, authentic path, modifying traditional culture and seeking to counter the hegemony of global culture and the global economic monolith. They are receptive to our vision of environmental education. The men, on the other hand, and young adults, all of whom have had greater exposure to school education and the outside world, focus on leaving the village and getting well-paid jobs, or on the promises of money-income-generating development projects that do not recognise local social and environmental imperatives. Like school teachers, they are unwilling and unable to question 'the system', much less take their future into their own hands.

The school teacher can, however, be a catalyst for change in men and young adults by initiating a process of transformative learning, pursued as the participative learning process suggested in Figure 1.

Figure 1. Conventional school education aims at transferring defined concepts and parcels of information to students. Collaborative learning fosters an interactive process of learning among teachers, students and community members. New insights, knowledge and techniques are created in this process and shared by all (Uttarakhand Environmental Education Centre, 2002).



Incoherence in the curriculum

Reference has been made to the incoherence created in the school curriculum by the 'infusion' of environmental issues. Our school course is designed on the basis of an alternative set of assumptions and thus only aggravates this problem. The overarching concept of the course is that of the ecosystem as a self-organising, self-maintaining, and, indeed, a living entity, of which the human community is a vital, though non-material, component. This in turn presupposes alternative concepts of matter, life, causation, the detached observer that figure in modern science, and also alternatives to those all-pervasive contemporary concepts of the atomised self, the market and progress. Teachers and textbook writers and curriculum planners have not yet fully realised that there is no way of removing the incoherence in the curriculum except by 'going back to first principles' – i.e. by articulating and questioning the assumptions on which modern science and society are based. Curricula should be designed to provide opportunities for teachers, children and their parents to do this.

In fact there is not only modern science (the mechanical explanation) and ecological science (the organic explanation). When we contemplate the introduction of traditional knowledge, we introduce further scientific paradigms that must be made explicit and compared with these two and among themselves. Interestingly, it has recently been shown that there is a similarity among traditional science paradigms in terms of their assumed first principles (Goldsmith, 2000). Further, they are similar to those of ecological science, even if expressed in different idioms (Jackson, 2003). All of these differ fundamentally from modern science.

Gordon (1995) has designed a workshop module to help in-service teachers explore the differences between materialist, mechanistic science and ecological or systems science, while

Jackson (2002b) has suggested how this might be done in the classroom. The UEEC environmental education course includes stories and thought experiments designed to foster a critical, questioning attitude to current problems with 12 to 14 year-old children (UEEC, 2002a). Haigh (2001) reports challenging university students of geography with the question: *Is Gaia alive?* Many were open to this possibility and ready to discuss it.

In the matter of history teaching also, we in post-colonial societies must contemplate how we interpret history. We need to realise that historical interpretation is highly subjective; it depends upon the worldview of the historian. Mainstream historians participate in the worldview of contemporary global culture. Because this worldview assumes the European enlightenment concept of progress, it delegitimises the worldviews of all previous civilisations and cultures. If Europeans looked upon their own ancestors as primitive, but as moving inexorably, if unconsciously, towards their own 'enlightened' state, then they understandably looked upon the peoples of non-European cultures as 'contemporary ancestors' (Visvanathan, 1988:263). They would eventually, inevitably, become enlightened. Under colonialism, it was the 'moral duty' of Europe to assist their rapid progress towards this goal. This became the official justification for colonialism. The colonial pattern has continued in the form of 'development' and globalisation in post-colonial societies during the last half century (Sachs, 1999); indeed it has intensified. Local elites created by colonialism have continued to turn their backs on their own cultures, and to view the poor majorities in their own countries as 'contemporary ancestors', that is, people at a primitive stage of human evolution who must be helped to progress to the stage of modern global culture. If they resist, it is even justified to use force on them for their own good – all, of course, in the interest of development.

There is now a strong reaction to this in all post-colonial societies. Our own cultural traditions are increasingly seen as valid in their own right. If they are not, then traditional patterns of organising society and traditional sciences can have no *locus standi* in our curricula. If we value our traditions we must challenge the hegemony of the progress theory of history (Jackson, 2003).

We have found that in questioning sciences and cultural patterns in the classroom, we must keep the matter of students' maturity in mind. They must be intellectually and emotionally mature enough to be able to understand the questioning mode of learning we wish them to adopt, and to profit by it. At the same time, we must provide space in the curriculum for this questioning, and help students to undertake it on their own.

Integrating the course into the mainstream school curriculum

From July 2002 the environmental education course is being phased into the mainstream curriculum with the addition of some 500 schools each year. The orientation of new in-service teachers to the course and subsequent guidance interactions, the printing and distribution of students' workbooks, and student evaluation have been taken over by the state Department of Education. UEEC staff has held orientation workshops for some 30 staff members of nine state teacher-training institutes (TTIs) to enable them in turn to hold workshops for teachers. TTI staff are also taking over school visits, with some initial coaching on techniques by UEEC staff. The course has now been 'mainstreamed'.

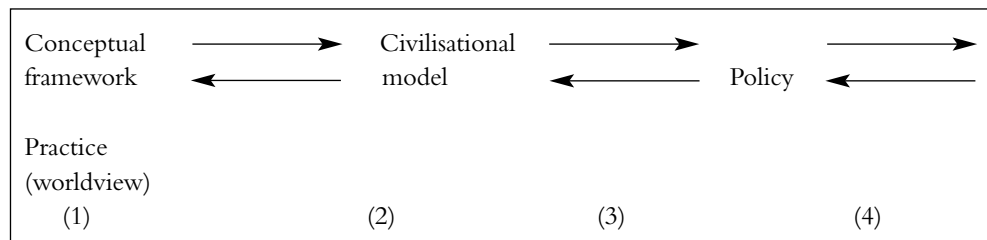
This is the only known instance anywhere in India of a separate environmental education course in the school curriculum. It signals that focusing on local environmental problems in a local and practical manner is seen as a desirable policy objective. We in the UEEC do not insist that a separate course is the only way in which this objective might be achieved. A better option would probably be to give the entire curriculum this focus. At UEEC's suggestion, a recent Indian national workshop on school environmental education discussed and recommended that this be attempted, and that this should be done by comparing and questioning the development and ecological perspectives in the classroom (UEEC, 2001). We hasten to add that if this were done, the definition of 'the local' would need to be expanded gradually in successive grades until it embraced the global ecosystem, while at the same time not allowing children to lose sight of the village ecosystem when contemplating the global. This would give practical shape to the notion of a multiplicity of cultural streams and economic systems within an over-arching global framework.

After the course has been brought into the mainstream curriculum, UEEC staff have a different role to play in this experiment. Mainstreaming has not been accomplished with the signing of an executive order. The order signals only the beginning of a new phase. In view of the novelty of the course, and therefore the time taken for new participants to comprehend it, and the demands it makes on them, progress will be slow and problematic. This was already evident one year on. Constant support to TTI staff is no less important than to teachers themselves. Workbook revision may continue to primarily be the responsibility of the UEEC for some time to come. Probably we will have to take a lead in extending the course to grades 9 to 12, and perhaps to assist other states to initiate similar courses. We expect to be able to contribute to finding ways to meet the enormous challenges, already outlined, that the introduction of this course into the mainstream curriculum has generated. Progress will be slow due to the inertia inherent in all large bureaucracies, and additionally problematic because the government school system as a whole is being sidelined and impoverished by the commercial, private school. (Private schools are less likely to be interested in giving an environmental and localisation orientation to their curricula since they explicitly cater to the global economy.)

Some Reflections

This paper describes an environmental education experiment designed to generate new perceptions that might be useful for future policy. These perceptions, and those resulting from an analysis of the results of the present infusion policy, also briefly described here, lead us to question our initial premise that we are seeking to provide an 'environmental orientation to school education'. This phrase suggests a 'greening of school curricula', i.e. making adjustments to existing curricula without altering them in any fundamental way. This premise is now clearly seen as inadequate. The quest for effective environmental education will force us to change existing curricula in terms of aims, content and practices.

Further, our experience challenges us to construct a larger, more comprehensive concept of what goes into policy formulation. Figure 2 below attempts to describe such a concept.

Figure 2. Concept flow chart of policy formulation

Policy is a statement of how we intend to go about a certain task in terms of our understanding of how the universe works as expressed in a 'civilisational model' (contemporary global culture is one such model). This model derives its structure and legitimacy from a set of assumed first principles, denoted here as a 'conceptual framework' or 'worldview'. (The worldview of contemporary global culture can be characterised as mechanistic materialism.)

Failure in practice rebounds upon policy, and we busy ourselves tinkering with it. When modified or refined policy also leads to failure, and if it happens enough times and the failure is spectacular enough, we are forced to back up one step to consider whether our civilisational model might be flawed. If it does seem to be flawed, we start tinkering with it – after all, no model accurately and completely gives expression to the assumed first principles that constitute our worldview. In science, for example, we substitute relative space for absolute space, and that brings about some improvement in theory and practice, but space remains an objective, 'real' entity 'out there', independent of the observer. Similarly, we attempt to refine our descriptions of human-nature interactions, or the relationship of the person to society, or the 'aims of education', without questioning the fundamental assumption of an atomistic, detached observer. Our present search for environmental security, social and economic justice, and meaningful, wholesome education is being frustrated by such stubbornly held concepts as these.

From this point of view the UEEC experiment becomes more intelligible. We realised the futility of tinkering with existing policy, and went back to first principles (stage one) to begin all over again. This resulted in a radical policy statement (Table 2, Design features of the UEEC environmental education course). Put into practice experimentally, this provided feedback to the policy stage and further to stages two and one. Further refinements can occur if this iterative process can be sustained.

In the first round of this iterative process, started back in 1987, our perceptions of the first principles we assumed were vague, intuitive, and policy and practice tentative. Subsequently clarity and operational competence increased. We have found that the key to success in this endeavour is to treat it as a collaborative learning process.

Based on this argument, we could say that the infusion of environmental concerns into the school curriculum in India is a failure because we have, so far, been unable to back up beyond the 'policy' stage. The design features of our environmental education course are incomprehensible and hence unworkable if we cannot 'see' their antecedents in an alternative worldview. Before we can usefully speak of policy formulation, or of policy-in-practice, we need to become aware of and to question our inherited worldview.

From these reflections it is possible to move to a useful consideration of future environmental education, or rather, educational policy as a whole. If struggling to find fundamentally new ways of thinking is the crux of our search for more effective educational policy, then we are not ready to make detailed policy pronouncements until we have, in fact, arrived at new ways of thinking – if ever so tentative. Even after we are reasonably clear about these new ways of thinking and doing, simply drafting policy statements and expecting something to happen will get us nowhere. Those who must put policy into practice can only do so when they too have come to think differently – through having participated in the overall process of experimenting with new ideas.

Our immediate policy should therefore be to design programmes and projects that bring together everyone concerned in creative learning experiments such as the one outlined in this paper. Let these not be mandated by a central authority. Let all those – and there will be many scattered around the world – who have an inherent disposition to mount such experiments, do so. And, of course, as a matter of policy, support them. As we gain experience, the outlines of effective educational policy will slowly emerge, and there will be enough people in place to put them effectively into practice

Notes on the Contributor

Michael G. Jackson was a Professor of Agriculture and sometime Director of Research at the G.B. Pant University of Agriculture and Technology at Pantnagar in Uttaranchal State, India. He took early retirement in 1982, went to live in a rural, mountainous area of the state and devoted time to the work of the UEEC where he took part in designing and testing the UEEC school environmental education course. He came to environmental education through observing the adverse environmental, economic and social effects of the green revolution on rural communities. A related interest is in sustainable agriculture, and a collection of his essays on this topic under the title 'A Future for the Indian Village' will be published next year by the Other India Press. Email: usnpss@sancharet.in.

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