TRAINING OF TEACHERS FOR TOMORROW'S WORLD

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Many persons in the profession of training teachers do not like to have the word "training" used to describe their activities. It is, however, an old term that has been used for decades. Currently many persons are endeavoring to replace it with the word "education." They do this because they see some connotations in the word "training" which they do not like, particularly when they think of training an animal or training an athlete. They think of a seal clapping his fins or of a boxer beating down an opponent. Neither idea seems to be related to the activities of the teacher in the classroom.

Before abandoning a long-used and well-understood term, we should look at some of the connotations of the substitute. An "educated" person is one who, in the common parlance, knows a lot about a lot. He is a person who has read widely, traveled widely, and experienced much. His skills are many, but rudimentary. He is somewhat of a dilettante.

A "trained" person is educated, of course, but he is also able to integrate his knowledge and his experiences around a single purpose. If he is a doctor, he integrates his knowledge toward curing the ills of the body. If he is an engineer, he integrates his knowledge toward the design and construction of machines, of structures, or of roads. This connotation of integration of knowledge to an end makes it important to retain the old term and to speak always of training teachers as we would speak of training any other professional person.

Change Inevitable

I have used the term "tomorrow's schools" because education inevitably looks ahead. The child who enters kindergarten in September of 1949 will graduate from high school in 1962, and from the university in 1966. What kind of world lies ahead of him? What problems must he solve when his schooling is ended? These are important questions for all of us, but especially important for those who train teachers.

Changes take place rapidly. There are great advances in technology. During the period of 16-17 years that lie ahead before the beginning kindergartener takes his place in adult life, a lot is going to happen. We can see this most readily by looking at the past before we look at the future.

We can go back to 1932 and compare what happened then with what happens now in 1949. There has been great development in electronics. Radar can detect mobile objects in the air and has many other uses. Television is just beginning to

have its impact upon American life. Great mathematical problems which could not be solved within available time are solved by so-called mechanical brains. All of these changes centering around electronics have taken place within the 17 years that have elapsed since 1932.

In the area of transportation, streamlined trains, just beginning to be heard of in 1932, are now common. There are new airplanes, like the flying wing, with jet propulsion engines that were not even widely developed in laboratories 17 years ago. Trains and trucks use the diesel engine which was not adapted for such use until recently.

In the area of communication, "Pocket Books" sell widely throughout all parts of the nation. We have seen the growth and development of picture magazines, the coming of age of talking pictures, and a beginning use of facsimile reproduction. These are but a few of the changes in material things which have affected our way of living.

In organized society, since the early days of 1932, there has come the growth of social security, old age pensions, the rise of the unions to power, and open attacks by governmental agencies on intolerance and prejudice. Our age is characterized by increased use of government in an increasing number of areas of human endeavor. Government yardsticks, for example, have been set up to measure private industry. Government planning enters more and more into the control of our physical environment and the direction of our activities as citizens.

These are the things which have gone on, but they tell us little about what changes lie ahead. The rate of both social and technological change is something like a geometric progression. The more that man knows about the physical nature of the universe, the more he can find out. The more and better material things he creates, the more he can create. The more that man improves his relationships with his fellows, the more he can do to improve them.

Attitude Toward Change

Man cannot predict exactly what is going to happen, but he can be sure that there will be tremendous speeding up in both technological and social change. He can also state with some certainty that the rate of technological change will continue to be somewhat greater than the rate of social change. The problem of lag in adaptation of our society to technology becomes increasingly acute. Man is reluctant to change his accustomed ways of doing. He doesn't seek to change his relationships to his government or to unorganized groups of his fellows with anything like the degree of eagerness with which he seeks to change his automobile when a new model comes out. He is reluctant to believe that the increasing speed of technological change makes social change not only inevitable but desirable. When he does begin to understand the need for social change, he does not translate his understanding into action.

As man observes the world, it is soon clear to him that there are competing systems of ideas about what is good in government, in the production of material things, and in the use and ownership of them. Ideas are not destroyed readily. The conflict of ideologies which exists today will continue through at least the

two decades which lie before us. It may differ in the degree of intensity with which it is carried on. It may change its nature somewhat, as new ideas come into the picture, but the conflict will remain.

Rapid technological change and rapid social change will be taking place in an atmosphere which is charged with the emotions arising from ideological conflicts. In the midst of the maelstrom sits the modern American, bewildered by what goes on and attempting to prevent many things from happening. Change seems to him to be undesirable. He tends to resist it at every turn.

One of the great problems for education is the development of a generation of persons who understand that change is ordinary, who recognize that change is inevitable, who begin to examine their environment and to initiate changes in order to improve it.

One result of man's fearful attitude toward change is a change-resisting school rather than a school which facilitates changes. One of the major reasons for the critical social lag is the vicious circle in which one change-resisting generation makes the schools produce another change-resisting generation, which in turn prevents the schools from changing. Schools must recognize that a major responsibility is the development of an intelligent attitude toward change among their students, and this is not accomplished by teaching which reverently adheres to traditional, rote memorization procedures which fail to provide many opportunities for problem-solving.

Role of the Teacher

What is the role of the teacher in such a school? The teacher is several persons in one. First, he is a part of the environment of the children who attend school. His personality impinges upon the personalities of his students each day. What he does, what he is, what he thinks, how he dresses, how he appears, what he feels, and all of the other facets of his personality affect the way in which children learn what they learn.

In the second place, the teacher is a manipulator of the student's environment even while he is a part of it. He arranges the time of day at which each activity takes place. He selects and uses printed materials, pictures, and visual aids. He plans the emotional climate of the classroom. He decides whether there are to be democratic, autocratic, laissez faire, or some other kind of relationships.

In the third place, he is a scholar of the nature of society. He understands both social trends and social development. He sees cause and effect at work in human relationships and understands how to bring about the effects he desires. He is a student of the internal dynamics and structure of organized and unorganized groups of persons. He understands the ways in which governments operate.

In the fourth place, he is a scholar of the nature of man. He knows how man learns. He understands the physiology of human growth. He knows the relation of physiological readiness in learning. He understands the way in which attitudes, appreciations, and emotions are de-

veloped; in short, he understands with considerable thoroughness the human animal with which he deals.

In the fifth place, he is a professional person in a difficult area. The problems of the teacher are far more intricate and complex than those of any other profession. A human being cannot be placed in a test tube or a betatron and examined. He cannot be planted in the soil so that his growth and development can be watched. Whatever is done to him in order to observe him, changes him while the observing takes place. No technique can be used for long, because he adapts to it.

So it is with methods of teaching. It is extremely difficult to know what method of teaching is best in a given situation, and having found the method, it soon becomes obsolete. Man is an adaptive animal. Whatever is done to him leads to changes in his behavior so that he can escape from the doing. What is a good method with the student today may be a poor method with him three years later because he has learned to adapt to it. The teacher, as a professional, must know the methods which look to be good at the time that he is trained. He must also be versed in the procedures whereby he can invent better methods when he finds that familiar ones no longer work in practice.

Youth's Basic Needs

Unless the teacher may be characterized in these ways, he will achieve comparatively little success in helping *all* youth of secondary school age meet the sorts of basic needs which are outlined in the *Guide to the Study of the Curriculum in the Secondary Schools of Illinois*. An examination of any one of these youth needs will illustrate the complexity of the teacher's job. The fifth need cited is:

> Acquiring knowledge of, practice in, and zeal for democratic processes:
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> a. Learning to be intelligently critical of the social heritage.
> (1) Possessing an understanding of and belief in our culture.
> (2) Being able to gather the facts regarding society and evaluating them.
> (3) Developing ability to be independent in arriving at judgments; must not merely imitate a teacher or leader.
> (4) Being able to propose a plan and see the consequences if the plan is adopted.
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> b. Seeing and utilizing opportunities for participation in community activities outside of the school.
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> c. Achieving appropriate understanding of and relationships with minority (or majority) groups.
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> d. Developing an understanding of the necessity for international peace together with some knowledge of how to further it.
>
> e. Understanding relationships between the sciences and human destiny.

Training the Science Teacher

The scientists of America have studied the problem of training the science teacher. Their report was published in 1942. Participants in the project included the National Committee on Science Teaching, the American Council of Science Teachers, the American Association for the Advancement of Science, the American Chemical Society, the American Nature Study Society, the National Association of Biology Teachers, and several other scientific groups.

In discussing aspects of our present culture, their report states:

> There is likely to be little disagreement with the statement that our culture is witnessing one of the most rapid developments and changes in the history of Western civilization. There can be no quarrel with the proposition that

science—invention and technology—has been largely responsible for this unprecedented growth. Almost overnight, it seems, we have been whisked from an age of agrarianism and simple capitalism to an age of industrialism and corporate ownership. The change has been so rapid that we have not yet developed a terminology suitable for discussing with facility the new order of things. . . .

It is not to be wondered at, therefore, that there are at present many divergent ideologies. Nor is it surprising that men of science are becoming self-analytical, that scientists are attempting to develop critical philosophies, to understand the potentialities inherent in the methods and accomplishments of science. They recognize a responsibility, not only for their own immediate discipline, but also for the employment of their discoveries in the betterment of man's lot. . . .

Meanwhile the youth of today is facing a world of contradictions—of want in the midst of plenty, of fear in an age of potential security, of greed and selfish interest in a society supposedly influenced by the ethics of Christianity, of class stratification and restraint of human rights in a political democracy, and of wars and recurring crises in the "scientific" twentieth century. It is amid these confusions that the teacher of science must help young people solve their problems.

Aims of General Education

After describing these problems of our culture, the scientists then look at the problem of training a teacher, first, as an individual and a citizen:

The teacher is first of all a person. To the extent that he is intelligent, informed, conscious of social issues, and happily adjusted in his life and his views, he may become an outstanding teacher. This is true for all teachers regardless of field, and it should be noted that the general education proposed in this chapter is thought of in terms of *all* teachers and, for that matter, of all persons living in a democracy. But it seems especially important that those accepting the responsibility for giving science instruction be provided with this education.

The prospective teacher should acquire a sufficient range of understanding to insure his social acceptance in the community where he teaches. He should merit recognition as a person generally well informed and should be able to accept and handle a position of responsibility in the community.

He must have avocational interests and the ability to enjoy and appreciate a variety of intellectual and aesthetic pursuits. He must understand human beings, their customs, and their institutions, and recognize the roots of local prejudices and provincial mores in biological and cultural variants. To work effectively and sympathetically with community problems, he will need to recognize institutions in relation to their origins and in comparison with the similar and the greatly different institutions which have obtained in other times and places. And, above all, he should have had the advantages of guidance and study to aid him in the development of a personally and socially satisfactory conception of life.

I. THE TEACHER SHOULD HAVE AN UNDERSTANDING OF AMERICAN CULTURAL GROUPS. The American science teacher lives and works in the midst of a cultural complex composed of many shifting socio-economic, racial, ethnic, national, and religious groups. In times of crisis, intolerance, misunderstanding, and fear arise among cultural groups and these stresses are seized upon by demagogues and those seeking to further special interests. America, as well as Europe, is faced with fallacious doctrines and common misunderstandings regarding the superiorities or inferiorities of various groups. Most of these conclusions disregard the fact that range of individual difference within any population is demonstrably great with respect to almost any character; that to think of all individuals in terms of an average or in terms of other individuals is almost certain to result in error. Such conclusions convey the idea of political or racial units all of whose members possess given charcters.

II. THE TEACHER SHOULD UNDERSTAND THE VARIATIONS IN INSTITUTIONAL FORMS OF PAST AND PRESENT SOCIETIES. Today, more than ever before, it is imperative that those responsible for the education of youth defend and expand democracy and aid in actualizing our democratic vision. The science-trained teacher will recognize that the American forms of life can best be defended on the basis that they are operating in such ways that we de-

rive satisfaction, security, and personal and national well-being from them. Furthermore, they should be inspected and modified on the pragmatic basis of how well they are functioning, or can be made to do so, for the wellbeing of the nation and its individuals. . . .

III. THE TEACHER SHOULD UNDERSTAND THE POTENTIAL RELATION OF SCIENTIFIC RESEARCH TO DEMOCRACY. Society has already become so integrally scientific in the material sense that the expression, *impact of science on society*, is nearly meaningless. There is no aspect of human activity that organized science has not modified; but intellectually, we can hardly be called scientific. In large part science has remained subordinate to private interest and is called upon to do its part but to remain in the background; it is the indispensable handmaiden of our industrial expansion but could hardly be said at present to be offering intellectual direction to society commensurate with its potentialities.

IV. THE TEACHER SHOULD UNDERSTAND HIMSELF AND HIS STUDENTS, THEIR PARENTS, AND OTHERS IN THE COMMUNITY. That understanding of human beings is necessary for success as a teacher is a proposition likely to encounter little opposition. Basically it is the theme of every section in this chapter. This understanding is in part a background of general understanding of human beings, their characteristics, their development, and the factors which influence these. In part it is an understanding by the teacher of himself and the individual children and adults with whom he works.

V. THE TEACHER SHOULD DEVELOP LEISURE-TIME ACTIVITIES AND AESTHETIC SATISFACTIONS. It is the belief of the Subcommittee that the problems of leisure-time activities and the goal of developing aesthetic satisfactions should be more carefully considered in the education of teachers. The Subcommittee agrees with the statement that 'the word *(aesthetic)* should not only apply to something that happens in museums.'[1] Many take the position that teachers should have contacts with, and develop appreciations and abilities in, various areas of aesthetics. The National Survey of Education of Teachers revealed that only about one third of the teachers from teachers' colleges, liberal arts colleges, and universities had had any work at all in the fine arts in either high school or college.[2] Appreciation and creative ability in the arts need not, of course, originate or develop within the confines of institutions, but the establishments of early contacts may engender the development of appreciations and abilities which would otherwise remain dormant.

VI. THE TEACHER SHOULD DEVELOP A SATISFACTORY CONCEPTION OF LIFE. Many adolescents pass through a period of adjustment and orientation among conflicting religious and ethical concepts. Emotional disturbance often results when an individual experiences apparent contradictions between the faith to which he has clung and the logic that is associated with science. It seems important that the teacher, particularly the teacher who deals with the subject matter and the method of science, should be aware of the perplexities that exist in the minds of young people, and should develop for himself a consistent and workable philosophy of life that will enable him to give sound guidance and counsel to those in his charge.

These are the six aims of general education which scholars from scientific societies believe should become part of the aims for preparation of teaching of science. They should become part of the aims for the preparation of teachers for almost any field.

General education is related to the first aspect of being a teacher—that of being a part of the environment of the children in school, of being a personality which impinges at each moment upon the personalities of students. This education will enable them to develop the personalities which will be most helpful to them as individuals and citizens, and most wholesome for the students with whom they work.

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[1] Progressive Education Assn., Commission on Secondary School Curriculum. *Science in General Education*, p. 126. D. Appleton-Century Co., New York, 1938.

[2] Evenden, E. S. *Summary and Interpretation: National Survey of the Education of Teachers*, Vol. 6, U. S. Office of Education. Government Printing Office, Washington, 1932.

Broad Versus Specialized Knowledge

A second area in teacher training deals with an area of specialization of knowledge with what he needs to know about the subject which he is going to teach. Before looking at this area, it is necessary to understand clearly what American schools are for. According to President Henry Hill of George Peabody College for Teachers:

> The purpose of the American high school, in the words of an Englishman who sees this more clearly than most of our college professors, is to provide such training and education and practice as seem necessary for the induction of all young men and women in the mores of the society in which they will move. To think that the chief purpose of the American high school is to produce scholarship is to make the whole matter ridiculous, and seriously interferes with getting on with the really fundamental, abiding, difficult problems before us.[3]

And again, from the report of the American Association for the Advancement of Science, we find the following statement:

> The majority of students in high school need the kind of science courses which fit their present interests and their future needs as citizens. Such courses must be well taught to be successful with thorough treatment of topics taken up and with application to consumer problems, personal and public health, the use and conservation of natural resources, international relations and so on.[4]

This report goes on to state further that many colleges have adopted standards of concentration in the major department which make it difficult and often impossible for undergraduates to secure good preparation for teaching in as many as three sciences. While present standards may be appropriate for the future research scientist, they are not good for the future high school teacher. Colleges should provide opportunity for a concentration which shall not lie in one department but which shall spread not too thinly over at least three subjects in the sciences and mathematics.

These comments of the American Academy of Science are true of the preparation of teachers in almost every area. The typical curriculum of a large university or liberal arts college is directed toward the training of specialists and not toward the training of high school teachers. The course offerings which are presented point toward the preparation of individuals who know more and more about less and less. They do not include the broad general problems of a whole field. They may be necessary to produce persons capable of scholarly research and the advancement of knowledge, but there should be some way to select these individuals, and to educate them separately. As Henry Hill has said:

> Our attempt 'to educate everybody' is unique in world history. It is perhaps more an education involving attitudes, and emotions and skills than scholarship and intellect. I have always seriously doubted whether as many as five per cent of the earth's inhabitants had either the capabilities or the interest to become scholars.[5]

It is about time that institutions of higher education recognized this hard fact of life and set up an educational program which would enable scholars to move ahead and, at the same time, enable those who are not scholars to receive the broad, rich education within any subject matter field which will make them

[3] Hill, Henry H. "The Teacher Must Learn His Craft." *The Peabody Reflective*, March, 1949, p. 83.

[4] American Association for the Advancement of Science, Cooperative Committee on Science Teaching, mimeo., 1946, p. 109.

[5] Hill, Henry H. "The Teacher Must Learn His Craft." *The Peabody Reflective*, March, 1949, p. 83.

far better citizens and far better teachers than any of us.

What the prospective teacher needs is broad knowledge in a subject matter field rather than highly specialized knowledge. He needs to be trained within any area so that he understands its broad scope and its interrelationships. Only this training will enable him to acquaint students with its scope and relationships.

Social Culture

The third area in which a teacher must be trained is in that of understanding the nature of society. Much of what has been mentioned earlier under general education fits in here, and I will not dwell upon it further, but merely repeat that it is an area which needs attention.

Human Nature

The fourth area is that of training in the nature of man. It is here that anthropology, sociology, and most particularly psychology should make great contributions. The teacher must have a thorough grounding in the nature of human nature, in the human sciences, so that he will understand how man ticks, what makes him tick, and how to make him tick in different ways.

Professional Methods

A fifth area of education is related to the manipulation of the environment by the teacher. It is the field of professional methods of teaching. These should come late in the education of the teacher, but they should arise out of constant and continuous observation of schools in action, out of the study of the nature of human nature, and out of the nature of society. It is frequently assumed that methods are related to what is taught rather than whom is taught. Colleges and universities multiply methods courses incredibly. There are methods of teaching arithmetic, methods of teaching algebra, methods of teaching mathematics, methods of teaching biology, methods of teaching chemistry, methods of teaching French, methods of teaching Latin, and so on and on, down through the long list of subjects that are offered in the typical American high school. Nowhere do I know of a course in methods of teaching students, yet they, and they alone, are taught.

Methods of teaching, while they may be accepted verbally, become effective only as they are practiced. There must be long and continued opportunities for prospective teachers to do this under the observation of master teachers who can give them criticism, advice, and assistance.

An intensely practical reason for modifying teacher training programs in these ways stems from the very vigorous activities of the Illinois Secondary School Curriculum Program. If I am any judge of what is happening, the schools are developing programs which will call for teachers who must, if they are to be successful, possess training of the type described.

Summary

In summary, the training of teachers is a complex and difficult task. If it is to be effective, it must produce an individual whose knowledge is integrated toward helping students to learn. It must produce persons who are aware of the need for

change, and who seek to develop this awarness in others. To do this, it makes use of broad general education in order that teachers may have desirable personalities. It includes subject area courses which are directed toward an understanding of people and relationships. It includes thorough grounding in the human sciences. It includes long practice in using methods of teaching students.

I have attempted to indicate what, in my judgment, might be a better program for training teachers for tomorrow's schools. One of the more intangible, but most important, attributes of the superior teacher has been left until the last for purposes of emphasis—the terribly urgent need for a better citizenry which comes from the great social problems of tomorrow. When these problems are enhanced in complexity and danger by atomic energy, they cannot be met by skill and competence alone. A deep and abiding sense of the importance of teaching must be left within the heart and mind and spirit of each graduate. There must, of course, be love for children, affection and respect for fellow teachers, a desire to secure increasingly greater competence and belief in the essential human values of democracy.

These are important, but of themselves they are not enough. They must be coupled with a fierce determination, a kind of missionary zeal to make the world a better and a safer place for man because of what is done in school. Developing this spirit is the great task of every institution which is training teachers. In it, we cannot and we will not fail.