A MORAL CURRICULUM FOR BIOLOGY TEACHERS

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It is my opinion that in the past moral ideas have been neglected to a great extent in teaching biology, if by moral ideas we mean the following:

1. Teaching pupils *to conserve natural resources for the present and future benefit of humanity.*
2. Developing a *"reverence for life"* similar to that advocated by Albert Schweitzer.
3. Developing *humane techniques for research with animals.*
4. Teaching the principles of human reproduction and heredity *with special reference to the development of a responsible, personal moral code of ethics.*
5. Developing *habits of personal and group safety in the laboratory and field from the standpoint of being personally concerned with the welfare of fellow students as well as themselves.*
6. Encouraging pupils *to be concerned with the welfare of adults, including parents and teachers.*
7. Developing *honesty on all occasions, including evaluation activities.*
8. Developing *respect on all occasions for the viewpoints of others, including religious as well as scientific, political and other viewpoints.*
9. Developing *attitudes of respect for all, including the different races of mankind and different cultures, as well as self-respect and respect for the integrity of their own bodies and personalities.*
10. Developing *an overwhelming subscription to the value of truth in all of life's aspects.*
11. Encouraging pupils *to become aware of the social and moral implications of science and its applications, and of the necessity of their taking a personal stand on the issues arising from the applications of science in society.*

It seems obvious that such moral ideas may be taught in biology classes where the teacher is aware of the critical issues in science teaching today, such as those listed by the National Science Teachers' Association's Committee on Issues in February, 1969, in a paper prepared for distribution to science teachers. These issues were: (1) The importance of retaining and protecting natural resources for science teaching, (2) The responsibility of science teachers in deciding on the appropriate use of living animals in the classroom, (3) The importance of teaching about human reproduction, (4) The wise use of science exhibitions, (5) The liability of teachers for classroom accidents, and (6) The importance of cooperating in national assessments.

It also seems obvious that such moral ideas may be taught by teachers who make a direct attempt to incorporate them into their course of study and who are convinced of the importance of these ideas in their students' lives.

Where in the year's course of study for biology can these moral ideas best be taught? An examination of most general biology, zoology and botany textbooks, laboratory manuals and teacher's guides printed for use on different educational levels shows very little information dealing with such moral ideas. It is true that conservation is included as a topic for study in some books, and it is also true that the method of inquiry, stressing the values of truth and honesty, is emphasized throughout the various versions of the Biological Sciences Curriculum Study. These, however, are the exceptions, and even conservation as a subject is slighted in the BSCS versions and its fundamental importance is mostly implied rather than explicitly stated.

I would like to propose a biology curriculum which would incorporate directly class activities which would enable the pupils to learn these moral ideas and be moved by them in their lives.

Accordingly I have outlined a hpo-

thetical moral curriculum for one year for a biology class. This curriculum is organized in a chronological fashion based primarily on a seasonal approach of the study of life. The places where specific moral ideas (such as those I have listed) may be studied in this curriculum are indicated and the ideas underlined. Suggestions for developing evaluation techniques to measure pupil learning of these moral ideas are also mentioned.

An Example of a Moral Curriculum for Biology Teachers

1. *Introduction.* About 6 days.

In setting up classroom rules of conduct by teacher-student planning, and in arriving at class agreement on goals for learning and on methods of evaluating pupil progress toward these goals, *moral ideas could be discussed and included in the list of class objectives for the year. Class agreement could be reached upon the inclusion of evaluation techniques in the class activities. These evaluation techniques would attempt to measure pupil progress in learning these moral ideas and applying them in pupil behavior*, in addition to measuring progress toward other class-derived goals.

Since the pupils would hopefully actively participate in this curriculum planning, it would be assumed that they would have a "vested interest" in trying to learn and apply moral ideas in their lives in the school and neighborhood. Since they would also be participating in developing evaluation techniques, it can also be assumed that they would have a similar "vested interest" in scoring "high" when evaluated by these techniques. *All of the moral ideas which have been listed in this paper could be restated in the form of objectives presumably attainable by the pupils in the class. Both the teacher and the class, however, must be committed to their attainment.*

2. *The Study of Insects and other Animals in the Field and Laboratory.* About 4 weeks.

It can be assumed that through the study of these animals (taxonomy, life histories, morphology, etc.) the pupils would make a direct attempt *to learn to conserve natural resources, develop reverence for life, develop humane techniques, develop habits of personal and group safety, become concerned with the welfare, of adults, develop honesty, develop respect for the viewpoints of others, develop attitudes of respect for all, learn the value of truth, and become aware of the social and moral implications of scientific activities.* It can also be assumed that through the direct participation of these pupils in planning and evaluating their activities, they would desire to learn moral ideas, and that they would attempt to learn, retain and apply these moral ideas as they study these animals.

3. *How Plants and Animals Live Together.* About 3 Weeks.

It can be assumed that, through the active participatory study of these ecological relationships and principles, the pupils *would strive to learn and apply all of the moral ideas listed, with the probable exceptions of numbers three and four, concerning the learning of humane techniques for animal study and human reproduction, respectively.*

4. *How Plants and Animals Grow.* About 8 Weeks.

Likewise, through active, pupil participatory activities involving the study of the principles and relationships concerned with plant and animal growth (morphology, anatomy and physiology-including humans) it would be hoped that pupils *would learn and apply all of the moral ideas listed, with the probable exception of human reproduction.*

5. *How Plants and Animals Behave (or React).* About 3 Weeks.

Through the participatory pupil activities involving the study of organismal reactions to stimuli (including humans) hopefully the pupils *would learn to apply-humane techniques, develop a reverence for life, learn habits of personal and group safety, become concerned with the welfare of others, practice honesty, respect everyone (including themselves), be truthful, and develop an awareness of the social and moral implications of science and its applications.*

6. *How Plants and Animals Reproduce.* About 4 Weeks.

Through the study of reproduction the pupils *might learn and apply all of the moral ideas which I have listed, and especially the moral idea of developing a responsible, personal moral code of ethics with respect to the facts of human reproduction.* It is very likely that the

manner of teaching the facts of human reproduction and of encouraging pupils to develop such a personal moral code would be influenced by social pressures. In some instances it might not even be possible to teach these facts and ideas because of negative pressures from the community. In any case, to teach these very important things there probably would need to be constructive and intelligent administrative and community cooperation in planning and facilitating activities aimed at pupil attainment of these objectives.

7. *How Plants and Animals Come to Be As they Are (Heredity and Evolution).* About 5 Weeks.

Through class activities based on learning the principles and theories of heredity and evolution pupils *could learn and apply all of the moral ideas listed.* In some communities the cooperation and support of the school administration, parents and others in the community might be vitally necessary to insure success in the study of genetics principles and evolutionary theory, especially as these are related to humans. In some communities it might be impossible to study the human aspects of these fields. Teachers and administrators should show leadership, tact, perseverance, perceptiveness, discernment and objectivity in order to carry these studies through to a successful conclusion in the class.

8. *How Man Lives With Plants and Animals.* About 4 Weeks.

Studying the basic principles of conservation could provide class activities through which pupils *could learn and apply all of the moral ideas listed.* Since the studies of pollution and human conservation may be included in this portion of the curriculum, problems associated with an expanding human population could well be studied in planning and executing class activities.

9. *Plants and Birds in The Field and Laboratory.* About 3½ Weeks.

In the study (identifications, taxonomy, morphology, etc.) of this final phase of the curriculum *all of the moral ideas which have been listed could be learned and applied with the probable exception of human reproduction.*

In conclusion, it should be emphasized that the curricular approach advocated here reflects my faith in teaching democracy in the biology classroom by encouraging, aiding and abetting active pupil cooperation in planning and executing the activities of the class, including evaluation. Evaluation techniques could include behavior checking, anecdotal and other records, interviews, reports, questionnaires, information tests, interest tests, aptitude tests, attitude tests, "opinionnaires", forms given other teachers and parents, guide sheets, laboratory and project work, tapes and television reports of class work, and letters of recommendation.

It is my firm belief that a biology teacher who has a thorough knowledge of both his subject and his pupils, and who is committed to teaching his pupils important biological principles, concepts, interesting facts and applications in ways meaningful to his pupils, would experience little difficulty implementing this curriculum. This moral curriculum would then become an integral part of the total biology curriculum, and hopefully all engaged in its planning and execution would benefit personally by gaining not only knowledge, but also wisdom and, adding to their wisdom, *understanding.*

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