

upper elementary grades and at junior and senior high school levels (48).

In 1972, the California State Department of Education published *Framework for Health Instruction*, a comprehensive instructional plan for kindergarten through the 12th grade. The curriculum includes 10 major content areas that are sequentially organized according to conceptual structure. The topic of tobacco receives emphasis at the junior high school level (29).

A scope and sequence chart developed by Willgoose (90) shown in Table 2 is representative of the comprehensive curriculum plans discussed in this section. The assumption is that a school antismoking program has its greatest positive impact on students when it is presented on a systematic schedule, according to a planned progression of expanded and reinforced activities for the student, as depicted in this table.

In contrast to the comprehensive approach to curriculum development, a number of voluntary, commercial, and governmental agencies have developed a great many materials designed to assist and encourage schools to teach about a variety of special or categorical disease problems. For example, curriculum units have been written for schools on such topics as alcohol, drugs, smoking, venereal disease, nutrition, cancer, and heart and lung disease.

Still another approach to curriculum development, initially encouraged by NCSH through the School Health Curriculum Project (SHCP) (23,24), is now being continued by the Bureau of Health Education, Center for Disease Control, in Atlanta, Georgia. This curriculum is designed for the elementary and middle school grades, and while it is not comprehensive, it is a broad-based program of health instruction. Curriculum units are organized around the study of body systems which are presented in sequence with a unit for each grade level. Instruction about smoking and health is integrated throughout this curriculum.

Among the more recent curriculum developments in health education and smoking are programs designed to instruct students about the cardiovascular system and the several risk factors related to cardiovascular disease. Some of these materials have been designed for self-instruction or programmed learning in order to alleviate the problem of training teachers and finding class time for instruction in the school day. An example of this approach is provided by the Cardiovascular Curriculum Education Project (CCEP) (89), sponsored by the National Heart and Blood Vessel Research and Demonstration Center (NRDC) at the Baylor College of Medicine in Waco, Texas.

**TABLE 2.—A scope and sequence chart for a comprehensive health education curriculum**

Suggested topics	Grade emphasis			
	K-3	4-6	Junior high	Senior high
Personal cleanliness and appearance	X	X	Omit	Omit
Physical activity, sleep, rest, and relaxation	X	X	X	Omit
Nutrition and growth	X	X	X	Omit
Dental health	X	X	X	Omit
Body structure and operation (including the senses and skin)	X	X	X	Omit
Prevention and control of disease	X	X	X	Omit
Safety and first aid	X	X	X	Omit
Mental health	X	X	X	X
Sex and family living education	X	X	X	X
Environmental and community health	X	X	X	X
Alcohol, drugs, and tobacco	Omit	X	X	X
Consumer health	Omit	X	X	X
World health	Omit	Omit	Omit	X
Health careers	Omit	Omit	X	X

SOURCE: Willgoose, C.E. (90).

**Application of Curriculum Procedures to Smoking Education—  
Evaluative Comments**

To what extent have the aforementioned principles of curriculum development been applied to smoking education curriculum projects? The comprehensive curriculum projects appear to have applied many of these principles successfully. The content materials reflect an awareness of individual and societal health needs and in most cases reflect a careful and detailed organization of an extensive subject-matter base. However, with the possible exception of SHES, little attention appears to have been given to a theory of learning that would characterize the approach being taken by a particular project. Weaknesses are evident in the areas of evaluation and in-service training of teachers in the use of the materials. Evaluation efforts have been confined largely to the acknowledgement of overall

achievement. Exceptions would be SHES and the New York State curriculum, which were developed with complete sets of curriculum materials and guides for use at all grade levels.

A serious problem is the lack of resources to develop and implement comprehensive curriculum programs. Several States have mandated a comprehensive curriculum without providing the funds needed to carry the project through to a satisfactory conclusion. The extensive in-service education program for the teachers of New York State, supported by the New York State Department of Education, is noteworthy. The health education curriculum developed and implemented in Florida is another example of the effective application of curriculum-development principles.

With regard to the curriculum materials by nonschool agencies on special topics or categorical disease problems, a difficulty arises in the application of the usual procedures to the principles of curriculum development. Much of this material is of excellent quality and technically accurate with regard to the particular problem under study. The difficulty is in applying it to the school situation. The teacher may not be adequately prepared to use the material effectively, or it may be inappropriate for the level at which it is being used. Little opportunity is available for tryout and revision of the material. The most serious difficulty encountered in using special categorical-problem material is determining an effective context in which to relate the special materials to the ongoing curriculum in order to assure an effective learning experience for the student.

These problems can be solved, however, as evidenced by the SHCP (Berkeley Model) curriculum. Designed for the elementary and middle school grades, it has been school-based from the outset and has been extensively tested and used by schools throughout the United States. The careful training of teachers to enable them to follow the curriculum plan precisely, the variety of learning activities and resource materials, and the extensive involvement of students in the learning process are obvious strengths of this program (23).

The fact that the project is so process-oriented may prove to be the most serious problem in disseminating the model. As the project has developed, all teacher-training for use of the program has been confined to the project staff. As a consequence, the curriculum has never been incorporated into the formal programs of preservice teacher preparation in higher education. In addition, original published materials describing the program are lacking; most of the materials used successfully in the curriculum are drawn from existing publications by careful selection and adaptation.

CCEP, representing a categorical disease interest, is considerably broader in scope than many such programs. As reported by White, et al. (89), this program is presently being taught as part of the secondary school health education program in Texas. The curriculum, covering

the cardiovascular system, cardiovascular disease, and associated risk factors, involves approximately 4 weeks of class time at each of the four senior high school grade levels. It has been designed as a programed self-instruction learning guide to supplement teacher instruction in the classroom.

At this point, relatively little has been reported about the effectiveness of this curriculum. However, as noted by White and associates, teachers have rated the materials above-average to excellent. Despite the effort to provide schools with "ready-for-use" self-instruction materials, a survey of teachers indicates that they are clearly in need of in-service training on how to use the CCEP units (89).

### **Development of Demonstration Projects and Identification of Successful Programs**

Particularly in the past decade, a number of promising approaches have been developed to prevent youth from smoking. In this section several innovative approaches are identified. Other projects and programs are presented in the following section, which focuses on the evaluation of educational programs designed to prevent smoking. The information presented reflects a sample of the current literature devoted to these areas.

Assuming that the cigarette smoking habit is a health hazard of sufficient gravity that youth should be encouraged to resist the pressure to smoke, Irwin (42) developed a five-lesson unit on smoking education for seventh-graders. Three different approaches were used: (1) the individual approach, (2) the peer-led approach, and (3) the teacher-led approach. Teacher preparation was also tested; that is, a regular classroom teacher was contrasted with one trained in smoking education. A total of 575 seventh-grade students participated. Results indicated the individual study approach provided the most favorable changes.

The School Health Curriculum Project (SHCP) is another promising educational approach. SHCP is based on the concept that the best way to reduce smoking-related disease to a minimum is to develop broad-based, primary prevention education that leads one to decide with understanding and conviction not to begin smoking (24). The curriculum objectives, teaching methods, learning materials and resources, and pupil activities are organized around the following aspects of the human body: what a wonder it is, how it works, the nature and function of its various parts, what it needs and can do without, what can happen to it, how individual and community choices and the environment affect it, how its problems and diseases can be prevented, and what can be done about them when they do arise. The curriculum is further organized around body systems at different grade levels. Smoking in all of its ramifications is carefully integrated into the

curriculum project. School administrators, nurses, health educators, and other basic curriculum specialists who work with teachers are trained as a team. After intensive training, the teams return to their work setting to develop the model curriculum in two classrooms at their own grade levels. Recognizing the importance of family health practices, the need for parent reinforcement of that which the school curriculum seeks to teach, and the potential of carrying on adult education through children, the model curriculum has many activities specifically designed to involve parents. This project is constantly being evaluated and is currently being incorporated into school curricula throughout the country and abroad (1, 74, 75).

### **Evaluation of Educational Programs Designed to Prevent Smoking**

As previously mentioned, most States have mandated instruction with respect to tobacco. Even in States lacking mandated instruction, programs designed to prevent youth smoking are commonplace. The literature abounds with information relating to specific educational efforts and curricula concerned with the development of objectives, methods and materials, intended outcomes, and teacher training. Generally, the resulting curricula have focused on the development of knowledge about the effects of smoking, creating a greater self awareness of the body structures and functions, altering or reinforcing smoking attitudes, the initiation and continuation of a nonsmoking behavior, or the cessation of an existing smoking habit. However, while the literature is replete with examples of educational programs, evaluative results on their effectiveness are much less obvious. More often than not such programs are merely assumed to be effective. When evaluation is conducted, it is generally limited to assessing effectiveness in the cognitive and affective domains. Less frequent are evaluative studies of educational programs relating to behavioral outcomes and, in particular, measures of long-term effectiveness. Evaluations of programs using retrospective and prospective designs are infrequent. The absence of control groups or studies involving assessment of the interaction between teacher and method is evident (68). Even when evaluative efforts demonstrate the inherent success of a program, replication rarely occurs.

Another difficulty that limits generalizations from assessments of educational programs to prevent smoking is the lack of uniformity in classifying behavioral groups. That is, different rates of smoking behavior between studies may be due in part to the utilization of dissimilar criteria. The principal difficulty in making meaningful comparisons of study results is the lack of a standard definition of the smoker. To illustrate this problem, the definitions employed in youth smoking research include the following: Sallack's study (77) of junior

and senior high school students in Erie County, New York, identified a smoker as a person who has smoked at least five packages of cigarettes. Haynes, et al. (34) defined a smoker as one who has smoked at least one cigarette a day. Salber, et al. (76), in their study of high school students in Newton, Massachusetts, defined a smoker as one who had smoked at least 10 cigarettes or was personally described as a smoker at the time of the survey.

Obviously, attention should be directed to developing a standard glossary that precisely defines a particular behavior. Also, researchers should specify their operational definitions when discussing their findings. Because of difficulties in these areas, NCSH (now the Office on Smoking and Health) has encouraged the use of a common definition of a smoker in investigations conducted in the United States (86). For example, a current regular smoker is defined as one who reports smoking one or more cigarettes per week or one or more cigarettes per day. A current occasional smoker is one who reports smoking regularly but who smokes less than one cigarette per week. An experimenter is one who has smoked at least 1 cigarette, even if only for a few puffs, but who has smoked less than 100 cigarettes in his or her life.

The result of the above-mentioned limitations is that education programs generally reflect a fragmented, shotgun approach to the prevention of smoking by youth. In 1967, Davis summed up in these words the state of affairs at that time: "It can't be overstressed that general or shotgun approaches have got as much effect as indiscriminately relying on aspirin as the treatment for every person entering a doctor's office. Yet, in many regards this is similar to what we do in our smoking and other health teaching" (32). Nearly a decade later, he repeated this same theme at the Third World Conference on Smoking and Health (24).

Despite present limitations, a review of the literature indicates a broad range of experimentation with educational programs. Approaches include traditional methods, such as lectures or group discussions, as well as techniques like emotional role playing.

A useful method of categorizing programs designed for youth has been developed by Thompson (84). He classified programs into four general, but not mutually exclusive, categories: schoolwide antismoking campaigns, youth-to-youth programs, comparisons of teaching methods, and studies of the relative effectiveness of various message themes. Following are brief discussions summarizing the results of projects grouped by category.

### **Schoolwide Campaigns**

Schoolwide antismoking campaigns have generally been found to be ineffective in changing smoking behavior (28, 36, 45, 56, 58, 72). A variety of techniques have been used, including lectures, discussions,

rap sessions, demonstrations, and assemblies. Frequently, mass media approaches, including pamphlets, films, posters, and information in school newspapers, have been attempted. While there is some support for such programs with respect to attitudes and behavior concerning smoking (27, 28), most of them have failed to assess or demonstrate any significant effect upon smoking behavior.

### **Youth-to-Youth Programs**

A commonly used approach in youth antismoking programs is one in which older students, usually at the junior or senior high school level, conduct activities designed for students at a lower grade (8, 9, 14, 15, 37, 41, 46, 51, 71). Generally, evaluative results of the effectiveness of these programs are not included in the literature describing them.

One youth-to-youth program that included an evaluative component and has reported results is the Saskatoon study (46, 70, 71). This student-directed program on smoking education was initiated in the fall of 1968 in 39 schools of the Saskatoon Rural Health Region. Two major objectives were to obtain information on the smoking behavior of 7th- to 12th-grade students and to assess the effectiveness of peer group involvement in smoking education programs that were developed by the students. Emphasis was placed on the healthful aspects of nonsmoking rather than the harmful effects of smoking. Eighth-grade students attended a regional seminar on smoking and health and were encouraged to plan projects on smoking education in their schools. After the 2-year study period, no significant difference was noted between the smoking habits of the students who were exposed to the student-directed educational program and those who were not.

### **Teaching Methods**

Studies in this area generally focus upon the relative effectiveness of one method compared with another (19-22, 40, 42, 53, 88). Most of them include a pre/post test design, but few include a control group. Effectiveness is most commonly assessed in the cognitive or affective domains. Less frequently assessed is the effectiveness of varying methods upon smoking behavior. When this component is evaluated, the amount of positive behavioral change is found to be relatively minor.

Prior reference was made to Irwin (43), who compared the effectiveness of teacher-led, peer-led, and independent study approaches upon students' attitudes, beliefs, and knowledge of smoking. In the individual approach, the educational effect depended on the student's own study and interpretation of the curricular materials, and any teacher contact had to be student-initiated. Students assigned to the peer-led approach studied the same materials, but presumably were also affected by the class discussion with their peers. The teacher-led approach had the combined effect of the materials, individual

study, peer-group discussion and the teacher's skill in an attempt to achieve the maximum educational effect. Results indicated that students taught by the individual study approach showed more favorable changes than did students instructed by either the teacher-led or peer-led methods.

In another study concerning the effectiveness of three methods of teaching about smoking, Crawford (19, 20) found that neither the committed approach (teacher said that she felt smoking was undesirable) nor the neutral approach (effects of smoking were related to other topics in the five short incidents during the semester) were associated with behavioral change. The committed approach was found most effective with regard to increased knowledge while the neutral method was determined to be least effective.

Watson (88) reported mixed findings in a study on the effectiveness of four teaching methods upon student knowledge, attitudes, and behavior. The four techniques were a didactic approach, group discussion, psychological persuasion, and a combination of all three approaches. Behavior was most affected by the didactic approach, attitudes most by the psychological persuasion technique, and knowledge by the combination method. In all instances, the group discussion method was found to be the next most effective and was considered overall to be the most promising technique.

Several studies have compared the effectiveness of three approaches: presenting both sides of an issue, encouraging students to assume adult roles, or presenting all educational material in an authoritarian manner. Conflicting results from these three approaches have been noted. Horn (40), in a study of Portland youth, found the two-sided approach most effective. Neither of the other techniques resulted in a greater degree of behavioral change than in the control group. In a replication study involving Illinois youth, part of a larger University of Illinois Antismoking Education Study (UIAES), Creswell, et al. (21, 22) reported the adult-role method most effective and the two-sided approach least effective.

In another aspect of UIAES, Merki, et al. (53) found no significant differences in changing smoking behavior between a mass-media and a student-centered approach at the 11th grade level. Both methods were found equally effective in changing behavior at the 8th grade level. Also at that level, the student-centered approach resulted in a significantly more desirable change in smoking attitudes.

### **Message Themes**

As in other types of programs previously mentioned, the evaluation of various message themes has generally shown that such programs have little effect on smoking (45, 49, 73). One of the most commonly used themes is the health hazards of smoking. Although some programs using this theme have resulted in significant changes in knowledge and



attitude generally (67, 69, 73), no effectiveness has been demonstrated with respect to smoking behavior. In fact, one program reported an increase in smoking (7).

Also, studies comparing the effectiveness of immediate short-term versus remote or long-term effects have failed to produce consistent results. Horn (40) found the remote theme more effective in reducing smoking among boys. For girls, both methods appeared equally effective in changing behavior. In the University of Illinois study, Creswell, et al. (21, 22) found the contemporary theme more effective, while Merki, et al. (53) reported both themes equally effective.

In summary, a variety of educational approaches involving both mass media and instructional methods have been implemented and evaluated. Results most frequently indicate a lack of measurable effectiveness. When effectiveness is demonstrated, replication often fails to support a given approach. Inconsistency of findings is commonplace. Thus, in terms of effectiveness, educators have relatively few tested models to channel their efforts. This state of affairs dramatizes the necessity of program evaluation research in this area. For those concerned and involved in preventing or reducing the smoking habits of youth and adults, Dr. Luther Terry, former Surgeon General of the United States, offered sage advice. In concluding the World Conference on Smoking and Health, Dr. Terry commented: "This is our job, to educate people. I don't think it will take us a hundred years, but it will take much more time, much more effort, and much more imagination than we have exercised thus far" (91).

### **Dissemination and Promotion of Successful Practices and Products**

A broad range of publications exists for the dissemination of information relating to successful program practices and products concerning education to prevent youth smoking. These publications generally take the form of professional journals or abstracts of current literature. One of the most useful of all sources is the abstracts of current literature published by the Office on Smoking and Health. Their *Smoking and Health Bulletin* is published approximately every 6 weeks and is printed annually with a cumulative author and subject index as the *Bibliography on Smoking and Health* (62, 63). All items cited are part of the permanent holdings of the Office on Smoking and Health and are maintained in its Technical Information Center (TIC). The technical collection presently consists of over 26,000 documents. One of the major areas covered in these abstracts is behavioral and educational research related to smoking. TIC also provides bibliographic and reference services to researchers and others and publishes and distributes a number of titles in the field of smoking. Through its Automated Search and Retrieval System, containing over 10,000

citations, TIC has computer capability to generate comprehensive bibliographic print-outs on many topics of current interest, including education programs, in smoking and health. Generally, the materials disseminated by the Office on Smoking and Health and other health-related governmental agencies provide an adequate departure point for those with a particular interest in the area of education about smoking.

A wide variety of information and materials are also disseminated by those voluntary health agencies having an interest in smoking education, many of which have developed, tested, and supported research focused upon the prevention of smoking by youth. A number of these agencies have developed and packaged curriculum materials in this area, generally available at little or no cost to educators.

However, problems exist with respect to dissemination of information about successful practices and programs. In part, this situation arises because of the magnitude of the total amount of information available on smoking and health. There is simply so much written about the overall issue that information regarding successful educational endeavors is often buried in the literature or presents an overwhelming challenge to the individual looking for one aspect of the larger issue. Another problem is the lack of generalization of available information. Currently, most studies are isolated in that they are conducted at the local level. Lacking the advantage of generalization, at least at a regional or State level, these efforts often go unreported, get lost in a multitude of other such projects, or are dismissed as being too narrow to permit generalization to the broader population. Unfortunately, among the few programs reported to be successful, replication is uncommon. Thus, it is not surprising that dissemination of information from replication of successful programs is infrequent.

One of the most useful actions to improve this situation would be a periodic focusing upon both successful and unsuccessful educational programs. In this manner, the information would more likely filter down to the classroom teacher and develop a greater interest in the research community to conduct, replicate, and evaluate programs dealing with the education of youth.

## **Teacher Education**

### **Certification of Teachers and Consultants**

As with most areas of education in our nation, there is a pluralistic approach to instruction on youth and to the responsibilities for education about smoking. As previously mentioned, most States have some formal requirement for mandated instruction regarding tobacco. The status of instruction and certification in the area of smoking has been assessed in a nationwide survey conducted by the American School Health Association (14a). Most often, smoking education

instruction was found to be the responsibility of a teacher certified in health education or health/physical education. Specifically, 30 States certify teachers of health education; 10 of these States offer dual certification in health and physical education. Two States and the District of Columbia offer only dual certification in health and physical education. One State offers certification in physical education only. Another State offers certification in health and safety education. The remaining 17 States have either no specific requirements or have only general teacher-certification requirements for school health educators.

While the trend is for increased certification for instructors in the health area, the fact that nearly one-third of the States have either no requirement or only general teacher-certification requirements for school health educators raises a serious question as to the quality of instruction about smoking. Instruction in health is often delegated to teachers with insufficient training in health education in general and smoking education in particular. There is also significant variation between States as to what comprises certification in the area of health education. At present, no uniform standards exist. This condition, coupled with the lack of certification in many States and the importance of education about smoking, creates a significant challenge in this area. It appears that the potential of education related to youth smoking is most enhanced when the instructor meets the requirements of a certified school health educator. Where health education certification is required, the instructor almost invariably has had course work in the areas of drug education, including tobacco. Generally, curricula in health education include preparation in personal health, growth and development, health behavior, educational psychology, mental health, group dynamics, anatomy, and physiology, as well as formal training in materials and methods of teaching health education. A summary of the current status of school health educator certification is presented in Table 3.

**TABLE 3.—School health educator certification**

<i>State</i>	<i>Health education</i>	<i>Health, physical education</i>	<i>Comments</i>
Alabama			Must have minor in health, physical education, and/or recreation
Alaska			Teacher certification only
Arizona			Teacher certification only

Arkansas	X		17 semester hours of health education
California	X		
Colorado			Teacher certification; additional requirements may be set by local school district
Connecticut	X		
Delaware	X		
Florida	X		
Georgia	X	X	
Hawaii	X	X	
Idaho	X	X	
Illinois	X		
Indiana	X		
Iowa			Teacher certification only. Certification in health education pending
Kansas	X		
Kentucky	X		
Louisiana	See Comment		Listed as health and safety education certification Teacher certification only
Maine			
Maryland	X		
Massachusetts	X		
Michigan	X		
Minnesota	X	X	
Mississippi			
Missouri			No requirements
Montana	X	X	
Nebraska	X	X	
Nevada			No requirements
New Hampshire			No requirements
New Jersey			NASDTEC standards
New Mexico	X		
New York	X		
North Carolina			
North Dakota			No requirements
Ohio	X		
Oklahoma		X	
Oregon	X		
Pennsylvania	X		

Rhode Island			Physical education certification
South Carolina	X	X	
South Dakota			No requirements
Tennessee		X	
Texas	X	X	
Utah			Major or minor in secondary education in health
Vermont			No requirements
Virginia	X	X	
Washington	X	X	
West Virginia			Competency-based teacher education certification
Wisconsin	X		Separate certification for health and physical education
Wyoming	X		No requirements
District of Columbia		X	

SOURCE: American School Health Association. (14a).

### Preparation of Elementary Teachers and Health Education Specialists on Smoking Education

The school as an institution is particularly sensitive to the forces of a democratic society, which often are reflected in the school's programs and in the teacher's preparation. The dynamic condition of modern life and the related societal pressures spawn new issues and problems which place special demands upon the teacher and the school. The role of the school and the purposes of education in today's society remain a source of continuing debate.

Massanari, et al. (50) observed that there is "a continuing and sometimes increased expectation that schools as social institutions should cure a variety of social ills." In addition, they pointed out that "there is a growing realization of the inadequacy of the knowledge base which supports the education of teachers, as well as an increased awareness that education research should focus on current problems faced by classroom teachers." If, in fact, the knowledge base of teachers presently employed in the nation's schools is inadequate, retraining and in-service education assume paramount importance. If current problems facing teachers require more carefully researched answers, educational research must delve into those areas.

The generalization could be made that in the United States the undergraduate program of teacher preparation of elementary teachers includes little or no course work in health education, or more specifically, in smoking education. The course time required for preparation in the areas of language, the arts, mathematics, social studies, and science is so extensive that very little time remains for other subject areas. For example, Illinois requires that students preparing for the field of elementary education elect 3 to 5 hours of physical education or health education course work in the total 4 years of their preparation. Occasionally, students may elect more course work in this area, but that would be the exception.

As a result, when health education courses or smoking education are added to the instructional program at the elementary school level, either by State mandate or local decision, in-service training must be employed. Recognizing the need for in-service education of teachers, NCSH contracted with AAHPER in 1970 for the development of a leadership training program for health educators. It was envisioned that these health educators could be prepared to conduct a series of in-service training programs on smoking and health education for classroom teachers, who would then be prepared to teach this material in the classroom.

The project developed a training program to be presented in a workshop format of 1 to 3 weeks' duration. Topics usually covered in these workshops included: (1) the physiological and behavioral aspects of smoking, (2) a review of local, regional, and national health agency resources available to teachers, and (3) a study of the methodology of teaching for behavioral change (3).

Other workshops were held that dealt with issues related to smoking and health, such as curriculum development and the development of new models for integrating smoking and health with other subject areas. These special training workshops were unique in that they were not related to a specific program of smoking and health. Instead, they were created to meet an obvious need of the classroom teacher, or as Massanari, et al. (50) postulated, to focus on the inadequacy of the knowledge base of teachers, as well as to develop an increased awareness of problems currently faced by the classroom teacher.

Another problem confronting the classroom teacher is the need for training to implement a new curriculum or an innovative curriculum design. SHCP is a good example of such teacher training. This program offers the teacher 2 weeks or 60 hours of intensive training on each of the body system units. Teachers are given specific training in only one unit of the program at a time. After the training, they return to their schools to teach the program to their students, using the materials and the teaching activities studied in their training session.

After the teacher has successfully taught the program presented at the training session, he or she must then conduct a training session for other teachers in that district in order to assure the dissemination of the model. This type of training has been used successfully with classroom teachers who have had little or no formal preparation in health education.

#### *Professional Preparation in Health Education*

While the report of the Society for Public Health Education, Inc. (82) does not speak directly to the preparation of teachers, its recently adopted guidelines for preparation of health educators are a significant influence throughout the field of health education. Moreover, the Society's statement on health education that accompanies the report effectively sets forth the purposes and the methodology of the professional health educator:

Health Education is concerned with the health-related behavior of people. Therefore, it must take into account the forces that affect those behaviors and the role of human behavior in the prevention of disease. As a profession, it uses education processes to stimulate desirable change or to reinforce health practices of individuals, families, groups, organizations, communities, and larger social systems. Its intent is the development of health knowledge, its exploration of options of behavior and change and their consequences (82).

In recent years, several national professional organizations have issued reports on the guidelines or recommended standards of preparation for health education. In 1972, AAHPER issued a report; in 1976, the report by the ASHA Committee on Professional Preparation and College Health Education was released; and, in 1977, the Society for Public Health Education, Inc. published its guidelines (3, 12, 82).

These reports have taken the form of performance standards, competencies, functions, knowledge concepts, and course content experiences. Schaller (79), in an article published in 1978, reviewed the reports and identified common areas of professional preparation in health education. The common areas included the following: (1) foundational sciences of physical and biological science, (2) behavioral sciences, (3) a common core of health content courses, and (4) the skills of professional practice.

Preparation experiences of relevance to planning and to the conduct of smoking education programs are evident in each of the programs being recommended for preparation in health education.

Traditionally, these curricula of study have been designed to prepare the student for work either in school or in community health education. However, as the field has evolved, it has become evident that the foundational preparation of the undergraduate is becoming more

closely aligned with both school and community objectives. The student is benefited greatly from study and experience in both the school and the community settings. The skills and knowledge required in each area are in fact complementary and serve to increase the effectiveness of the health educator. Of special benefit is the increased time devoted to professional practice experiences resulting from participation in school observations, practice teaching, and in the community field work experience.

#### *The Effects of Teacher Training and Teaching Methodology*

Some experimental research has been conducted to test the effectiveness of teacher preparation. Irwin, et al. (43) conducted an experimental study using a factorial design to test the effectiveness of teacher preparation by comparing the regular classroom teacher and a health education specialist with special training in smoking and health. Three different instructional approaches were employed: a teacher-led group, a peer group, and an individual study approach. Each of the approaches (or teaching methods) employed the same curriculum material and sequence of lessons. This was done in order to hold constant the influence of the materials in each of the experimental groups while varying the educational approaches. In general, the experimental program was favorably received by both teachers and students. Perhaps the finding of greatest importance in this study was that students taught by the regular classroom teachers achieved significantly higher attitude belief scores (more favorable nonsmoking scores) than did the students taught by the specially trained teachers. While the specialists successfully imparted information, they apparently were less effective than the classroom teachers in developing positive nonsmoking attitudes, perhaps because, as outsiders, they may have upset the emotional climate of the classroom.

An experiment conducted by Swanson (83) examined the relative effectiveness of two educational approaches in drug-abuse education (including the area of smoking). A values-oriented approach was compared to a more traditional approach to teacher training. The experimental treatment involved a 3 1/2 day intensive live-in training session for 78 elementary school teachers in Illinois. The immediate effects were measured in terms of the teachers' knowledge gains and attitude changes resulting from the effects of the workshop training sessions. After the teachers returned to their schools and taught their classes, a further assessment of the training was determined by testing for effects on the students. The students were evaluated on the educational experience they had received and on how they evaluated the teacher, their knowledge gains, and their attitude changes.

The effects of the workshop-training experience on the teachers produced significant knowledge gains in both the values-oriented and



traditional-approach groups. Both groups made significant shifts toward healthy attitude scores.

The effects of the teacher training on the students were significant knowledge gains produced by both values- and traditionally-trained teachers, with the traditionally-trained teacher's students making significantly greater knowledge gains. The investigator suggested that the evidence supported an educational program that includes a combination of traditional and values activities.

#### *The Teacher's Role In Smoking and Health*

A number of studies have been conducted on the smoking behavior of adults since the issuance of the 1964 Surgeon General's report. However, relatively little research has been done on the teacher's smoking habits. This is significant since it is often acknowledged that teachers have the greatest potential influence upon the developing attitudes and smoking behaviors of the young. One of the first of these studies was that of Morris, et al. (59) on the smoking habits and attitudes of Oregon high school coaches. The principal objectives of the study were to determine the past and present smoking habits and the attitudes of the coaches towards cigarette smoking as a health hazard. Results showed that 44.4 percent of the coaches had at some time been regular smokers. At the time of the survey only 29.2 percent were still smoking. A large majority of those who had stopped smoking had done so because of the scientific evidence linking cigarette smoking to disease. It is apparent that these coaches had accepted their responsibility for smoking education. Moreover, they believed that their own attitudes towards smoking have a significant influence on their students and athletes.

Newman (65) conducted a study of smoking among New York City teachers. The assumption underlying her study was that teachers will necessarily play a key role in any solution to the problem of youth smoking because of their influence as a role model. Thus, the purpose of this investigation was to determine how teachers perceived their roles in smoking education. In response to questions about their own smoking behavior, most teachers expressed the belief that they could not be effective in smoking education if they themselves were also smokers. Among this sample of teachers, 31 percent were current smokers. While a large majority approved of teachers smoking in a teachers' lounge, they did not approve of teachers smoking on school grounds in front of students. Also, they did not approve of the school providing smoking facilities for junior high school students. Approximately three-fourths of these teachers believed that they could influence student smoking and that teachers who were nonsmokers and ex-smokers would be most effective with students.

Chen and Rakip (16, 17), writing about their own research on the smoking behavior of teachers, suggest that school antismoking

education efforts have not been successful because these programs have not been attractive to youth. They point up the importance of the teachers' role, contending that schools need the services of a teacher who is prepared in health education to help schools develop policies and to implement more effective educational approaches. They also stress the importance of the teacher as a role model. In their study of a sample of New England teachers, Chen and Rakip found a relatively low rate of smoking among teachers, with 26.5 percent of them current smokers and another 27.2 percent ex-smokers. As pointed out earlier, students generally overestimate the number of teachers who smoke. With respect to smoking education, the nonsmoker and ex-smoker teachers expressed a sense of responsibility for setting "a good example" for students. Again ex-smokers and nonsmokers appeared to be much more convinced of the relationship between smoking and disease than current smokers. The researchers concluded that the general climate in schools today is conducive to smoking education.

#### *The Teacher as a Role Model*

As noted, there is a general recognition of the importance of the teacher's role in smoking education. While there has been a lack of research on the effects of the teacher, the uniqueness of the teacher's position as a role model is repeatedly stressed. As expressed in the position statement of AAHPER, to be effective in smoking education, the teacher's position must be clear and unequivocal:

In addition to having the facts correct in smoking education, it is also equally important to know how you truthfully stand on this vital health issue—what your own personal feelings and attitudes are about smoking. It is essential that your behavior honestly reflect your convictions (5).

### **Recommendations**

#### **The Status of Education About Smoking in U.S. Schools**

1. A nationwide study should be conducted to assess the effect of current teaching efforts on the prevention and cessation of smoking behavior.
2. A study of the different patterns of instruction should be undertaken in order to determine the effects of this instruction on the attitudes and smoking behavior of youth. For example, is there a relationship between the knowledge, attitudes, and smoking practices of students and particular instructional programs, such as special units on smoking education or instruction organized through a comprehensive health education curriculum?
3. Retrospective surveys of student smoking should be initiated in mandated and nonmandated instructional programs in order to assess

the comparative effects of such instruction on student knowledge, attitudes, and smoking behavior.

4. A study should be undertaken to assess the degree to which States with mandated programs are meeting their responsibility.

### **The Development and Implementation of School Policies on Smoking**

5. School districts should take the initiative to develop interagency advisory committees on smoking and health to assist schools in the development of school smoking policies. A supervisory committee might include such groups as the local health department, voluntary health agencies, PTA's, and law enforcement agencies.

6. A study should be conducted on the effects of different types of school policies on student smoking behavior. For example, are some school policies more effective in reducing overall smoking behavior both in and outside school settings?

7. The effects of a permissive school policy that permits older students to smoke should be investigated as they bear on the concomitant smoking attitudes and behaviors of younger students.

8. The rate of respiratory illnesses among smoking and nonsmoking school-age students should be investigated.

9. Comparative studies should be conducted of the different approaches employed by school boards in developing school policies on smoking (such as policies by school board edict and policies democratically developed) in order to test the possible relationship between policies and the institutional climate of the school (that is, "sense of freedom" and "control"). Also, such studies should provide further information about relationships between policies, institutional environment, student attitudes, and smoking behavior.

10. Retrospective studies should be conducted of contrasting school policies on smoking, such as nonsmoking and student-approved smoking, to examine the possible relationship between school policy, student attitudes, and smoking behaviors.

11. School and community-based educational programs aimed at the prevention and cessation of smoking should be promoted.

12. Research comparing the effectiveness of school- and community-based approaches with traditional school instructional programs should be supported.

### **Curriculum**

13. School officials should initiate steps to integrate special smoking education programs into those established areas of the school curriculum which have natural or logical relationships to the subject matter of smoking and health.

14. Agencies sponsoring the development of educational materials on smoking and health should provide sufficient resources for the orientation and training of teachers in the use of these new materials.

15. Agencies providing funds for research and evaluation of new curricula should encourage innovative research methodology that will enable the investigator to assess the effects of these new curricula and, at the same time, to overcome some of the weaknesses in attempting to apply traditional experimental methods in the school setting.

16. Efforts should be undertaken to develop materials that have been specifically designed for use with the School Health Curriculum Project (SHCP). Such school materials should be readily available to schools and to teacher education institutions to facilitate the testing, evaluation, and implementation of the SHCP program.

#### **Development of Demonstration Projects and Identification of Successful Practices**

17. In light of the encouraging results of several projects, strong consideration should be given to continued support of promising demonstration projects.

18. Replication of successful practices should be promoted.

#### **Evaluation of Educational Programs Designed to Prevent Smoking**

19. Evaluation should be incorporated into all programs designed to prevent smoking, utilizing both retrospective and prospective designs.

20. The evaluation component of educational programs designed to prevent smoking should include assessment of cognitive, affective, and behavioral outcomes.

21. Evaluation should include both short- and long-term measures of program effectiveness.

22. The use of uniform definitions to classify behavioral groups (regular smokers, occasional smokers, ex-smokers, nonsmokers, and never smokers) should be encouraged for purposes of establishing a basis for comparison.

23. The lack of demonstrable effects of most educational programs shows the need for continued support of program development and education.

24. Provision for replication should be incorporated into the evaluation process.

#### **Dissemination and Promotion of Successful Practices and Products**

25. Greater attention should be directed toward the dissemination of research findings and successful educational programs specifically designed to prevent or modify smoking practices. This information should be readily available for incorporation into school curricula.

26. Programs and practices identified as successful in one setting should be replicated in others in order to evaluate the consistency of findings.

27. Projects identified as successful should be replicated before being implemented on a State or regional level.

### **Teacher Education**

28. Greater emphasis should be placed on the preparation of specialists in health education, including the area of smoking and health.

29. All prospective elementary teachers should have some preparation in health education, including the relationship between smoking and health, as a part of their pre-service preparation.

30. The extent of teacher preparation in smoking education provided by teacher education institutions should be assessed.

31. Efforts should be made to establish uniform minimal State certification standards for the preparation of health-education specialists and for the health education preparation of classroom teachers on the subject of smoking and health.

32. Special emphasis should be given to the development of alternative mechanisms for providing in-service and continuing education for classroom teachers in health education, including smoking and health. These programs should be formally linked to institutions of higher education to enable teachers to receive academic credit for special preparation.

33. Research should be encouraged to test the relationship of teachers' smoking behavior to students' attitudes and smoking behavior.

34. Longitudinal studies should be conducted to test the effects of different instructional patterns and different patterns of teacher preparation on students' attitudes and smoking practices.

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