

Section C

Role of the State Departments in the Improvement of High School Biology Teaching

15. *How shall we deal with the problems of provisional and temporary certification for biology teachers who do not meet minimum requirements?*

COMMENT: This problem arises out of the acute shortage of qualified biology teachers; it points up sharply the responsibility of teachers in secondary schools and colleges, of national societies, to interest many more capable college and high school students in biology teaching.

Higher, but not too rigid certification requirements, based on the kind of training outlined in the report on college teaching should be adopted in science as they are in such fields as vocational agriculture. This might help to improve the salary status of science teachers and to attract competent people into the field.

RECOMMENDATIONS: The Conference recommended:

- a. That provisional certificates be issued only when the local superintendent can certify the lack of a qualified teacher, and that holders of such certificates be required to become qualified in as short a time as possible by summer school work.

That provisional certificates be issued on a one-year basis and that they be renewable upon presentation of evidence of satisfactory progress towards meeting full certification requirements. If a choice must be made between a person trained in biology without professional courses in education and one with a certificate but no biology training, the former would be preferred.

- b. That programs be set up within the school or local system, in collaboration with nearby colleges and state science supervisors, for the immediate and continuing in-service training of

teachers with provisional and temporary certificates.

- c. That teachers be encouraged to enroll in formal courses selected from the teacher training program on which full certification is based.
 - d. That teachers be encouraged to participate in an active in-service teacher training program in the local system, sponsored by the local administration, the State Department of Education, and the colleges.
16. *How can the program in public school biology be cooperatively planned so as to use effectively local units, college officials and teachers and the state departments of education (especially science consultants and certifying officers)?*

RECOMMENDATIONS: The Conference recommended:

That the program in public school biology should be cooperatively planned by the establishment in each state of a continuing articulation and planning committee, composed of representatives from these fields:

- a. High school administrators.
- b. College and university administrators.
- c. High school teachers fully certified in biology.
- d. College and university teachers in the biological sciences and in education.
- e. Science consultants on the state level.
- f. The supervisory and certification divisions of the State Department of Education.
- g. The State Academy of Science.

That the functions of this committee be to:

- a. Identify problems concerned with certification, teacher education, the program of study at all levels, or with a combination and extension of these problems.
- b. Furnish leadership in helping the State Department of Education, the public schools, and institutions of

- higher education in obtaining an effective solution to these problems.
- c. Encourage and disseminate pertinent information concerning the importance of instruction in biology.
 - d. Assist in the recruitment of biology teachers.
 - e. Encourage the school administrators to study the need for greater cooperative action and seek their help in implementing recommendations made by the committee.
17. *What is the role of the State Departments of Education in fostering in-service training which will result in the improvement of biology teaching?*

RECOMMENDATIONS: The Conference recommended:

That the State Department employ well-qualified science coordinators, advisors or consultants who have had high school experience and are trained in both science and education, to consult with science teachers in high schools and to implement a program of cooperation between college scientists and high school teachers.

That the need for a state science coordinator, consultant or advisor be made known by the science teachers to the State Department and the various agencies having policy control over the state department.

That State Department consultants help by:

- a. Assisting in coordination of services of the State Department, the colleges, and the local systems in activities conducive to improvement of instruction in science.
- b. Assisting in setting up committees for cooperatively developing curricular materials and share these with all high school science teachers.
- c. Providing a means of communicating to all teachers information on best teaching practices, and other information which will add to the quality of teaching.

Encouraging greater exchange of information between science special-

- ists and teachers of high school science through pre- and post-school planning conferences, regional meetings of science teachers, and at the county and local school level.
- d. Encouraging classroom teachers through in-service programs to become involved in classroom research for the improvement of teaching so that the gap between "what teachers know" and "what teachers do" in the classroom will be closed.
 - e. Encouraging existing science associations and organizations to keep all science teachers on the high school level up-to-date on information and research; and encouraging the formation of new associations where needed to assist in such work.
 - f. Encouraging colleges and universities having approved programs for teacher training to provide adequate subject matter workshops and specific courses projected primarily for teachers in subject matter areas and for which credit will be given in continuing certification.
 - g. Encouraging the colleges to make available services of subject matter personnel as consultants to schools in their vicinity.
 - h. Assisting the state committee recommended above (composed of both high school and college teachers) to advise, consult and plan for recruitment, selection, motivation, and the up-grading of biology teachers.
 - i. Encouraging all local school administrators to provide for in-service teacher training conference for biology teachers prior to the opening of school, during the year, and for post-school conferences, for purposes of evaluating, planning, and re-evaluating the biology program. Consultants for such in-service conferences should include personnel from the State Department concerned with teacher training and improvement of instruction in the area of biology, and personnel from appropriate departments of the colleges which prepare biology teachers.

18. *What role can the State Department of Education play in insuring adequately prepared teachers in secondary school biology? What can be done to prevent individuals with little or no training in biology from teaching secondary school biology courses?*

RECOMMENDATIONS: The Conference recommended:

- a. That State Departments of Education adhere to certification requirements which will insure training such as that indicated in the recommendation for college training and that content areas be adequately represented on commissions that establish certification requirements.
 - b. That the science consultants in the State Departments actively supervise the science teaching in high schools.
 - c. That the State Department refuse to certify a person unless he has had college courses in biology which adequately cover the areas of a high school biology course.
 - d. That the State Department of Education cooperate with the colleges in setting up approved programs for teachers which would give broad training in science and mathematics in addition to a balanced general education, and which will enable the teacher in a small school to teach in more than one area.
 - e. That certification requirements be raised to the level of the training as recommended earlier. These requirements should list the subjects considered minimal in chemistry, physics, mathematics and other sciences, and in professional education, not merely the number of credit hours. This will insure that biology certificates, for example, go to people with broad and fundamental training, and would exclude those with a number of credits in a narrowly limited area of biology.
19. *To what extent can and should the State Department of Education assist in the allocation of full-time (hour-for-hour)*

teaching credit for instruction in the biology laboratory?

COMMENT: There is only one measure of teaching credit: the number of hours spent with students or preparing classroom materials. Credit for class hours should be the same whether those hours are spent in recitation, laboratory, shop, or field. This should become the general rule.

RECOMMENDATIONS: The Conference recommended:

That the appropriate agency or persons in state departments and colleges assist in obtaining an hour-for-hour allocation of full-time teaching credit for instructors in high school and college science laboratories.

20. *How can the State Department of Education aid in the recruitment, selection, motivation, and up-grading of high school and college biology teachers?*

RECOMMENDATIONS: The Conference recommended:

- a. The establishment of salary scales adequate to attract and retain qualified teachers in the profession.
- b. The establishment of suitable retirement benefits.
- c. The maintenance of active in-service training by:
 - 1) Conducting well-planned workshops.
 - 2) Providing competent consultants.
 - 3) Cooperating with conservation, agricultural and other state agencies in producing suitable pamphlets in biological subjects.
 - 4) Promoting adequate communication on problems and techniques among biology teachers.
- d. The establishment and maintenance of a research staff to evaluate and suggest improvements in methodology.
- e. The encouragement of democratic administration because this is a crucial factor in retention and recruitment is a part of recruitment.
- f. The encouragement of and assistance in obtaining the best classroom in-

struction possible as this is most important in recruitment of future teachers.

- g. The encouragement of local communities to insist on the best biology teaching obtainable.
- h. The encouragement of and utilization of the efforts of the many scientific

and educational groups interested in and working on recruitment of biology teachers and biologists.

- i. Encouraging deans, department heads and advisors to present the teaching profession as an attractive career opportunity to biology majors.

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PART IV Summary of State Programs of Action for Implementing the Conclusions and Recommendations of the Southeastern Work Conference on Biology Teaching

The State teams represented in this conference assumed responsibility and leadership for the following programs of action:

- A. Dissemination of information concerning this conference:
 1. News release to state and local papers.
 2. Summary articles in state education association journals and papers.
 3. Distribution of copies of conference summary report to the following persons and groups:
 - a. State Superintendent of Public Instruction and other key personnel in the State Department of Education.
 - b. Deans and heads of departments of biological sciences in all institutions of higher learning.
 - c. Members of Advisory Committees and Councils on Teacher Education.
 - d. Heads of state academies of sciences.
 - e. Heads of science section of education associations.
 - f. All high school science teachers, college instructors in science, and high school principals.
 4. Face-to-face (oral) presentation and discussion of conference report by state team or representatives with the following individuals and/or groups:

- a. State Superintendent of Public Instruction.
- b. Director of Teacher Education and Certification.
- c. Science section of State Education Association fall conferences.
- d. Advisory Committee on Teacher Education.
- e. Organization of School Administrators.
- f. District education conferences.
- g. Home faculty or staff of each conferee.

- B. Implementation of Recommendations:
 1. Request the State Department of Education to employ or to designate a science consultant to work with college and high school teachers and instructors of science.
 2. Encourage college biology teachers to become participating members of the science section of the state education association.
 3. Request the director of teacher education and certification in the state department of education to work with teacher education institutions in an effort to get heads of science departments to review and to revise their offerings for a major in biology in light of the proposals made at this conference.