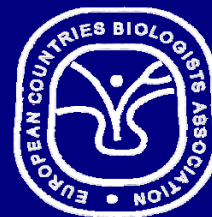


# Health education and school Biology



European Communities Biologists Association



**HEALTH EDUCATION AND SCHOOL BIOLOGY**

**Report of a workshop organized by the European  
Communities Biologists Association**

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## ECBA PUBLICATIONS

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## I. INTRODUCTION

The European Communities Biologists Association (ECBA) has discussed, on several occasions, the ways in which the teaching of biology at both primary and secondary school levels could contribute to improvements in the education of citizens of West European countries. Biology teaching is directed at individual pupils, but aims also at making them aware of being part of larger units such as societies, ecosystems, and civilisations.

In discussions of this kind views of *health* play an important role and it became evident, in earlier meetings, that biologists have a great deal to contribute in this field. In recent years it has become clear that for a number of reasons, but particularly because of the vast increase of resources devoted to health care, political leaders within the EEC are in general convinced of the necessity to improve knowledge of health (in the broadest sense) among young people. In some of these countries, therefore, initiatives to develop ideas in health education have been set in train recently and in some of these biologists have been asked to participate.

With this knowledge as a background, ECBA decided to organize a workshop in which, through interaction of people engaged with health education and biologists interested in this field, an opportunity would be created of arriving at a consensus view clearly defining the role which could be taken by teachers of biology. In practice the discussions in the workshop concentrated on the secondary school level. However, they also have clear implications for the primary school level as well as for the training of teachers.

It is interesting that recent studies by G. Schaefer show that young people in the industrialized countries of the West, when asked to produce words associated with the word 'health', tend to respond with words such as 'disease', 'doctors', 'medicine', 'hospital', etc. In Figure 1 we see that, in such societies (e.g. West Germany) the attitude towards health (by which health is perceived as the absence of disease) is essentially negative. On the other hand, the same test given to young

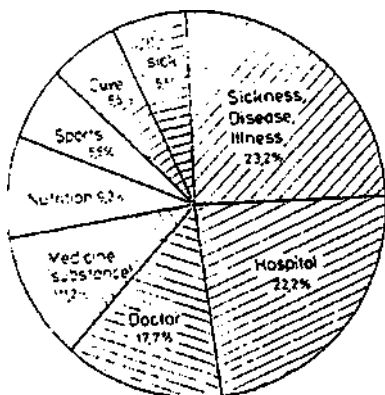


Figure 1. The eight most frequent associations to the keyword HEALTH in 13-14 year-olds in West Berlin (n = 62).

people of the same age in developing countries (e.g. the Philippines) produced associations of health with words such as 'feeling well', 'being strong' (Figure 2).

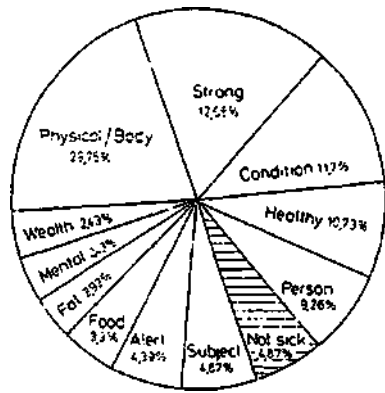


Figure 2. The twelve most frequent associations to the keyword HEALTH in 12-14 year-olds in Manila ( $n = 105$ ).

In such societies health is perceived as the presence of something positive with body and mind in sound condition (*mens sana in corpore sano*).

A curious result which emerged from the tests of word associations with health was seen in industrialized Japan where in a test with a comparable group of young people the associations were largely *positive*. We see, therefore, that even in a technologically strong and industrialized country it is possible to maintain a positive notion of health. Apparently traditional influences are strong enough here to counteract the negative influences of modern civilisation on the basic concepts of life

It is clear that understanding of the meaning of health is neither universal nor easy. This can be demonstrated by the following definitions drawn from a variety of sources:

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

Health is optimum personal fitness for fine living as expressed in work, play, love, and worship.

Health is that complete fitness of body, soundness of mind, and wholeness of emotions which make possible the highest quality of effective living and service.

Health is the quality, resulting from the total functioning of the individual, that empowers him to achieve a personally satisfying and socially useful life.

Health is the condition under which the individual is able to mobilize all of his resources - intellectual, emotional, and physical - for optimum living.

These definitions are not exhaustive and it is possible to construct others. However, one thing is obvious: health seems to be, in all cases, related to man. Nature (plants and animals) and environment (conditions of the air, of marine and fresh water, and of the soil and the specifically man-made features of the environment) are not, in these definitions, explicitly mentioned as factors important for 'health',

By contrast the teaching of biology in (secondary) schools involves a structured approach in which different levels of organization and complexity are described and interrelated. Topics in health education however, may be related to these different levels in a manner exemplified, using specific topics, in Table 1.

Table 1

Level	Topic Nutrition	Sexuality	Disease	Behaviour
Individual	Diet	Sexual 'knowledge'	Body disease	Personal rules in hygiene
Population	Food production in	Transmission of genes Birth control	Epidemics and prevention	The social use of alcohol and drugs
Ecosystem	Agricultural resources	Demographic problems	Epidemiology on a world scale	Pollution

For ECBA the apparent lack of emphasis on the relation of health to the different levels of biological organization, formed an additional reason for the organization of a workshop of biologists and health educators to discuss the interrelationships in the teaching of biology and health. Two aims were foremost in our minds:

Is it possible to include health education within the teaching of biology and, if so, what consequences would that have for biology teacher training as well as for the material to be taught?

If health education is provided as a separate subject of study, how should cooperation between the various teachers who also might be involved (e.g. those of biology and of social studies) be organized?

A considerable impetus to the organization of this workshop was given by the ECBA booklet on *School biology for child and society* (ECBA, 1981) in which elements of health education are seen to have their place in a natural way within the biology curriculum. However, teaching health education clearly also requires a degree of interdisciplinary cooperation.

The discussions in the workshop were structured so as to allow consideration of three major, though interconnected, sections:

The concept of health education.

The biological principles to be applied in health education.

The contributions of biologists, in defining topics and developing methodology, in the field of health education.

## II. CONCEPT AND CONTEXT OF HEALTH EDUCATION FROM THE POINT OF VIEW OF BIOLOGISTS

### I. The concept of health education

A balanced and humane approach to individuals and to human institutions requires recognition of the interaction of biological, social, and spiritual factors which produce the complete human being or organization. To be healthy implies that all

of these qualities are as fully developed as possible so that a very healthy individual will be close to the limit representing total development of his potential in all these respects. Healthy individuals are well adapted to their usual environment and healthy societies consist predominantly of individuals who are healthy and who live in a relatively harmonious relationship with each other. This view of health, however, recognizes that individual and population health priorities may differ and may even, on occasion, conflict with each other.

**In our view therefore, health is expressed as the full development of life in all of its aspects.** The goal of health education is then to help individuals to approach the desired dynamic equilibrium of all vital processes within themselves and between themselves and their social, man-made, and natural environments.

It is therefore, we believe, essential that health should be seen in a positive way and not simply as an absence of disease. It is also necessary that the concept of health should embrace the recognition of the need for balanced relationships within and between mind, body, society, and environment.

## 2. The need for health education

The costs of ill health, whether measured as losses in the quality of life or as an economic burden, are very great in most societies and there is little doubt that a properly managed and well balanced scheme of health education, starting in the primary schools and continuing into the secondary level, would be likely to lead to much better understanding of what constitutes a healthy approach to life and hence to shifts in behaviour favouring such approaches and a consequent reduction of the burdens posed by ill health. Such understanding will include recognition that health education is required for the following ends:

- i. Full personal development and encouragement of self reliance.
- ii. Recognition of the great potential of the average human body for homeostatic response to perturbations of health.
- iii. Acquaintance with the basic principles of healthy ways of life and with examples of the diversity of causes of ill health including those caused, or contributed to, by:
  - a) Ageing
  - b) Environmental contamination
  - c) Genetic or cytological factors
  - d) Iatrogenic factors (i.e. medical treatment and the like)
  - e) Life style including agents of abuse
- iv. Recognition of the need for harmonious coexistence of individuals within human societies and the part that health-influencing factors can play in this.
- v. Insight into the social and financial pressures exerted by burdens of ill health. We are strongly of the view that health education ought to be available to all members of society but that it is particularly important that it should be available to all primary and secondary school children.

## 3. How should health education be provided?

The present provision of health education in schools takes different forms in different member states and even within a single country may be very uneven in quality and quantity. We have given a good deal of thought as to how those who must teach health education should be prepared for this task. It is not realistic

to suppose that specialist teachers could be supplied on any scale and in any case this would not help significantly in the early stages within the primary schools as most teachers in such schools are non-specialized.

While there is, and clearly must be, a large biological component in health education it is equally clear that a successful scheme of health education must involve a multidisciplinary approach which takes account of matters like social relations, cultural traditions, family structure, interactions between health objectives and financial goals (as seen, for example, in revenue derived from tobacco sales), and factors influencing motivation. A proper appreciation of health requires some understanding of the processes involved in the normal functions of the human body together with an appreciation of the disturbances produced in such processes by practices regarded as unhealthy whether these be positive (e.g. agents of abuse such as drugs) or negative (lack of appropriate exercise).

It follows that successful health education, of necessity, is a multidisciplinary activity which involves biology, psychology, sociology, educational sciences, and medicine. However, it is patent that a large majority of topics in health education have a more or less pronounced biological basis. As biology is the major life science represented in most types of school throughout the Community it is logical to conclude that biology teachers should play a considerable and vital role in health education.

The format of schemes of health education should, in our view, be conceived in a flexible way to allow inclusion of all techniques, examples and media bearing on health. Naturally the age, cultural circumstances, and educational level of the pupils will be important in making decisions on which items are chosen. The nature of the principles and topics which ought to be developed in all courses is considered in detail in sections III and IV.

## 4. Curriculum consequences

Pressure on curriculum hours increases continuously both from technologies such as computer science and from the social sciences. To make room for the important area of knowledge represented by health education will not be, therefore, easy. However, we suggest that where an adequate number of hours for biology teaching is already available some of the time needed for health education could be provided within these hours. This conclusion derives from the fact that much health education stems directly from basic biological principles and hence appropriate adjustments within the normal biology course could be expanded to serve a dual purpose. However, some additional time would be required and in those countries where the provision for biology is already inadequate the need for additional time will, of course, be greater.

## 5. Teacher training implications

As we have seen health education is complex, dynamic, and multidisciplinary. Thus biology teachers will need additional training (pre-service and/or in-service as appropriate). This training will need to take account of the importance of value judgements and ethical standards. Thus methods of bioethics, value clarification, decision-making, and related matters will need to be included in any training scheme. The importance of example, too, will need emphasis as pupils can often be strongly influenced by life-style habits of their teachers.

### III. BIOLOGICAL PRINCIPLES TO BE APPLIED IN HEALTH EDUCATION

Subject curricula in schools vary amongst and within countries, yet in most, biology is seen as a vehicle for health education. The reason is that the content links between biology and health education are strong; moreover, as a result of research in the biological sciences it is acknowledged that all organisms share the basic principles of life and as our understanding of the life processes of the human body has increased there has been a rapid development of biomedical sciences as sub-disciplines of biology. Biology remains essentially an academic discipline and at school level the courses include information about living organisms, their complexity and individuality, the phenomena of life cycles, reproduction, growth, development, adaptation, variation, and evolution and introductions to behaviour patterns, the structure and function of the nervous system and processes of learning and memory. Many biology syllabuses are overloaded and their content controlled by the requirements of an examination course or an obligatory curriculum. The time for teaching is limited and it may be impossible for teachers and pupils to consider the ethical and moral aspects of their work or even the relevance of biological facts to their own life and health. In many ways, school biology, like other specialist disciplines, is too remote from everyday life. Teachers must be aware of this gap and its methodological implications. The complex body of knowledge that biology presents ought to be considered so that the relationship between any topic and the personal life of the pupils, their behaviour and aspirations, their health, that of others and the community at large is made evident. There seems to be a gap between 'subject knowledge' and 'knowledge for life' and the problem is to bridge this gap for the benefit of children and the community as a whole. The solution may lie in the design of syllabuses which reduce facts and concentrate on biological principles - such principles being linked with and used in health education. Thus, the whole school biology curriculum - even work on plants and microorganisms - can be regarded as health education in its broadest sense. Similar shifts of emphasis should take place in other subject areas.

Biological principles

**The principle of individuality and variability:**

Every living individual is unique: on the one hand it conforms to a structural and functional pattern, which is shared with other individuals, while on the other hand it might show differences from other individuals caused by inheritance and/or environment.

**The principle of compartmentalization and interdependence:**

Living matter shows complexity: ecosystems, organisms, and cells have specialized substructures which are functionally integrated and support the whole.

Living things depend for their existence upon interaction with other living things (together with non-living things) in the biosphere.

The principle of *homeostasis*:

All organisms maintain dynamic equilibria resulting in a steady internal environment.

The principle of *adaptability*:

All living things have an evolved but limited capacity to respond to changes in the internal and external environment.

**The principles of development and evolution:**

Living things have life cycles during which they grow, mature, age, and have the

ability to reproduce (ontogenesis and reproduction). They also have different sources of variation, including molecular and structural changes and sexual recombination (variability, phylogeny, and evolution).

**The principle of communication and behaviour:**

All living things show exchange of signals and flow of information within and amongst different levels of organizations. Communication at the level of the organism results in observable acting and reacting patterns which are the outcome of adaptive evolutionary processes. Human behaviour shows high complexity including biological, psychological, spiritual, and social influences.

**The principle of cycles and recycling processes:**

All life is ultimately dependent upon limited resources which are transformed by continuous processes within producers, consumers, and decomposers.

The *application* of the principles stated and defined above, is where the link with health education may be established. For example using principle 1, 'Individuality and variability', a teacher could provide experiences which explore the physical and emotional similarities and differences amongst members of any class and which establish respect for the intrinsic value of other living organisms and systems. These experiences should concentrate on the whole organism at primary level but necessarily they become more abstract at secondary level. At primary level work could include measurements of height of individuals, study of food, and triggers of happiness: at secondary level they could be response curves in pharmacological testing or the growth patterns of different animals maintained under different regimes. The broad educational aim of the first principle is to increase the self-esteem of the individual. The specific contributions of the biologist are to make health education biocentric rather than anthropocentric and to prevent disease and death being considered in isolation from the natural phenomena of life. Biology should promote consideration of each human being as part of an open biosystem in an evolutionary perspective and an awareness that the adaptability of humans to environmental change is limited.

Biology teachers as a point of reference

Topics related to health education occur not only in biology syllabuses but in other subject areas. Thus, ageing and its consequences may be taught in sociology, environmental pollution in geography, food hygiene in home economics, and sanitation in history or chemistry. Specialist teachers of other disciplines will have different methodologies, but the moral, ethical, or health implications of what they are teaching is not explicit in most cases. Failure to integrate and coordinate the teaching of health-related topics can result in an incoherent and disjointed treatment and this must be avoided. As biologists in school cannot hope to cover the whole field of health education, the cooperation of other disciplines should be encouraged and supported. This points to a multidisciplinary approach to health education. A senior member of the staff of any school must be given the responsibility to coordinate health education within clear guidelines designed by school administrators. As health education in its broadest sense does not occur solely in the classroom, all teachers, particularly the coordinator, should be aware of the influence of the school environment and the community as a whole on the health of any individual. The school climate and ethos are of the utmost importance.

Adoption of a multidisciplinary approach will have implications for initial and in-service teacher training. All teachers' courses should include the methodology of health education, particularly bioethics, value clarification, and decision making. Biology teachers, occupying a central position in this interdisciplinary activity, can be seen as a reference point.

#### IV. TOPICS IN HEALTH EDUCATION AND METHODOLOGY TO BE DEVELOPED BY BIOLOGISTS

"Health is a positive characteristic of life at all levels and in all its manifestations'. It is fundamental to this concept that there is a balance of relationships 'within mind, body, society, and the environment and between these elements'. 'Health' is often viewed, especially in the Western world, in a more or less negative way as, for example, when defined by the absence of disease, or as something specific to individuals. To many people good or bad health related to their own mental and physical condition and the wider implications of society and the environment have little place in their conscious definition.

Health education must therefore encompass a wide spectrum of topics and must endeavour to create an understanding in the student of the basic principles of health based on the relationships with and between mind, body, society, and the environment. It should also provide an overview of health and ill-health within these contexts.

##### 1. The place of health education in the school curriculum

###### (a) *Primary schools*

In primary schools in most European countries there are no specialist teachers in health education. Teachers study a wide range of subjects in their training but specific courses on health education are rare. Because of the general and diverse approaches to teaching in primary schools and its interdisciplinary nature health education should be integrated into the curriculum and good health practices should be implicit in other relevant areas of the curriculum. Simple examples of this could be: when learning to count, apples could be used rather than toffees as a contribution to health education; when playing active games, changes in heart beat rate could easily be monitored by counting the pulse rate; when studying national costumes the reasons for certain types of dress and their adaptive value in the particular environment could be discussed; when cooking or playing with food, only those foods which have a positive effect on health could be used.

###### (b) *Secondary schools*

The interdisciplinary nature of health education makes it, to some extent, the responsibility of all teachers. Its inclusion in the curriculum need not be confined to life sciences but, as in primary schools, good health practices should be implicit in all areas. Health education is the responsibility of the whole school community and the school climate should be consistent with the aims of health education.

No one discipline should be expected to cover the whole field of health education although one teacher should be responsible for coordination within the school and one subject may provide the core of the teaching. This core subject may or may not be biology. However as biology is the major life science

represented in most types of school biology teachers must play a considerable and essential role in health education. If biology is to be used as the core subject for health education extra facilities including hours and training should be provided for the teacher.

##### 2. The teaching of health education in schools

When teaching health education the aims of the process must be clear in the teacher's mind and the methodology employed must be seen as one of the most important aspects of the experience. Health education should not merely be a process of passing information from the teacher to the student. While this is necessary, it is one of the minor functions of health education. When approaching health education a teacher must realize that the aim is to enable the student to have the optimum potential for health. The teacher should be able to offer guidance so that a student is able to have access to accurate information, make informed choices, have the skills to act upon those choices, and have an awareness of the influences on behaviour which are outside the immediate control of the individual.

In secondary schools there are three possible approaches to the teaching of health education by biologists. The first of these is the inclusion of health topics as an adjunct to the teaching of biological principles; the second is the use of health topics as a basis for teaching biological principles, and the third approach is the teaching of health education as a subject in its own right, using as a basis the skills and knowledge of the biologist. Whichever approach is used, traditionally trained biology teachers will need to have time to learn how to apply the techniques, skills, and knowledge of health education to their biology curriculum. It may be necessary for biology syllabuses to be reformulated in terms of basic biological principles relevant to health education. The approach chosen by individual schools and teachers should be determined by the needs of the students and the society in which they live.

In order that students should come to a position where they can take greater responsibility for their own health there must be interaction between students, teachers, the community, and the environment. This interaction must also be at a practical level within the experience of the student.

Some teaching methods which can contribute to this type of dialogue and interaction include values clarification, project work, simulations, role playing, and discussions. More classical methods such as lecturing and the use of some audio-visual aids are a one-way passage of information from the teacher to the student and are less essential for health education. The most effective method of teaching health education should involve an open dialogue between the teacher and the learner, with the possibility that the curriculum itself to some extent is an open curriculum, which students can influence.

##### 3. Topics relevant to health education

Health education should encompass a wide range of topics dealing with the relationships within and between the mind, body, and environment. Cultural and environmental differences will determine the specific needs of health education in different schools, communities and countries. A distinction can be made between those topic areas designed for use in primary schools (a) and those in secondary schools (b)



(a) *Topic areas for primary school children*

- i. Social behaviour and relationships: e.g. relationships and behaviour towards family, peers, local community, handicapped people, people from other cultural, religious, and ethnic groups, the biological basis of behaviour. ii. Fitness: e.g. recreation, relaxation, physical activity, sleep, stress effects, and psychosomatic manifestations.
- Hi. Safety: e.g. at home, roads and schools; accident prevention, first aid iv. Personal health: e.g. care of the body, cleanliness, types of disease, self-stabilization, reliance, self-esteem, the need for individuals to revise their views of in the light of new knowledge.
- v. Medical provisions and help: e.g. familiarization with the health service personnel, techniques, and locations.
- vi. Food: e.g. production, preparation, habits, hygiene, consequences of eating habits.
- vii. Human development and sex education.
- viii. The relationship between humans and our environments: e.g. pollution, the 'balance of nature'.

(b) *Topic areas for secondary school teachers*

These are listed in table 2.

Table 2. Health education in schools/colleges (ECBA, 1981)

Main content area Examples of items for study within each main content area

- |  |   |
|--|---|
| A. Personal health, body management and human biology, fitness and personal hygiene          | <ol style="list-style-type: none"><li>1. The working of body systems (one's own body)</li><li>2. Adaptation to environment, e.g. physical and mental stress (ecology, evolution, genetics).</li><li>3. Exercise - need for and effect of.</li><li>4. Health habits and personal hygiene (microbiology).</li><li>5. Effects on body of alcohol, drugs and tobacco.</li><li>6. Common infectious diseases including sexually transmitted infections (microbiology).</li></ol> |
| B. Food  | <ol style="list-style-type: none"><li>1. Nutritional needs of the body (physiology, ecology, biochemistry).</li><li>2. Nutrition and health, e.g. slimming, obesity, stress and anxiety, etc.</li><li>3. Eating patterns of individuals and community.</li></ol>  |
| C. Human development, growth and development from childhood through adolescence to adulthood | <ol style="list-style-type: none"><li>1. Body changes at puberty including individual differences and sexual development, (see A.6.).</li><li>2. Emotional and social development accompanying physical changes.</li><li>3. Exercise - need for and effect of (see A.3.).</li></ol>   |
| D. Relationships/social behaviour  | <ol style="list-style-type: none"><li>1. Parents and adult authority</li><li>2. Peers</li><li>3. Sexual relationships - with other and same sex.</li><li>4. Marriages and/or other long-term relationships.</li><li>5. Learning to cope with loss and separation.</li><li>6. With mentally ill and physically handicapped.</li><li>7. As situations for smoking, alcohol, and drug activities (see A).</li></ol>  |

E. Education for parenthood

1. Growth, development, and needs of young children.
2. Family roles and structures including one-parent families, etc.
3. Helping young children to cope with loss and separation.

F. Community health

1. A National Health Service and alternatives. Roles and relationships with doctors and hospital staff. National and
2. community health issues such as contraception, abortion, immunization, fluoride, etc. Attitudes to physical and
3. mental illness and handicap. Voluntary organizations and
4. clinics, etc. e.g. Marriage Guidance Council,
5. Samaritans.

G. The environment in which we live

- Litter, pollution including noise.
1. Meeting the needs of the community, for living space,
  2. leisure and mobility.
  3. Health issues such as sewage processing, refuse collection, etc.

H. Safety and first aid

1. Road-traffic education and driver education, etc.
2. Home.
3. School and work.
4. Leisure.
5. Principles of first aid.

4. Teacher training

Biology teachers in secondary schools may or may not have undergone a university education. Whatever the case it is unlikely that current training would meet the needs completely of effective health education. A general biology curriculum for biology teachers at University level was agreed during an ECBA workshop in 1977 entitled *Biology curricula at universities* and includes:

A. *Biological topics*

The systematics of organisms.

Biology and biochemistry of cells and subcellular systems, general and comparative physiology and developmental biology.

Ethology: patterns of behaviour, inheritance, evolution.

Genetics and the process, mechanism and pattern of evolution; variability and its physical basis and inheritance; variation and evolution.

Ecology: levels of ecology, organization of the biosphere, population ecology.

Structure and function of ecosystems, ecological and historical aspects of plant and animal geography.

B. *Topics related to biology*

Physics, Chemistry, Geosciences, Mathematics, History and Biology, Philosophy of Science, Foreign Language.

C. *Skills and attitudes*

*Necessary skills*

The use of classical and advanced instrumental techniques. Experimental skills (planning, performing, and evaluating experiments).

Mathematical skills (use of statistical techniques for collecting, evaluating and presenting biological data, special forms of diagrams and logarithmic scales). Verbal and reporting skills (discussion techniques, lecture techniques, techniques of writing scientific texts).

Bibliographical techniques (reading techniques, use of libraries). Observation techniques (intellectual skill towards separation of syntactic and semantic aspects of data, i.e. of sensory experience and interpretation). Hypothesis techniques (the technique of solving a problem by forming hypotheses that can be tested by empirical data).

Methodical skills in science (at least the clear distinction of: causal explanation/teleological explanation, deductive/inductive thinking, linear causal thinking/complex thinking in causal networks).

#### *Desirable skills*

Drawing skills (diagrams, cross-sections, microscopical and macroscopical models).

Application skills (application of biological knowledge to problems of everyday life by means of associational thinking).

Dissection and conservation of plants and animals.

Breeding and maintenance of living organisms.

#### *Necessary attitudes*

Tendency towards empirical proof on data ('empirical basic attitude').

Readiness to test formal theories for use in biology (e.g. theoretical physics, theoretical chemistry, mathematics, general systems theory or philosophy of science).

Awareness that biology is not an 'easy subject', but on the contrary needs a particular standard of training in complex thinking and of wide-ranging knowledge in different fields.

Openness to new aspects of biology (openness towards innovations in the biological sciences and to continuous learning and re-learning).

General caution in changing biological systems.

Openness towards cooperation, teamwork, and inter-regional (also international) exchange.

#### *Desirable attitudes*

Engagement in promoting the use of biological knowledge for the benefit of society.

In the above outline there is a sound biological basis for health education but only limited emphasis is placed on the importance of the relationship between these • topic areas and health or the methodology of health education. To increase the possibilities for biologists to take a major part in health education their training must take more account of this area and of the philosophy of health education. The attitudes of teachers towards the students and their relationships should also be discussed. Health education should be both a compulsory part of initial teacher training and a subject in its own right.

In order to prepare biologists to play their vital role in health education they too should be trained to work with teachers of other disciplines and encouraged to explore the possibilities for health education to benefit from specialists in other areas. Regular in-service training in health education is vital to enable teachers to

keep up to date with developments in health education methodology and assessment.

#### 5. Resources

Primary and Secondary school teachers use topics from many sources. The most important and useful teaching aid in health education is the student himself/herself. However training should enable teachers to widen their field of resources and introduce them to the range of possibilities. These could include formal channels such as Health Services, Health Education departments in the community, and other health information systems; informal channels such as local community resources and groups, the local environment; or the mass media. Teachers must also learn to be discerning in their use of resources and should always be able to assess critically their value with particular reference to vested interests.

### V. RECOMMENDATIONS

#### A. The concept of health education

1. The concept of human health should be based upon the search for balanced relationships within mind, body, society, and environment and between these elements.
2. Health, should not be seen in a negative way as, for example, absence of disease but as a positive characteristic of life at all levels and in all its manifestations.
3. In order to achieve the positive objective of improved levels of health and recognizing that the social and financial consequences of ill health are considerable, we strongly recommend that health education should be available to all and, in particular to all school-children at primary and secondary levels.
4. Health education should be a multidisciplinary endeavour involving life sciences . such as biology, psychology, sociology, cultural and educational sciences, and medical disciplines.
5. The great majority of health education topics have a biological basis. Furthermore, biology is the major life science represented in most types of school. Biology teachers, therefore, must play a considerable and essential role in health education.
6. As much of health education in schools derives directly from basic biological principles we suggest that some of the time needed for health education could be found from adjustments within the normal biology course in those countries where an adequate number of hours for biology teachers is already available. However, additional time will be required to cover the whole spectrum of topics in health education.
7. As health education is complex, dynamic, and multidisciplinary biology teachers will need to be trained in pre-service and in-service courses in areas beyond extending their biological subject. Such biology teacher training should include training in methods of bioethics, value clarification, and decision making related to health problems. It is of great importance too, that teachers are encouraged to recognize the effects that their personal examples of life-style may have on pupils.

#### B. Biological principles and health education

1. School biology and health education should be for the benefit of the child and the community.
2. Biology syllabuses should elucidate their contents (facts) in the context of basic biological principles. The formulation of relevant biological principles should

be one of the pillars of health education. In any case these principles should contribute to the aims of health education.

3. Health education should be a responsibility of the whole school community; i.e. the school climate should be consistent with the aims of health education. As biologists in school cannot cover the whole field of health education, cooperation between different subject teachers should be encouraged and supported. A senior member of staff should have the responsibility for health education within a school
4. Initial and in-service training for all teachers should include within the methodology necessary for health education, the teaching methods of bioethics, value clarification, and decision making related to health problems.

#### C. Topics and methodology in health education

*/. Health education should be available to school children as follows:*

##### a) Primary schools:

Health education should be integrated into the curriculum and good health practices implicit in all other relevant areas.

##### b) Secondary schools:

Health education is to some extent the responsibility of all teachers. Biologists can make a major contribution to health education with biology as a core subject and/or with biology teachers acting as coordinators for a more integrated approach. If biology is to be used as the core subject extra facilities including hours and training should be provided for the teacher.

#### 2. Educational methods should be employed which:

- i. make accurate information accessible to students
- ii. enable students to make informed choices
- iii. enable the development of the skills to act upon those choices
- iv. develop an awareness of the influences on behaviour outside the immediate control of the individual.

#### 3. Health education should encompass:

a wide range of topics connected with health which could include those mentioned on pages 10 - 11 of this report. Cultural and environmental differences will determine the specific needs of health education in different schools, communities, and countries.

#### 4. Teacher training: initial and in-service

- i. Health education should be a compulsory part of the programme and a subject in its own right.
- ii. In all teacher training for education in health emphasis must be given to the methodological aspects of teaching.
- iii. Biology teachers entering health education need to consider the philosophy of health education in depth and may need to adapt their teaching methods and attitudes towards their students accordingly.
- iv. With respect to secondary teacher training for biologists:
  - a) training in health education must be a priority
  - b) training should put emphasis on the links between health and biology and sufficient time should be available to accommodate this where necessary
  - c) in order to fulfil their coordinating role properly the teachers concerned should be trained to work together with teachers of other disciplines.

#### 5. Teachers in health education should make more use of resources from outside the education system.

This contact should help them to keep up to date with developments in knowledge, methodology, and assessment. They must also learn to be discerning in the use of these resources.

#### VI. AIMSOFECEBA

1. To represent the professional interests of biologists to the European Communities.
2. To ensure the professional competence of biologists within the European Communities.
3. To facilitate the exchange of information on professional matters relating to the work of biologists within the European Communities.
4. To facilitate free movement of biologists within the European Communities.
5. To promote exchange of those teaching biology in all classes of educational establishments.
6. To promote cooperation and exchange of information between the national biological societies about their activities throughout Europe.
7. To advise the EEC and the public in general on biological matters having implications for society.

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