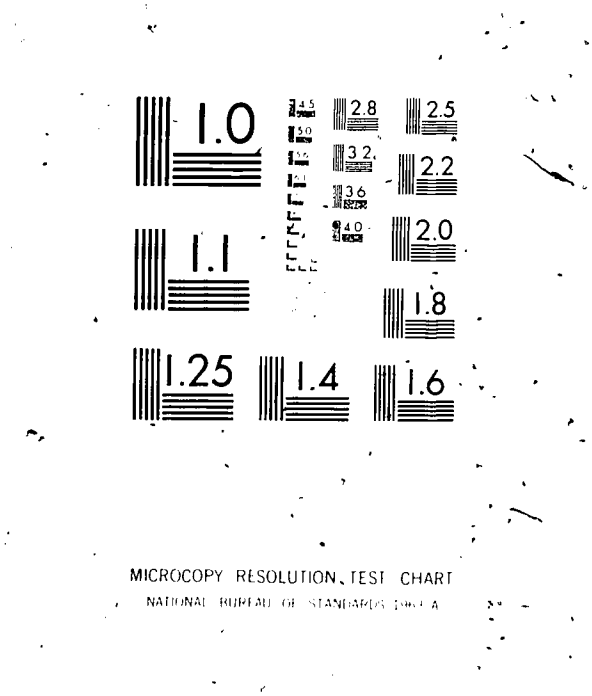

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ABSTRACT

A health education curriculum for secondary school and undergraduate college students is described. The prime emphasis in this curriculum is upon behavior modification and personal motivation on the part of the student. Strategies for modifying health behavior are outlined stressing the importance of students understanding and clarifying their personal values and goals. Working with the teacher, students develop a health program of their own after participation in basic medical laboratory experience that provides an understanding of their physical condition and needs. Both biomedical evaluation and behavioral inventory analysis are used in this instructional phase. A sample of a student-developed program is appended. (JD)

INFLUENCING BEHAVIOR THROUGH INSTRUCTION:

METHODOLOGY IN HEALTH EDUCATION

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INTRODUCTION

What is health education? In a recent article, Means proposed the following definition:

> Health Education is: an academic field and subject, with content and objectives that are intellectual and academic in nature; a relatively new discipline, in terms of modern concept; an applied science, which is derived from the biological and behavioral sciences; and a needed approach to bridge the gap between scientific health discoveries and man's application (1969, p. 211).

The development of health education as we know it today is a relatively recent phenomenon. Yet from a historical standpoint, health education has been a prime objective of virtually every significant group in American education dating back to this country's early history. As Galli pointed out, "The writings of Henry Barnard, the first Commissioner of Education in the United States, Benjamin Franklin, and Horace Mann did much to advance health education in the early years of American education" (1976, p. 161).

As the profession grew, most advances in health education took place to conform to current social concerns; that is, each time a health crisis was perceived, a greater emphasis was placed on education for prevention. Some examples are past programs of infectious disease control, fluoridation, and more recently anti-drug use campaigns. The discipline has demonstrated continual growth culminating in acceptance and support from nearly all major educational and health institutions, including the National Education Association, the World Health Organization, and the American Medical Association. Furthermore, health education as a formalized independent discipline is now mandated in some capacity by 46 states and the District of Columbia.

CURRICULUM FOR THE FUTURE

In 1970 Alvin Toffler released the highly acclaimed bestseller, Future Shock. Within this treatise on sociology, science, and psychology is a fascinating discussion of education. In a section on the curriculum of the future, which in effect offered a strong endorsement of health education, Toffler stated, "The curriculum of tomorrow must thus include not only an extremely wide range of data oriented courses but a strong emphasis on future relevant behavioral skills. It must combine variety of factual content with universal training in what might be termed life know-how" (p. 209). Elsewhere he said, "As for curriculum, the Councils of the Future, instead of assuming that every subject today is taught for a reason, should begin from the reverse premise: nothing should be included in a required

curriculum unless it can be strongly justified in terms of the future" (p. 418).

The advice of Toffler, a non-health educator, is remarkably consistent with predominant opinions within the health education profession. Rather than emphasize the past, health education should look to propose solutions for the future. Long relegated to a position of secondary importance in the overall curriculum design, health education can become one of the dominant forces in education in the formalized school structure of tomorrow.

If society hopes to curtail the rising instance of chronic disease, social maladjustment, substance abuse, and a litany of other potential problems, it must seek feasible methods of prevention. Skyrocketing medical costs and the ineffectiveness of treatment can no longer serve as the only alternatives. The health education profession, therefore, must demand from society continued support and financial backing; and from itself accountability, progressive research, and fresh ideas.

METHODS IN BEHAVIOR CHANGE: A REVIEW OF CONTEMPORARY HEALTH EDUCATION STRATEGIES

With the rising costs of education and the public outcry for accountability, current trends in education have been toward performance-based evaluation. Many sectors of the educational system have used this approach, usually in the form of knowledge or skill acquisition tests. However, the nature of health education, where knowledge or skills per se may have no relationship to future desired outcomes, does not lend itself to this system. Means said, "Health is determined not by what we know but what we do" (1969, p. 211).

Unfortunately, most recent documentation in health education has centered on attitudinal and knowledge change, under the assumption that knowledge acquisition coupled with attitudinal change will culminate in appropriate behavior at some future point in time. Such thinking may not be realistic, since the necessary motivational mechanisms may never materialize to prompt the desired outcome. Furthermore, like the paradigm of the chicken and the egg, there is a question about which takes place first, attitude or behavior change. Therefore, the only accountable measure of successful health education must be actual behavior change. Malmisur wrote, "In the final analysis, effectiveness of instruction in health education is measured by behavioral modification. Therefore it seems professionally imperative that we seek explicit descriptions of methods for the instructor to order sequentially the complex learning process" (1969, p. 140).

In attempting to make assumptions about the most plausible means of behavior change, one must review both successes and failures of past research. As noted earlier, the literature is replete with attitudinal and knowledge oriented reports; however, legitimate research in behavior change is limited. This section will not be exhaustive of such work but will address a broad spectrum of current topics.

There are probably as many techniques in behavior change as there are health educators. Theories abound but empirical evidence is limited. Reviewing the various approaches current within the profession, I have concluded that three particular modes stand out and deserve comment: (a) behavior modification, (b) self-management, and (c) activated health education. These methods have all demonstrated various degrees of success. In addition, they are consistent with contemporary thinking in educational psychology and are feasible for virtually any school use.

BEHAVIOR MODIFICATION

Behavior modification evolved from the behavioristic school of thought in psychology that originated under Wilhelm Wundt in Germany in the late 1800s. The behavior movement developed the principles of conditioning, with B. F. Skinner as its most renowned proponent. Behavior was thought of as

conditioned reflexes whose discrete responses could be modified through environmental manipulations. Later, the application of behaviorism to real problems became known as behavior modification.

Behavior modification is a means of changing behavior by rewarding the appropriate behavior while ignoring or disapproving unwanted behavior. It was first used in dealing with the mentally ill. After success in that area, behavior modification was introduced in education and later in other settings such as day care centers, prisons, and nursing homes.

Greenberg (1975) described modification from the health education perspective as a method by which teachers determine to a certain degree the behavior of students. The first step in behavior modification is to establish a goal or target behavior. This may mean the acquisition of a particular behavior, such as the flossing of teeth, or the elimination of a negative behavior, such as smoking. Once the goal or target behavior has been identified, students who demonstrate appropriate examples of such behavior are rewarded with reinforcers. In the school setting, these reinforcers take the form of materials such as toys or candy; privileges; and social interaction involving status, praise, and attention from adults. Negative reinforcers--criticism, threats, loss of status, withdrawing of privileges--are used in an attempt to eliminate undesirable behavior. In addition, desirable behaviors are broken down into sub-behaviors which are reinforced either positively or negatively until the desired outcome is obtained; this process is called "shaping."

Key elements have been refined through research, and the following suggestions are offered to improve effectiveness:

1. Reinforcement should occur immediately after the behavior.

2. Reinforcement should be clearly associated with the behavior.

3. Reinforcement should be continuous.

4. Reinforcement of little gains (shaping) should be used at first.

5. Positive reinforcement should be emphasized over negative reinforcement.

Modifying Health Behavior

In health education literature, examples of the use of behavior modification exist but are limited. Evans (1973) reported the success of using behavior modification in oral hygiene programs. In addition to the general techniques of behavior modification discussed earlier, Evans suggested repeating instructions, providing feedback or knowledge of

results to subjects, presenting messages encompassing various combinations of fear and positive appeals, and providing very specific oral hygiene skill training rather than general instructions.

Greenberg (1977) compared the effects of behavior modification with those of alternative teaching modes including traditional, student centered, and combination approaches and found no significant differences in behavioral outcomes. Despite these results, numerous instances of success in non-school settings support the use of behavior modification.

Hunt and Matarazzo (1973) successfully used behavior modification for smoking cessation programs; the authors advocated supportive measures such as regulated exercise, relaxation training, and relevant recreational and social activity as adjuncts to behavior modification. Evans (1973) also suggested the use of booster sessions at periodic intervals to maintain the desired behavior.

In weight control, another area of concern in health education, Werner (1976) emphasized the success of behavior modification as compared to other accepted measures such as diet restriction, medication, and even surgery. Werner said, "Scientific evidence supports the notion behavior modification is the best remediation plan for weight reduction and permanent weight control" (p. 602).

Modifying Values

Behavior modification is not without valid criticism. First, behavior modification may present an oversimplification of the complexities of behavior. Also, there is an important ethical question about the educator's right to predetermine how a student should behave and then to program activities in order to elicit that behavior.

As an alternative method in health education, Greenberg (1975) suggested the process of values clarification. Values clarification theory recommends learning experiences that help students to perceive the reality of their values. It is hoped that students, through a greater awareness of their own values, will make rational behavioral decisions consistent with those values and a healthier life style. According to Greenberg: "A marriage of behavior modification and values clarification seems possible. . . . If during values clarification exercises a student becomes aware of a value unacceptable to him and desires to change that value, the teacher's help in employing behavioral modification, at the student's request, might be appropriate" (p. 94).

SELF-MANAGEMENT

Self-management gradually emerged from the field of behavior modification. In self-management, many of the basic concepts from the classical operant conditioning theories

are applied, but by the individual, to control internal events. Therefore, self-management addresses the problems associated with external manipulation in behavioral modification. Williams and Long (1975) stated: "The tone of self-management is consistent with our society's ethic of self-responsibility. We are held responsible for our behavior because we are assumed to be in control of that behavior" (p. 10).

Another characteristic of the self-management program is a very formal and precise strategy. Williams and Long described steps in self-management:

Selecting One Goal. Factors to be considered are:

1. The goal should be important to you.
2. The goal should be measurable; it should be quantified, as in losing ten pounds or running two miles.
3. Your first goal should be set only slightly higher than your present level of operation.
4. Goals should be stated in positive rather than negative terms.

Recording Quantity and Circumstances of Behavior. This process provides baseline data as well as continuous data as the program ensues. The measuring process may take the form of counting the number of cigarettes smoked per day, flossing experiences, snacking incidences, or whatever is appropriate. Graphing the results is suggested to clarify current performance as well as to provide a reference point for evaluating future action. In addition, concomitant circumstances associated with the behavior are recorded. As related to smoking, these circumstances may include mood, time of day, vocation, and others present.

Changing the Setting Events. Insight gained into the circumstances that surround a particular behavior can be used to mold new behavior. It is commonly accepted that one of the best ways to modify behavior is to alter the situation in which the behavior occurs. For example, if snacking is usually a response to boredom or nervousness, you might try a substitute activity, such as taking a walk when the situation arises.

Establishing Effective Consequences. Most of our behaviors are, at least in part, a result of their consequences. Behaviors are strengthened as a result of rewards and diminished as a result of punishment. Self-management relies on the use of effective rewards and the establishment of contingencies that govern their application. Rewards should be meaningful and appropriate for the desired outcome; for example, watching a favorite television show may be appropriate for smoking your daily cigarette quota, whereas buying a new wardrobe may be appropriate for quitting altogether.

Mobilizing Social Reinforcement. It is evident that one of the strongest influences on us is the social pressure exerted by our peers. In this step it is recommended that a goal be tied into a social arrangement--for example, choose an exercise partner, or make rewards for both you and another person dependent on goal achievement. Aversive consequences or negative reinforcement also may be effective. An example may be a public disclosure of your goal and reward system, so that lapses in goal achievement may result in social ridicule or loss of face.

Focusing on the Consequences. This is an effort to keep individuals constantly aware of the established program. One method is for each individual to verbalize his or her program before a group. Another is to "talk to yourself" constantly about the desired behavior; you are much more likely to exhibit the right behavior if you state aloud what that behavior is.

Applying Covert Control. Certain behavior seems to be highly related to identifiable thoughts or feelings. Three strategies applied to this principle are:

1. Covert pairs: the individual, when confronted by the temptation, thinks first of negative consequences for negative behavior and then of positive consequences for behaving in the desired manner. For example, when you are tempted to snack, think how much leaner you would be if you didn't.

2. Covert reinforcement: the individual regularly visualizes goal achievement and the positive consequences of that achievement. For example, imagine losing 20 pounds, and then imagine yourself in a new wardrobe receiving compliments on your appearance.

3. Covert sensitization: the individual imagines the undesirable behavior with all the senses involved and all the preliminary and related functions; then, at that point of consummation, substitutes a strong negative thought. For example, imagine all the preliminary aspects of having an alcoholic drink, with all the sensations involved; then, at that point of consummation, imagine yourself getting sick!

Description of programs using the self-management approach is limited. Grosshans (1977) described a personal behavior change program incorporated in a health education setting which adopts many of the characteristics of self-management. Using the contract grading approach (the means of positive reinforcement) toward a goal setting student-devised projects, Grosshans reported success in weight control and exercise development programs; however, no empirical information was given.

St. Pierre and Lawrence (1975) reported encouraging results using self-management in a smoking cessation program. Comparing various treatment approaches, they discovered that the best results were obtained by students receiving aversive treatment followed by self-maintenance. This group reported a 60 percent decrease in overall smoking behavior three months after the start of the program. St. Pierre and Lawrence reported the use of most of the techniques emphasized in self-management; however, they found the most promising strategies to be recording the circumstances of smoking behavior and using a signed contract between the subject and a close friend.

In clinical psychology, numerous reports incorporating self-management exist. Horan and Johnson (1971) and Penick et al. (1971) reported on obesity programs, Marston and McFall (1971) on smoking cessation, and Sobell and Sobell (1973) on control of alcohol consumption.

ACTIVATED HEALTH EDUCATION

The third program in behavior change strategies, commonly referred to as activated health education, combines many of the approaches in the previously discussed methodologies into a workable model more suited to educational settings. Activated health education uses a standardized instructional model which, with slight variations, can be applied to smoking cessation, weight control, and dental care prgrams, among others. Dennison (May/June 1977) described the three-phase activated instructional model:

Laboratory or Field Experience Phase. This is the experimental phase, in which students learn to be aware of their physical and behavioral health. Both biomedical evaluation and behavioral inventory analysis are used. Depending on the topic of concern, such testing as skinfold measures, fitness tests, blood pressure, or plaque disclosures along with various behavioral questionnaires are used. Initially this phase is teacher dominated and highly formal as dictated by the laboratory setting; gradual increase in student participation allows for some of the evaluation to be student directed.

Cognitive Phase. This stage uses a gradually reducing cognitive phase to present relevant information that complements the laboratory exercise and outlines personal susceptibility to various health problems. The phase is generally teacher oriented though less formal. Emphasis is placed on using multimedia presentations rather than the traditional lecture-dominated approach.

Affective Phase. To this point the suggestions outlined vary little from many of the standard and generally unsuccessful practices common in the profession. What truly separates

activated health education from traditional education is a gradually increasing affective stage. Here many of the procedures outlined in behavior modification, self-management, and values clarification are combined. The students identify and clarify their personal health values through discussion and various learning activities. They describe actual and ideal health behaviors. The health educator's role becomes that of a facilitator, aiding the student to establish a personal program of self-maintenance while taking care to avoid imposing values. The health educator's responsibilities are to "activate" the student and help with establishing the program; however, the strategy leaves the student ultimately responsible for the success of the program. This distinguishes activated health education from behavior modification and more closely aligns it with self-management, although with a less structured format.

Included in the approach is a highly defined method of evaluation with both internal and external components. The internal system is under the control of the instructor and is based on objective mastery principles; it is applied exclusively in the laboratory and cognitive phases and allows immediate feedback for both student and instructor. The external evaluation provides for biomedical evaluation by appropriate professionals in conjunction with student self-reported behavior inventories.

To date, the activated health education model has demonstrated success in behavior change in a number of areas. Dennison reported a decrease in alcohol-related disruptive behavior (January 1977) and improved plaque disclosures (1974) which were significantly greater than traditional methods. However, since no one advocates traditional methods as being successful in health education, it is still uncertain whether the activated health education method is significantly better than behavior modification, self-management, or any other methods or combinations thereof.

THE COMPOSITE MODEL

Three behavior change strategies have been outlined in this paper. What follows is a summary of the programs reviewed, incorporated into one suggested behavior change model. In developing such an ideal model, several points must be considered: (a) the numerous influences on behavior and the multitude of possible health topics; (b) variations with ethnic and cultural groups; and (c) the health educator who, when undertaking curricular decisions, is influenced not only by finance and school policy but certainly by personal biases, attributes, and liabilities as well. When all these factors are considered, to suggest any one style may be inappropriate.

As in the Activated Health Education format, the composite model uses a multiphasic approach.

Step 1 allows for student participation in appropriate laboratory experiences and behavioral evaluation procedures within the confines of the topic of concern. The laboratory experiences should be as sophisticated as economically and administratively feasible. For example, ideally in a heart disease prevention unit the student receives an exercise stress test, serum lipid evaluation, and perhaps an electrocardiogram reading. Various behavioral inventories are also administered to relate laboratory results to actual behavior. The combined results set the stage for future decision making about behavior change. Again, objectives mastery is used for grading purposes and satisfactory completion of this step.

Step 2 is concerned with supplying cognitive information to build a knowledge base for rational decision making and the development of "cognitive dissonance," that is, fear/anxiety arousal. Because of the sophistication of today's students, this information should be presented using the latest multimedia materials--films, slides, videotapes--as well as guest appearances by experts in the field. Furthermore, though fear of illness is an important motivational factor, the positive aspects of good health should be emphasized over the negative. To conform to the requisite grading system, the criterion reference or objective mastery approach is suggested; passing is dependent on demonstrated mastery of cognitive objectives.

Step 3 begins with values clarification activities that delineate actual and ideal behavior patterns leading to the formation of personalized goal setting. This singular goal should be quantifiable, measurable, and related to a time deadline. In addition, the student must formulate a concrete plan of action, submitted in written form (see Appendix A) that includes a description of the goal, charts for monitoring progress, an outline of a personalized rewards and punishment system, and an outline of the particular behavior

change plan--in the example in Appendix A, a suggested diet program for losing weight. The instructor not only reviews the program for feasibility but facilitates goal achievement through:

--Contract grading, where each step in the process is rewarded with an appropriate predetermined grade point

--Formation into groups of students with similar goal orientations; within these groups, allocation for student verbalization of goals and program designs, the sharing of problems and progress, and a signed endorsement of the formal written program signifying a group commitment to reach one another's goals

--Presentation of learning experiences which provide insight into the use of mental imagery for covert control (as described in the discussion of the Self-Management Approach)

--Opportunity for a public student group demonstration upon goal achievement--for example, a group-planned "health meal" for a diet group, group participation in a road race for an exercise group, or an antismoking lesson to a younger grade for a smoking cessation group

--The use of "booster sessions" later at intermittent time periods to reinforce and actualize the particular behavior.

INSTRUCTIONAL UNIT EXAMPLE

To illustrate the details of the suggested model, a sample unit outline is provided. An exercise unit has been chosen primarily because exercise is currently in vogue and is relatively easy to assess.

Exercise Unit

Level: Senior High School/Undergraduate College.

Time: 3-6 weeks.

Objectives

Specific objectives will vary depending on such variables as the grade level, school resources, and the health educator's background. However, any health education program should specify objectives within the following context:

Behavioral: A significant increase of group means on selected exercise inventories administered to all students as pre- and post-tests.*

Laboratory: A significant improvement of group means on selected physiological measures of exercise habits administered to all students as pre- and post-tests.*

Note: In both behavioral and laboratory objectives, success is not measured in regard to individual change. It is neither ethical nor realistic to expect change in all students. As in this unit, some students will be highly active while others will have little desire to increase exercise despite the most sophisticated of educational approaches.

Cognitive: All students will achieve a minimum score of competency on an exercise-related knowledge inventory.

Teaching Strategies--Laboratory Phase

As emphasized in the Activated Health Education Model, a thorough evaluation of both behavior and biomedical status must be taken. For the purpose of the example unit, behavioral scores will be established using Cooper's Aerobic Scoring System for exercise, and cardiopulmonary fitness levels will be established by use of Cooper's 12-minute maximum distance test. This testing should be under the strict supervision of the instructor or assisting professionals. It is suggested that corollary biomedical tests also be given using student technicians as aides. These less sophisticated tests could include blood pressure readings, skinfold measures, resting heart rates, and heights and weights.

All students are required to complete the total laboratory phase for satisfactory grading purposes. The results of these tests will not only serve as a reference point for

* Any research, no matter how ingeniously designed, is only as sound as its means of measurement. It can be assumed that innumerable false claims have been made based on instruments either invalid in themselves or inappropriately employed. No doubt true hypotheses have been rejected on the same basis. This paper is not designed to serve as a text on measurement; however, the reader is cautioned when either evaluating research or designing individual programs that instrumentation should be thoroughly analyzed. Certain elements of behavior change lend themselves to accurate measurement, as in weight loss programs where pound/kilogram changes can be easily assessed. How might health educators easily measure diet quality, sleep habits, carcinogen exposure? The challenge to the profession may be not only in changing behavior successfully, but in developing the means of observing it.

future evaluation but provide a stimulus for learning and self-analysis.

Teaching Strategies--Cognitive Phase

Knowledge may have little effect on behavior change in and of itself. However, behavior is affected in part by at least some rational decision making. Therefore, cognitive enhancement is a necessary though not a primary concern in the health education process.

Information is presented using the latest forms of audio-visual technology. Appropriate slides, movies, and film-strips are used. Where possible, guest lecturers from either the school or the community also can be included. To save time and facilitate the learning process, all appropriate notes, charts, and similar materials should be prepared in workbook form and distributed to students in advance. Cognitive knowledge must enhance the feeling of disease susceptibility but also must emphasize the positive benefits of sound health practices.

Several forms for testing cognitive knowledge can be developed using the objective mastery approach. All students are required to complete the cognitive phase satisfactorily by passing one of the testing forms. Suggested cognitive objectives within this unit include background information on the laboratory phase, individual risk analysis, psychological and physiological benefits of exercise, and the most beneficial forms of exercise.

Teaching Strategies--Affective Phase

The initial aspect of the affective stage centers on values clarification activities, allowing students to examine the relevant aspects of their lives and relate the self-analysis to the health topic of concern.* A simple example of such an activity, adapted from Kreuter (1976):

Students are asked to "clarify" their actual and ideal exercise habits by marking the exercise continuum.

Low			Moderate						High	
0	1	2	3	4	5	6	7	8	9	10

Note: Inventory scores may be useful substitutes for the one through ten arrangement.

* For further information concerning values clarification activities, the reader is directed to Simon, Howe, and Kirschenbaum (1972); Raths, Harmin, and Simon (1966); and Dalis and Strasser (1974).

Students are then asked to explain the reasons for their status and list the factors that prevent or limit ideal behavior. For example:

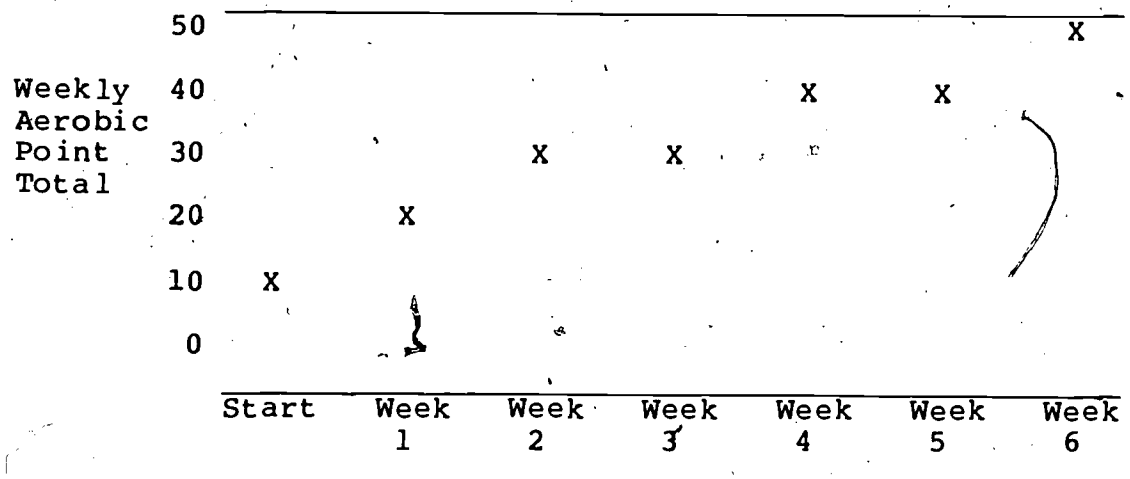
1. Laziness
2. Personal dislike of exercise
3. Lack of facilities...

Within appropriate group settings students are asked to share experiences and feelings and interact with others to gain a greater insight into themselves. Later they are asked what circumstances they are "willing" to change. Once direction has been established, the stage has been set for commitment and goal setting. Students then personalize a specific quantifiable exercise goal and relate that goal to a time deadline. Applying the knowledge gained during the cognitive stage, students develop a program outline describing the details of their behavior change strategy. (See also Appendix A.)

The instructor reviews each program for feasibility and appropriateness, and assembles students into groups or "teams" of similar goals and interests. Within these teams students will review one another's programs, suggest revisions where necessary, and finally sign a written endorsement of one another's programs.

Another aspect of this process is graphing change over time to serve as a point of reference as well as a personal reinforcer. Assume that a student scored initially in the low exercise range with a corresponding score for the cardiopulmonary test. A possible goal might be a moderate level on both the inventory and the physiological testing score after a six-week training program. Using Cooper's Point System of exercise, the graph might appear as in Figure 1.

Figure 1
GRAPH OF STUDENT GOAL TO ACHIEVE
A MODERATE WEEKLY EXERCISE SCORE (50 POINTS)
AFTER A GRADUAL SIX-WEEK TRAINING PROGRAM



Periodically each team will meet to share problems, progress reports, and points of interest. It is in these small group sessions that the instructor can make use of training sessions in covert control; that is, mental imagery visualizing goal achievement as described in the discussion of the Self-Management Model.

A major component of this behavior change process is the use of a system of rewards and punishments. Such a system can be quite varied and complex and therefore needs special consideration. The personal written program should also include a reward and punishment system. In the example, the reward system might include a special night out on the weekend following each weekly point achievement, and perhaps a special item of clothing purchased following the six-week goal achievement. Punishment might include skipping dessert for missing a session. Moreover, intrinsic rewards are enhanced by observing personal change over time (from the recorded charts) as well as receiving social reinforcement from the instructor and team members during progress report sessions.

The educational system calls for a means of evaluation, usually in the form of a number or letter grade. Though this system's effectiveness in the behavioral change process is questionable, most students are attuned to working within this framework and respond to a grading stimulus. Therefore, an added reward system is the use of contract grading. In the example, points might be rewarded in the following manner:

Completion of all laboratory activities and tests	25
Satisfactory score on the knowledge tests	25
Satisfactory development of a personalized written behavior change program	25
Demonstrated goal achievement through behavioral analysis and biomedical post-testing	25
TOTAL	100

A grade of 100 or "A" is certainly appropriate and justified considering the effort and consequences of this program. Most students would be highly motivated to work within this arrangement.

A final reward system, the public group demonstration, is suggested. In the example given, a likely possibility is "team" completion of a road race; such races are becoming quite common and are held in virtually all seasons. The positive group interaction, the sense of achievement, the feeling of being part of a unit, possible material rewards such as T-shirts, may all work to cement the learned activity fully into the student's behavior milieu. With some concentrated imagination, the instructor can discover any number of

Figure 2
THREE-PHASED BEHAVIOR CHANGE INSTRUCTIONAL MODEL

	Laboratory Phase	Cognitive Phase	Affective Phase
week 1	Behavior Inventory Biomedical Testing -Primary Instructor Directed	Prepared Handouts, Charts, Graphs, Lecture Notes in Workbook Order	Contract Grading Presentation
week 2	-Corollary Student Directed	Multimedia Presentations Guest Lecturer Appearance Knowledge Test 1 Test 2 Test N	Values Clarification Activity Personalized Goal Setting Personalized Behavior Change Program Development Small Group Work Sessions -Group Interaction -Mental Imagery Practice
weeks 3-6			Periodic Group Sessions
	Post-Testing*		
			Contract Grade Rewarding
			Terminal Group Presentation
			Periodic Booster Sessions

*NOTE: Although post-testing is clearly a laboratory experience, it also serves as an affective learning situation because of anticipated goal achievement.

possible terminal events, depending on the health area of interest.

An additional activity of the affective phase is periodic booster sessions. The behavior inventory is readministered and each team is reassembled. Progress reports are again shared. Those who have faltered in their programs may be remotivated, and those who have continued may receive additional reinforcement. In an area such as the suggested exercise unit, it is not uncommon to observe actual increases in exercise habits, as opposed to an expected behavior recidivism.

The sequential order of events within this schema is critically important. Figure 2 outlines the time relationship of the overlapping phases of this program.

CONCLUSION

This behavior change process is neither cheap nor easy to administer. However, if health educators are to be held accountable for their efforts, they must demand the facilities, preparation time, and finances to succeed. No longer can movies, a reading assignment, and a series of questions from a text be sanctioned as health education.

Within the confines of these proposals are proven approaches in behavior change. The application of these principles, with modest innovations where necessary, can promote significant changes in behavior.

What also makes the program attractive is that once a student has successfully applied this approach, the groundwork has been laid to affect behavior for a lifetime. The student now has the knowledge, experience, and confidence to modify his or her own behavior when the motivation and need arise.

A FINAL COMMENT

Perhaps the most important aspect in health education, but one that is too frequently ignored, is that of the teacher as role model. Rightly or not, the teacher exerts one of the strongest influences on a student's development. Teachers not only develop cognitive skills in learners but exert a great influence on their charges' value structure as well. This influence is particularly apparent in health education. As Glover wrote:

> But how they (health educators) present themselves as models, either consciously or unconsciously, to young learners, should be the focus of increased awareness. In terms of promoting health behavior and life styles, modeling exists as a powerful tool that may either greatly enhance or destroy the verbal message of human health (1978, p. 175).

It is interesting to note that nowhere in the review of these particular educational strategies is the role of teacher model discussed. To expect behavioral change in the learner may be impossible if that change is inconsistent with the teacher's behavior. Health educators cannot expect more from their students than they are willing to invest in themselves.

The effectiveness of any health education program may be a function of the teacher as an individual regardless of the merits of that program's design. Before any attempts at behavior change are undertaken by instructors, it is imperative that they first promote change in themselves.

APPENDIX A

SAMPLE OF STUDENT DEVELOPED PROGRAM

Personal Weight Loss

Debbie _____

Period 6
May 1978

Introduction

This program is developed to help me lose weight and to get more physically fit. I will have to modify my eating habits, which will be more difficult considering that I am mostly a vegetarian. My diet is very limited, and through the years I have learned that in the foods which I do eat, there is sufficient nutritional value. I will also increase my exercise plan, which is easily done now due to the pleasant weather.

My initial goal is to lose 10 pounds (to weigh 110) by July 1, 1978.

Diet

Possible foods as my meals:

Breakfast: grapefruit
or orange
1 piece of toast
4 oz. fruit juice
8 oz. tea w/lemon and sugar

Lunch
(During school time):
cheese and crackers
or bread w/butter
8 oz. 2% milk

Dinner: green vegetable
potatoes
fruit
8 oz. milk

Snacks: cheese
fruits

Keeping to this program, I will also remain below my recommended daily caloric needs (2178 calories), and will lose approximately 2 pounds per week.

Exercise Program

1. Limbering exercises (yoga) 10 minutes in the morning
2. 15 minutes of general warm-up exercises
3. Endurance exercises: sit-ups
4. Biking 7 miles per day
5. Walking to and from school; total, 2-3/4 miles.

Partners

Ginny
Ann

A partnership plays an important part in the success of a program. It can provide inspiration and encouragement needed to continue the program. In our case, we have similar goals and provide competition for each other. Also if one of us falls behind, it is a sort of punishment to be slipping under your partner.

Rewards and Punishment

1. For an inspiration and also a reward, I have sewn myself an outfit a size smaller than what I usually wear.
2. When I reach my goal I will buy myself a new outfit.
3. As punishment I will have to do extra work around the house plus more exercises.

SAMPLE PROGRESS REPORT

Date	GINNY Goal - 105	ANN Goal - 110	DEBBIE Goal - 110
May 23	116	120	120
May 27-30	114	118	118
June 2-6	112	116	116
June 9-13	110	114	114
June 16-20	108	112	112
June 23-27	106	110	110
July 1	104	108	108

STUDENT GROUP CONTRACT

I, the undersigned, have reviewed the preceding program and find it acceptable. I further, by my signing, offer my commitment to ensure the satisfactory completion of the herein-discussed goal.

Name _____ Date _____

_____ _____

_____ _____

_____ _____

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