A new view of science for health educators

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"The model of environmental science linked to health education outlined in this article could be one possible strategy for bringing health education into a more central part of the school curriculum. Such an integrated approach to science would put pupils' health education into a meaningful and significant curriculum area."

This article is an attempt to extend the view of the inter-relationships between science and health education explored in the recent article by Alan Beattie (Education and Health, January 1984). I am not sure that it does widen the debate about "knowledge and social control about curriculum and ideologies in school", but it is, I hope, a positive response to his invitation to join the discussion about the place of health education in schools, and may give a different perspective of the possible nature of the links which could be made between the teaching of science and the teaching of health education.

It is in essence a view of science which is much more personalised, child-centred, and indeed life-centred, than is much of the science currently taught in our secondary schools. It is concerned with re-drawing the boundaries of subject areas and raises questions about the organisation and management of such a huge subject area, which could easily encompass the whole curriculum. However, the issues of modules and topics, double and single subjects within an examination syllabus, and detailed consideration of staffing and servicing, are inappropriate at the present time. Hence the article simply aims a general and philosophical view of one possible way of resolving some of the existing conflicts.

Re-thinking science - a common experience

There is a close parallel between the experiences of those concerned with the inclusion of health education into the mainstream of scientific studies, and those of us who have moved from the areas of a pure science with its somewhat rigid, elitist, academic traditions into a more personalised and socially based view of science. I belong to the second group, my concern being with the science of the environment. Both groups have been faced with very similar attitudes and problems of acceptance and recognition.

Despite the supposed demand, voiced by numerous official and professional groups, for "science for all", and a science more related to everyday personal life and industrial experience, there is still a substantial number of the teaching profession, probably a majority, who are less than convinced of the need to broaden the syllabus or to depart from the established patterns of pure science subjects. Not unreasonably, they remain to be convinced of the value of health education or of environmental science before they see any value in moving away from an established system.

This reluctance to change is well exemplified by the problems encountered by the SCISP integrated science scheme, which was an attempt to offer a socially and environmentally orientated science at "O" level. Ironically there is a danger that the brighter children will continue along the pure science pathway - the criteria proposed for 16+ examination syllabus certainly reinforce this view - whilst the majority of pupils, the non-"O" level or marginal 16+ candidates, are allowed to break the rigid mould, to break out into learning situations based on real-life experience and perhaps to gain a better preparation for life, for work, and for leisure.

Rural science - in these days of economic pressures, a much-threatened subject - has for many years fulfilled an important role and made little progress into the "O" level examination syllabus. This, despite its obvious value for all children, urban and rural, and despite the fact that so many people enjoy the countryside scene, cultivate their own gardens, and care for their own pets. Applied approaches to science have an analogous experience, and there is a real danger that much of the new science and newer approaches to science (including health aspects?) could be lost to the CDT departments which are well funded and well supported.

Broadening the base

The "education for bodily regulation" described by Beattie is really a science with health appendages, and, as he implies, must inevitably offer a somewhat piecemeal cover of essential issues. The scientists need only step briefly outside the controlled, objective and manageable securities of his science. However, most of life for most of us is neither black nor white, but rather a series of tones of grey. Environmental, health, and industrial decision-making is invariably based on the "best solution", given the conditions and circumstances prevailing in a particular situation at a particular time. One cannot be absolutely objective, or totally sure, or completely in control. There are limiting factors - financial, scientific, political, and social - to much of our concern with both our health and the environment, but there is much common ground, although the interests of different groups within the community must be balanced. A well-educated member of our 20th-century society should have at least a general understanding of his environment, of the relevant technologies, and of factors which affect his own physical and mental well-being. There are many similarities between "health science" and "environmental science", although quite how one defines "the ecology of health" is an intriguing question.

The reluctance of science teachers to accept a broadened base of operation must lie in the nature of the initial training and education, and possibly also in the nature of the individuals who are first attracted to science. Certainly it has long been argued - a view with which Beattie is in accord - that arts graduates are more flexible, more able to communicate both verbally and orally, and happier when working with others in large or small groups and institutions, than are their scientific colleagues. It could be that before the science base is broadened at school level, courses in Higher Education on offer to future scientists will have to give greater emphasis to communication skills and allow more scope for a more personal and subjective view of science.
courses will be essential, whether it be directed towards rural, environmental, health or technological aspects. In a modern high-technology society the days of the “good amateur”, ignorant of the nature and content of science, must surely be numbered, and science courses must adapt to ensure that this is indeed so.

A view of a personalised science — Environmental and Health Science

As discussed at some length above, the general similarities between environmental science and health education could well be fused into a mutually beneficial and complementary area of study. Both start in an actual experience of life, or the confrontation with a real day-to-day anxiety or problem. The science required to reach an understanding of this first-hand experience is then drawn out of the traditional science disciplines (including social sciences). Firstly it is the starting point which is different and secondly the lack of a need to define the work with conventional labels of physics, chemistry, biology etc. In effect it is the broadening of the boundaries of subject areas and the new definitions of science that are disliked by many science degree specialists.

As can be seen from Fig. 1, environmental science as currently defined offers an integrated and thematic approach which encompasses many of the pure science elements. It also includes a study of the ways in which science affects the natural environment, and in which Man manages the environment so as to obtain his fundamental resource needs. Various aspects of health education naturally arise within this frame. By broadening the existing limits by a not unreasonable extent, as indicated in Fig. 2, a more personally-focused science could be developed which not only studies the environment and its management but also includes a more detailed consideration of the individual and his basic needs. This is a step which would incorporate much of health education into an integrated and sensible scientific whole.

A team development approach

This personal science would obviously require more than one subject’s time allocation, and so open-ended a view of society would naturally create overlap between different disciplines. Different individuals would, therefore, require flexibility in the syllabus to allow for a variety of interpretations of syllabus content. It would very probably demand, if not team-teaching, at least team development, by teachers from different specialisms and backgrounds. Such a science would necessarily lead to less restricted and dogmatic approaches and opinions, and hopefully it would go some way towards increasing a sense of personal responsibility and control in both pupils and staff. It would, in some small way, be an example of the “education for personal growth” described by Beattie as one of his four paradigms of health education.

In the same article he also cites the use of case-history studies in health education, and these, again, are an essential feature of environmental science. As can be seen from the outline schemes in Figs. 1 and 2, there are constant inter-relationships between the various aspects and areas of study within an environmental science course; like health education, these are an integral characteristic of the subject. It is not possible to operate in watertight subject compartments when dealing with such complex issues, as, for example,

- the formation of acid rain and smog;
- the extraction of sand and gravel or limestone rock;
- the use of pesticides such as DDT; or
- the use of nuclear fuels to generate electricity.

In all these environmental issues there are essential scientific, health, and technological implications, together with (of course) economic and political considerations. At present, many case studies involve concerns for public health and safety, and it is only a short step and a slight change in emphasis to move to examples of health problems which directly affect an individual’s own well-being.

Environmental science again can be a useful vehicle for a wide-ranging study of
causes and effects. The problem with a broadening of the science subject matter, as outlined here, is in essence one of confining the area studied and preventing too diffuse and nebulous a subject area from developing. This should not be too difficult a dilemma to resolve if the health education element were to be "added" in a manner similar to that illustrated above, since the area of study would be a coherent whole and not a patchwork of appendages to (say) a study of biology.

A different scientific diet

The pressures for change are now building up, and an impressive array of public and professional bodies, both here and in the United States – the Health Education Council, the Royal Society, the ASE, the CBI, and the Secondary Science Curriculum Review, to name but a few – are urging a different diet of science in the schools. There would seem to be a strong likelihood that in the near future substantial changes may be made. The scenario described in this article could offer one sensible pathway out of the numerous possible developments, and could be a useful step along the path of curriculum development.

A more broadly-drawn canvas could in many cases operate with group sizes which exist in present-day science classes, but if the "caring" role is to come to be more significant there will have to be at least some sessions with smaller, more intimate groups being formed, where more attention could be given to the needs of individual pupils. This could lead to a more positive approach being achieved within the pastoral care side of the pupil's day, and would surely be a most welcome development, particularly if there is a long-term contact between teacher and pupils.

Community contacts

In conjunction with this more broadly-based scientific/health framework, it would be encouraging to see schools, and teachers, playing a more active role in the life of their local community. Indeed, the community-college concept had made a significant movement in this direction in some Local Authority areas, but, like other non-essential fringe activities, this has been hit by financial restrictions. This is particularly notable in the reduction in adult-education provision. It would be good to see teachers extending their special skills and knowledge into a wider community scene with both children and adults; the reverse process, with local people and parents participating to a greater degree in the life of the community school, would also be welcome.

To some extent, schools have begun to operate outside the school grounds, and such an increased involvement in community life is now becoming well established in projects of nature conservation, reclamation, or in investigations with a special local flavour and interest. Environmental sciences and studies have been well to the fore in these schemes – they have an immediate and obvious link with the life of local people. This greater interaction between schools and the local community, as with the re-drawing of syllabus boundaries and content, would again benefit from a carefully planned and implemented programme of in-service provision, particularly if adults are to enter the schools as students as well as in the role of advisors and experts.

Implementing the new approach

I imagine that teaching in schools has always been a demanding, not to say exhausting, occupation. Certainly in the last few years, with an increased questioning of materials and attitudes both within and outside the educational institutions, school life has become much more complex. School life is demanding and harassing as it is, without even further changes and the extra pressures and frustrations which are inevitably part of such change.

Operating in the present atmosphere of uncertainty and job insecurity, teachers must be given time to organise their ideas, re-orientate their thoughts, and plan the implementation of any new courses. They must then be given support and, especially, time to meet and to discuss the modifications which will be necessary as a new syllabus is brought towards a reality in the classroom.

We could even approach the children for their views and bear in mind the consumer's response when putting the new schemes into practice, since so often change seems to be to satisfy the needs of the teacher and the perceived needs of the pupil rather than the actual requirements expressed by the pupils themselves. Hopefully they would appreciate and value the changes described above. My experience to date, both as a teacher and as a parent, certainly supports this approach.

Finally I would like to reiterate the view that the experience of educators concerned with the development of health education in the traditional science subject areas is closely paralleled by that of environmental science, and, probably, of all the more practical life- or technology-based science courses – which is all rather frustrating and essentially negative when seen from the innovator's standpoint. Therefore I would suggest that moving into the more personal study of science as defined by health educators or environmental scientists may be helpful, and could make a positive contribution to an improved quality of science education in the years to come.

Conclusion

The model of environmental science linked to health education outlined in this article could be one possible strategy for bringing health education into a more central part of the school curriculum. Such an integrated approach to science would put pupils' health education into a meaningful and significant curriculum area, and give an increased importance to the meeting of pupils' basic need to understand themselves – their bodies, minds, behaviour patterns, and their relationships within society. It could be a personal science which was constantly tailored to the requirements of the pupils themselves and of their local environments. It could be exciting!

Bibliography

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