CHAPTER 3

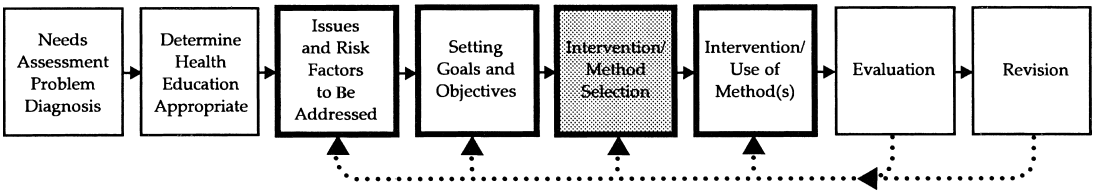
Contextual Considerations for Behavior Change: Intervention/Method Selection

Contributions by
Dr. Pam Doughty
Texas A&M University

Entry-Level and Advanced 1 Health Educator Competencies Addressed in This Chapter

Responsibility I:	Assess Individual and Community Needs for Health Education
Competency A:	Assess existing health-related data.
Competency C:	Distinguish between behaviors that foster or hinder well-being.
Competency D:	Determine factors that influence learning.
Competency F:	Infer needs for health education from obtained data.
Responsibility II:	Plan Health Education Strategies, Interventions, and Programs
Competency D:	Develop a logical scope and sequence plan for health education practice.
Responsibility III:	Implement Health Education Strategies, Interventions, and Programs
Competency C:	Use a variety of methods to implement strategies, interventions, and programs.
Responsibility IV:	Conduct Evaluation and Research Related to Health Education
Competency A:	Develop plans for evaluation and research.

Method Selection in Health Education



Heavy-bordered boxes indicate subjects addressed in this text; shaded boxes indicate subject(s) of current chapter.

Responsibility VII: Communicate and Advocate for Health and Health Education
Competency A: Analyze and respond to current and future needs in health education.

Note: The competencies listed on pages 47–48, which are addressed in this chapter, are considered to be both entry-level and Advanced 1 competencies by the National Commission for Health Education Credentialing, Inc. They are taken from *A Framework for the Development of Competency Based Curricula for Entry Level Health Educators* by the National Task Force for the Preparation and Practice of Health Education, 1985; *A Competency-based Framework for Graduate Level Health Educators* by the National Task Force for the Preparation and Practice of Health Education, 1999; and *A Competency-Based Framework for Health Educators—The Competencies Update Project* (CUP), 2006.

OBJECTIVES

After studying the chapter, the reader should be able to orally:

- List the major considerations in selecting an educational intervention/method.
- Employ appropriate theories and models in method selection.
- Present a rationale for proper selection of a method.
- List the most common mistakes in method selection.
- Describe effective learning environments.

KEY ISSUES

Objectives
Theories and models
Educational principles
Adult learners
Learning preferences
Characteristics of the learner and the community
Group size
Contact time
Budget
Resources/site/environment
Characteristics of the educational provider
Cultural appropriateness
Using a variety of methods
Learning environments
Seating arrangements
Packaging the total intervention strategy

Objectives as Drivers of Selection

Selecting the appropriate educational intervention is vital to achieving your objectives. Therefore, the objectives should drive the selection of all educational interventions and methods. In other words, the methods selected must be appropriate for the objectives sought. The previous chapter described the components of setting goals and objectives. This chapter emphasizes the importance of systematically identifying and reviewing objectives before selecting methods. Such a review is always the first step in selection. Interventions and methods must be linked with the objectives they are likely to achieve.

We use the term **intervention** to describe the total overall strategy to achieve our objectives. A **method** refers to one component of the intervention, such as an educational game or a health fair. Each is only one of

perhaps many methods we could employ to achieve our objectives. All educators have the selection process in common, but the health educator must also consider how the chosen strategies might influence clients' attitudes that influence health and directly influence health behaviors. Further, the health educator must often work with very modest amounts of time and limited resources. Given that health educators may be asked to help clients modify complex and deeply rooted practices, selecting the correct methods is indeed a challenge. Nevertheless, we do have an arsenal of methods and a knowledge base to help us with these decisions. This chapter will review the contextual issues to be considered when selecting an intervention strategy (method) and explore environments that best facilitate their delivery.

Health Education Theories and Models

In theory there is no difference between theory and practice. In practice there is.
—Yogi Berra

In most health interventions, changing behavior is the goal; however, altering human behavior is extremely difficult, as anyone who has ever tried to quit smoking or stop eating sweets can tell you. So, how does one go about fostering behavior change? First, one must understand what types of things help to start the behavior; why people continue with a behavior, even if they know it is bad for them; and how unhealthy behaviors can be stopped or replaced with healthy ones. **Theories** have been developed to answer just such questions. These behavior change theories link objectives and methods to provide strategies for interventions. A theory serves to help explain why behavior occurs, what the determinants are that facilitate or hinder behavior, and how the health educator might most effectively design an intervention to promote what is desired (Glanz, Rimer, & Lewis, 2002). A theory attempts to make sense of interrelated concepts, definitions, and propositions to analytically explain or even predict a phenomenon (Kerlinger, 1986). Planning interventions from a theoretical perspective allows the health educator to focus on what has been identified as aspects that foster or hinder healthy choices. Theory provides a systematic approach to tailor, target, implement, and evaluate health promotion programs that will enhance the likelihood of success.

Constructs, Theories, and Models

Theories are built upon a set of identified **constructs**. Much like bricks function as base units that are built on to create buildings, constructs work in a similar way to serve as the base units of unique theories. As the health educator begins to analyze the dynamics facilitating or hindering a behavior, guiding general principles or constructs begin to emerge. A construct is a representation of such a concept within a theoretical framework (Green & Kreuter, 2005). These general guiding principles are called **concepts**, and they make up constructs. Constructs and concepts are the same except concepts are called constructs when used within a theoretical model. For example, one concept, **self-efficacy** (which is prominent in many health behavior theories), is a person's perception of self-control over his or her environment

and behavior. This fundamental concept was first identified in the Health Belief Model created in the 1950s by a group of Public Health Service social psychologists (Glanz et al., 2002). The self-efficacy concept is represented by different construct titles in various theories, but it is essentially the same idea. Whereas Albert Bandura names the construct "self-efficacy" in his Social Cognitive Theory, Icek Ajzen refers to the same concept as "perceived behavior control" in his Theory of Planned Behavior.

Just as constructs form the foundation for the development of a theory, theories are used in the same manner as building blocks of a model. Models combine theories (often in a sophisticated manner) to produce an educational framework for the development of appropriate health education interventions. Figure 3-1 presents a graphic explanation of the relationships between constructs, theories, and a model.

Figure 3-2, the Transtheoretical Model (TTM), is built on the combination of three separate theories or hypothetical truths—Decisional Balance, Stages of Change, and Self-Efficacy. Benefits and costs are constructs for Decisional Balance Theory; pre-contemplation, contemplation, preparation, action, and maintenance are concepts of Stages of Change; and confidence and temptation influence the concept of Self-Efficacy. Altering human behavior is not only extremely difficult, but it also requires complex strategies for successful implementation. Understanding constructs, theories, and models will be essential in effective intervention.

PRECEDE-PROCEED Model

A variety of models exist to supply structure and to support program planners in the development of health promotion interventions. One of the most widely used models in health education is Green and Kreuter's PRECEDE-PROCEED planning model. "The PRECEDE-PROCEED model provides a comprehensive structure for assessing health and quality-of-life needs

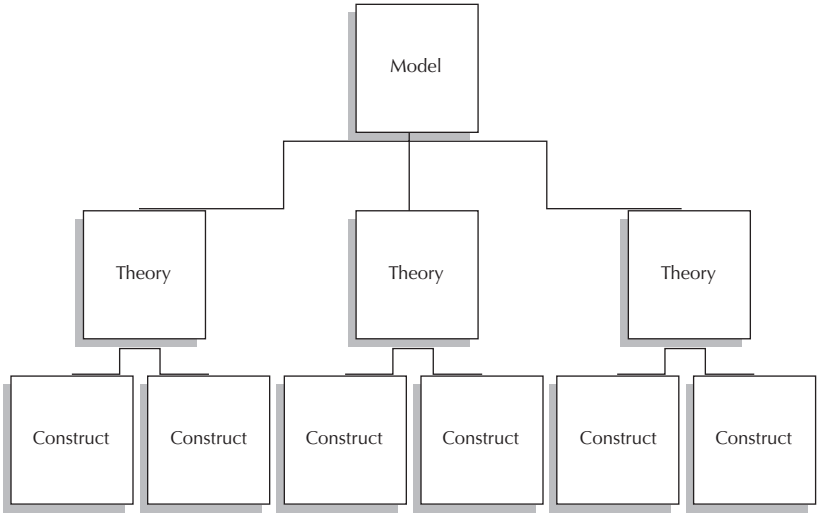


Figure 3-1
Constructs, Theories, and a Model

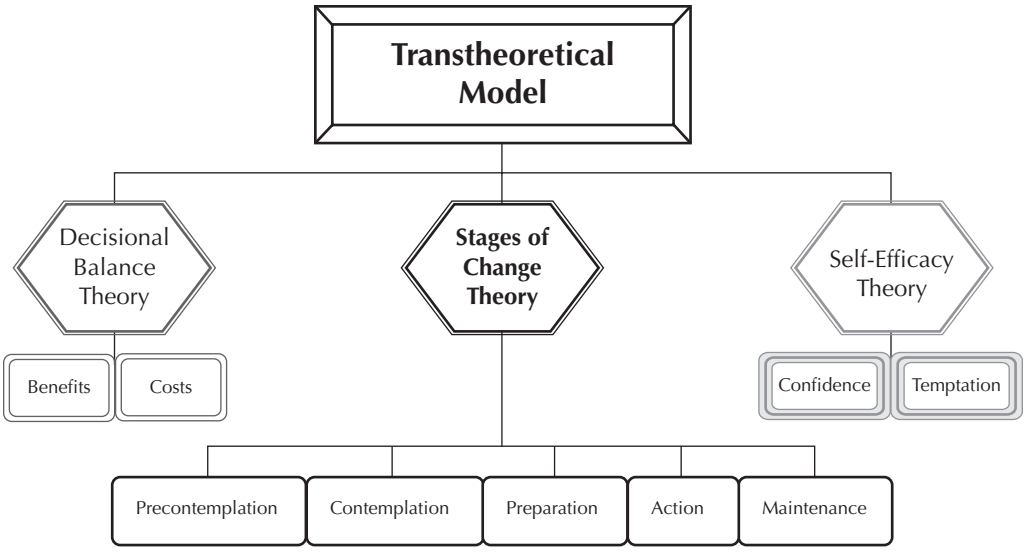


Figure 3-2
Transtheoretical Model

and for designing, implementing, and evaluating health promotion and other public health programs to meet those needs" (Green & Kreuter, 2006, p. 1). The model has been used to design interventions for diverse health issues including weight control, nutrition education, tobacco cessation, alcohol and drug abuse prevention, cancer prevention, and injury prevention.

The PRECEDE-PROCEED model is divided into two sections, each containing multiple phases. Understanding the constructs of the PRECEDE-PROCEED model will assist health educators in determining possible interventions as they investigate behaviors that are contributing to the health concern. The first half of the model, PRECEDE, includes the following concepts:

Predisposing
Reinforcing
Enabling
Constructs in
Educational
Diagnosis and
Evaluation

PRECEDE is designed to aid in the diagnosis of health concerns and in the planning process for the development of interventions. There are four phases in the PRECEDE part of the model. Phases one (social assessment) and two (epidemiological behavior and environmental assessment) are steps for the needs assessment where the overall magnitude of the problem is

The lotus, like health education, floats upon still waters; alas, while many admire their perfection, neither hath visible means of support.
—Mohan Singh

outlined. Factors that predispose, reinforce, and enable the targeted behavior are examined in phase three (educational and ecological assessment). This phase assesses the existing knowledge, skills, and attitudes regarding behavior and gives insight into possible theories for intervention development. Phase three identifies the determinants of change, objectives for change, and priorities that can be converted into a program plan (Green & Kreuter, 2005). Prior to the actual development of a program, phase four is assessed to evaluate existing health education efforts and current policies. Phase four of the model (administrative and policy assessment and intervention alignment) serves to identify potential gaps in the educational efforts while preventing duplication of existing health promotion efforts.

The second half of the model, PROCEED, includes the following:

Policy
Regulatory and
Organizational
Constructs in
Educational and
Environmental
Development

This half of the model is composed of phases five through eight (not addressed in this text) that act as a guide for the implementation and evaluation of the developed intervention. Figures 3-3 and 3-4 show a graphic representation of the two halves of the model.

The ultimate goal of any health intervention is to develop healthy behaviors. If we want people to wear helmets when biking, we must consider what factors might be encouraging or discouraging them to do so. To influence behavior, it is important to consider the existing knowledge, skills, and attitudes of the person or group in order to understand the factors that predispose, reinforce, and enable the behavior. Predisposing factors provide the rationale or motivation for behavior and include elements such as the person's or group's knowledge level, beliefs, values, attitudes, confidence, perceptions, and personal preferences (Glanz et al., 2002; Green & Kreuter, 2005). Could it be that children do not wear bike helmets because they do not believe that they will have an accident? If this is true, it is likely they see no value in wearing the helmet. In order to effectively promote the use of a helmet, the health educator would need to address and change these children's predisposed values.

Reinforcing factors are the positive and negative consequences of action that provide motivation for the continuance or cessation of behavior. Reinforcing factors are positive and negative rewards that come from an outside source. Some reinforcing factors included social support, peer influence, advice, and physical consequences of behavior (Green & Kreuter, 2005). Many children do not wear bike helmets because their friends tease them if they wear them. The teasing from peers is a negative reward that decreases the likelihood that the helmet will be worn.

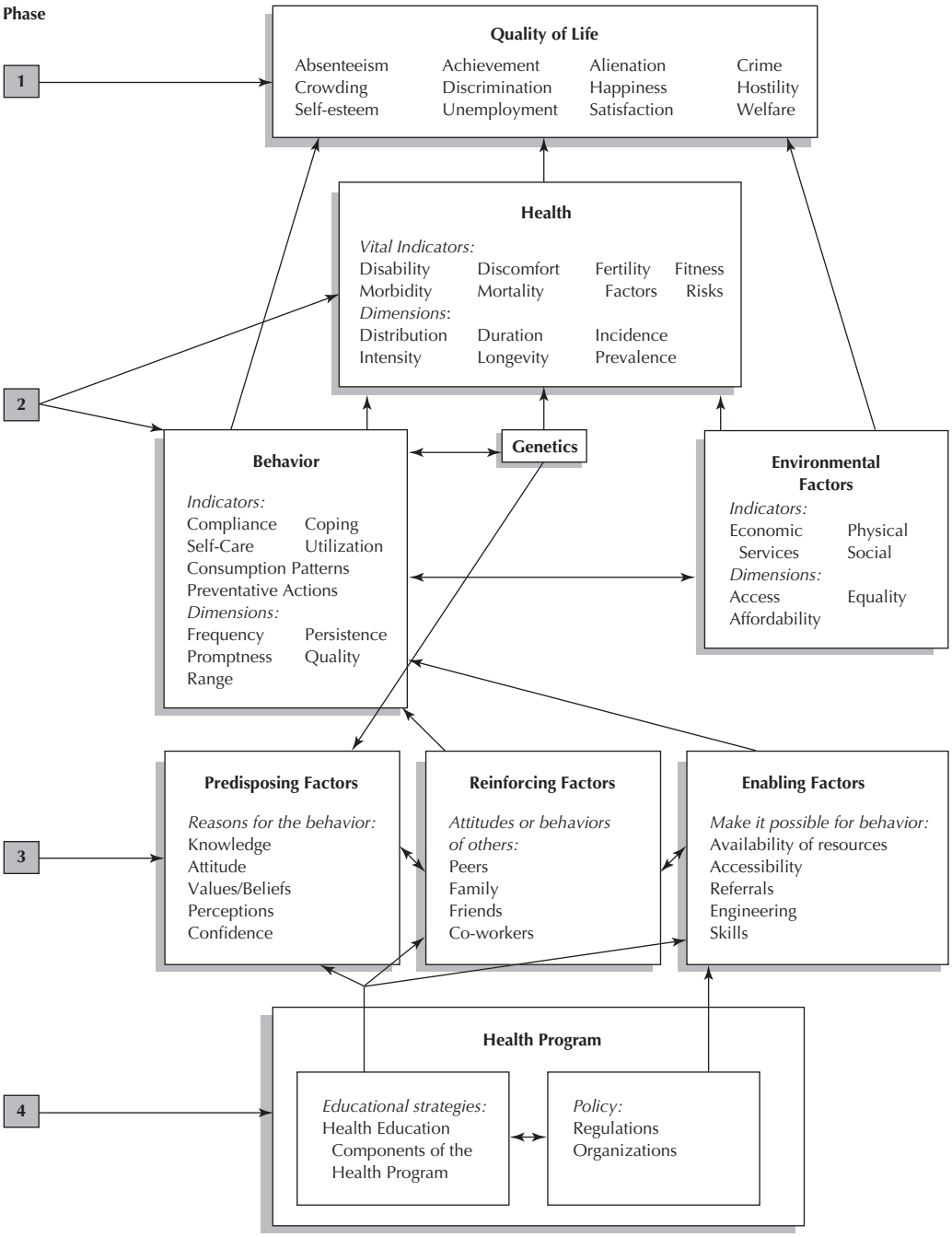


Figure 3-3
Representations of PRECEDE: Diagnosis and Planning Tasks
Source: Adapted from Green & Kreuter, 2005.

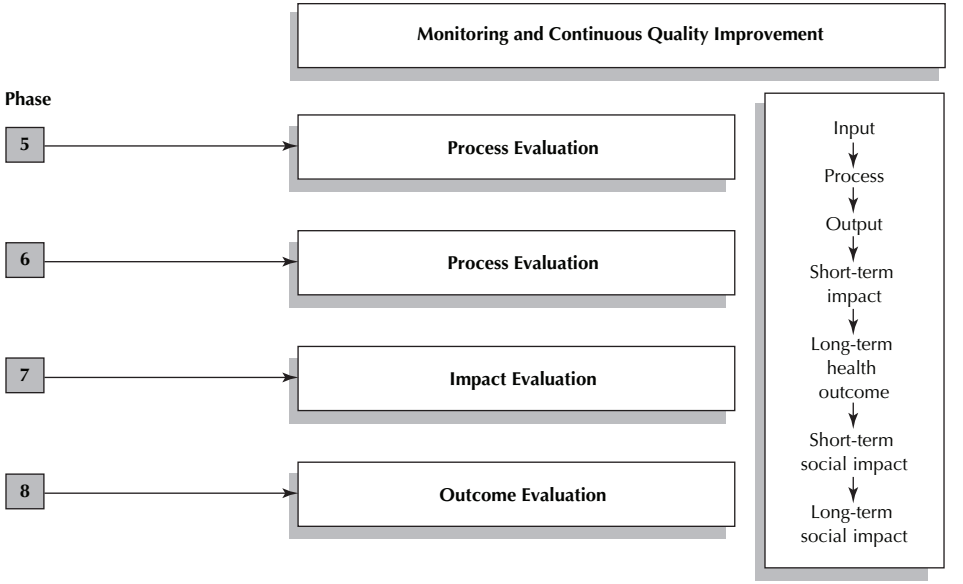


Figure 3-4
Representations of PROCEED: Evaluation Tasks
Source: Adapted from Green & Kreuter, 2005.

Enabling factors facilitate the performance of an action, and the absence of these factors prevents action (Green & Kreuter, 2005). Enabling factors include new skill sets and resources such as programs, services, and adequate finances to facilitate the behavior. Children without the financial resources cannot purchase a bike helmet and are clearly not going to be enabled to wear them. Providing helmets as an incentive for program participants, however, will enable them to wear their helmets.

Theory/Model Selection

If we think in terms of predisposing, reinforcing, and enabling factors as capacities to encourage healthy choices, then it makes sense to identify the most appropriate theory or model to strengthen these capacities. The selection of the most effective theoretical constructs for the model will be determined by what has been identified as encouraging and discouraging aspects of a behavior. Ideally, if a barrier to the performance of the behavior is tied to deficiencies in skills, then a theory containing constructs that emphasize skill improvement should be selected. This same line of thought would also hold true for barriers related to inappropriate attitudes or inadequate knowledge. It is not uncommon for a health educator to select constructs from a mixture of theories to create one that is tailor-made for the target population. The Individual Behavior Change Framework (IBCF) shown in Figure 3-5 shows the relationships among predisposing, reinforcing, and enabling factors to the constructs of knowledge, skills, and attitudes for behavioral change.

This IBCF is not a linear scaffold, but each of the factors is influenced by the other constructs. For example, to promote the wearing of bike helmets,

Figure 3-5
The Individual Behavior Change Framework
Source: Co-contributed by Dr. Pam Doughty

it is important to discover the knowledge, skills, and attitudes of the population regarding the wearing of helmets. Most people know they should wear a helmet, but they do not for a variety of reasons. Attitude may be a more significant predisposing factor than a lack of knowledge about its importance. If children think they look silly in the bike helmet, they are less likely to wear one. If their friends are all wearing helmets, however, it could reinforce their willingness to wear one as well. Providing helmets and teaching children the necessary skills to properly fit the helmet will promote and enable the children to perform the behavior.

Objective: After reviewing the case study, the reader will identify the concepts of the IBCF and the effectiveness of their use in Molly's program.

Case Study: Molly

Molly, a local health educator, was asked to design an intervention to increase fruit and vegetable consumption in adolescents. The high school agreed to pilot her program. As part of her intervention she provided lessons to increase the knowledge of the students and included multiple methods to develop positive attitudes about fruit and vegetable consumption. Following the intervention, the students were surveyed to measure their willingness to eat fruits and vegetables. Her analysis of the data indicated the students showed a favorable intention. She decided to test their intentions by replacing all snack machines with refrigerated vending

machines containing healthy alternatives, such as fresh fruits and vegetables (see Figure 3-6). To adjust for the increase in cost, the price for each item was slightly higher. After 2 weeks, 95% of the fruits and vegetables had not been purchased. Her supervisor asked her to figure out what went wrong with her intervention. (See Case Studies Revisited, page 90.)

Question to consider:

What strategies would you consider adding or eliminating to increase the likelihood of students selecting the healthy foods from the snack machine?

Theoretical Perspectives

A theory is often selected to serve as a guide for the development of interventions based on the specific concepts identified as influencing factors of the behavior. The health educator ponders the question, "Which theory is best for this situation?" Theories serve to explain health behaviors and suggest intervention strategies. Different theories emphasize different aspects of behavior. Some theories focus on the individual as the unit of change whereas others examine change within families, institutions, communities, or cultures (National Cancer Institute, 2005). Theories are often categorized

Figure 3-6
Healthy Vending Machine Choices

according to two broad perspectives depending on the direction of the intervention. These viewpoints include the cognitive-behavioral perspective and the community-level perspective. Cognitive-behavioral theories highlight the importance of modifying behavior at the individual/intrapersonal and interpersonal levels. Health education efforts that target individual behavior choices include counseling, patient education, and other one-on-one approaches to behavior change. Cognitive-behavioral theories examine the actual behavior choices of the individual, as well as the dynamics of the individual's mindset or intrapersonal perspective. Intrapersonal factors might include the individual's motivation, beliefs, knowledge, attitudes, past experiences, and skills (National Cancer Institute). At the interpersonal level, theories of health behavior assume individuals exist within, and are influenced by, a social environment. In a cognitive-behavioral perspective, the theory would consider how the interpersonal factors of the social context (thoughts, opinions, and advice of other influential people) sway an individual's behavior. Cognitive-behavioral theories are built on the premise that changing the behavior of individuals will eventually result in changes in a group, which will spread to influence the whole community.

Community-level theories, on the other hand, support initiatives to serve communities and populations. They attempt to encourage behavior change from an indirect and more global approach that should trickle down to facilitate change at the individual level. For example, a health educator might design a campaign to reduce underage drinking by asking local businesses to display promotional posters in their window fronts. Community perspectives attempt to modify behavior by using community members, organizations, and social contexts as a vehicle for behavior change. An advantage of community-level approaches is that they expose the health education efforts to a greater number of individuals. Table 3-1 categorizes the more commonly used theories/models in health education by perspective.

"Effective practice depends on using theories and strategies that are appropriate to a situation" (National Cancer Institute, 2005, p. 6). Awareness of the available theories and their constructs will enable the health educator

Table 3-1 Categorized Theoretical Perspectives

Cognitive-Behavioral		**Community-Level**
Individual/Intrapersonal Level	*Interpersonal Level*	
Health Belief Model (HBM) Transtheoretical Model (TTM) • Decisional Balance • Stages of Change • Self-Efficacy Theory of Planned Behavior (TpB)	Social Cognitive Theory (SCT)	Social Ecological Model (SEM) Community organization models Diffusion/Innovation Model (DI)

to systematically approach intervention development. The following sections review a few of the more dominant theories/models.

Theories from a Cognitive-Behavioral Perspective

What people think and know affects how they will act. Although knowledge is necessary for behavior change, it is not sufficient to alter most behaviors. It is critical that the health educator consider the individual's perceptions, motivations, skills, and social environment as key influences of behavior (National Cancer Institute, 2005). We must also account for the individual's attitudes and skill level to enable behavior change. The following cognitive-behavioral theories/models attempt to address these key influences.

Health Belief Model

The Health Belief Model (HBM) stipulates that the willingness of people to take health-related action depends upon their attitudes and beliefs about the:

- Threat posed by a health problem (susceptibility, severity)
- Benefits of avoiding the threat (benefits)
- Factors influencing the decision to act (barriers, cues to action, and self-efficacy)

Motivation is a central focus of HBM; therefore, it is a good fit for addressing problem behaviors that evoke health concerns (e.g., cancer screenings, immunizations, or high-risk sexual behavior and the possibility of contracting HIV) (National Cancer Institute, 2005). The key concepts of HBM are as follows (Denison, 2002; Rosenstock, Strecher, & Becker, 1994):

- **Perceived susceptibility:** One's perception of the chances he or she will contract a health condition.
- **Perceived severity:** One's perception of how serious a condition might be and its medical, clinical, or social consequences.
- **Perceived benefits:** One's confidence in the effectiveness of the behavior to reduce the threat of the health condition.
- **Perceived barriers:** One's perception of the negative consequences (physical, emotional, financial, and social) for taking action.
- **Cues to action:** Factors that motivate or remind one to take action.
- **Self-efficacy:** One's confidence in the ability to take action and the perception that successfully executing the behavior will produce a desired outcome. Self-efficacy was added to the original model by Bandura in 1977 to account for more habitual behaviors such as management of diabetes.

The following is an example of the HBM in action. Individuals diagnosed with diabetes are encouraged to check their glucose (blood sugar) levels frequently to assess the effectiveness of their diabetes management plan. When glucose levels are in a normal range, the diabetic does not feel sick and may,

therefore, elect to skip the recommended blood testing. In order to motivate the diabetic to follow the prescribed treatment regime, he must accept the fact that he has diabetes and that it requires management (perceived susceptibility). He must also understand that failure to control his glucose levels can result in serious medical complications such as stroke, heart disease, and nerve and kidney damage (perceived severity). By monitoring his glucose levels, the diabetic patient can reduce the likelihood of the aforementioned complications (perceived benefits) with the minimal effort of pricking his finger and reading the glucose meter (perceived barrier). The alarm on the cell phone of the diabetic could be set to serve as a reminder that it is time to check his glucose level (cue to action). The use of a daily log to record meter readings can serve as a confidence builder in the patient's ability to control his diabetes (self-efficacy).

Transtheoretical Model

The Transtheoretical Model (TTM) is composed of constructs from several theories that center on the Stages of Change Theory. As the name implies, it attempts to assess a person's readiness to change by identifying where he or she might fall along a continuum of behavior change. According to the theory, people are thought to move through five stages—precontemplation, contemplation, preparation, action, and maintenance—as they attempt to modify a problem behavior (Grizzell, 2007). At most stages the individual considers the constructs from the Decisional Balance Theory to evaluate the pros and cons of the behavior change while also incorporating the constructs related to self-efficacy. The individual must assess how confident he or she is to execute the behavior change and resist temptations that could result in noncompliance. This analysis serves as the motivation to move, either forward or backward, to another stage in the continuum. As the individual progresses through the five stages, the probability of sustained behavior change is more likely. This model has been applied to a wide variety of problem behaviors, including smoking cessation, exercise, low fat diet, radon testing, alcohol abuse, weight control, condom use for HIV protection, use of sunscreens to prevent skin cancer, drug abuse, medical compliance, mammography screening, and stress management (Velicer, Prochaska, Fava, Norman, & Redding, 1998).

Each of the five stages is summarized and a sample application is provided.

- **Precontemplation:** In this stage of the theory, the individual has no intention to take action in the foreseeable future, typically within the next 6 months (Velicer et al., 1998). Perhaps the individual is uninformed, underinformed, or has been unsuccessful with behavior change in the past; thus, she is not considering a change in behavior. A college student may not be aware of the potential health risks associated with drinking four to five alcoholic beverages within a 2-hour time span. The individual may not know that her binge drinking can lead to difficulty concentrating, memory lapses, and mood changes. To efficiently motivate self-change, individuals in precontemplation must first recognize a need for change.

- **Contemplation:** An individual in the contemplation stage recognizes a need and intends to change. As the binge-drinker begins to acknowledge negative consequences of heavy drinking—being hung-over or throwing up—she will compare these negative aspects to the benefits of appropriately regulating her drinking behavior to avoid embarrassing situations or to save money. Ideally the benefits will outweigh the costs, providing motivation to move into the next stage.
- **Preparation:** In this stage the individual attempts to make a plan for action to be implemented within the next month (Velicer et al., 1998). The binge-drinker may choose to take only enough cash in her wallet to purchase two drinks for the entire evening or may commit to having only one drink within an hour.
- **Action:** In the action stage the individual implements strategies that change her behavior. The binge-drinker has determined that if she only gets a new drink on the hour, she will be able to suitably regulate her alcohol consumption. While at the party, she sips slowly and waits until a full hour has passed before getting another alcoholic drink.
- **Maintenance:** In this stage the individual is striving to prevent relapse and is more confident in her ability to continue her behavior change for at least 6 months (Prochaska, 1994). The binge-drinker may discover additional strategies such as drinking water or other nonalcoholic fluids during the hour time frame, making it easier to adhere to her plan.

Ideally, an individual would arrive at the maintenance stage and stay there; however, the model is more spiral in nature, allowing for the individual to move back and forth along the continuum with successes and failures. Correctly identifying the target population's stage of change enables the health educator to tailor the health intervention to a group or an individual's readiness to change.

Theory of Planned Behavior (TpB)

The Theory of Planned Behavior (TpB), developed by Icek Ajzen (1991), suggests that behavior can be predicted because behavior can be planned. To date, behaviors explored using TpB include smoking, drinking, contraceptive use, dieting, wearing seat belts, exercising regularly, voting, and breastfeeding (Fishbein, Middlestadt, & Hitchcock, 1994). Ajzen theorizes that human actions are guided by three principles—behavioral beliefs, normative beliefs, and control beliefs.

- **Behavioral beliefs:** These beliefs include the person's thoughts or feelings about the likely outcome of the behavior and the evaluation of these outcomes. Behavioral beliefs create an attitude of importance about the behavior change. For example, if Tammy, an adolescent mother, determines that breastfeeding her newborn will provide additional immunity for her baby while helping her to lose her pregnancy weight, she may be more inclined to try breastfeeding.

- **Normative beliefs:** Beliefs about the expectations of others and the motivation to meet those expectations (what Ajzen [2006] calls normative beliefs) also play a role. Normative beliefs establish the foundation for the formation of the individual's subjective norm. A subjective norm is a conviction about whether most people approve or disapprove of a behavior (Glanz et al., 2002). As others acknowledge and encourage individuals to strive for the behavior change, they verify the subjective norm and increase the individual's motivation to be successful. Normative beliefs can facilitate or inhibit the performance of the behavior. When deciding whether or not to breastfeed, Tammy asks her friend Joanna what she thinks about it. Joanna replies, "Oh, that is so disgusting; I can't believe anyone would do that." The negative response from Tammy's peer could decrease her willingness to continue her breastfeeding behavior. Conversely, if Joanna said, "I heard that breastfed babies have higher IQs," the positive response could act as encouragement for Tammy.
- **Control beliefs:** Control beliefs, according to Ajzen (2006), represent ideas about the presence of factors that facilitate or impede performance of the behavior and the individual's perceived power over these factors. Control beliefs capture an individual's confidence in the ability to perform the behavior (Ajzen, 2006). When Tammy considers the cost and time necessary to use alternative methods of feeding, she might determine that it is easier and more cost effective to breastfeed.

Each of the belief constructs in Ajzen's theory is directly related to the attitudes of the individual. In combination, behavioral beliefs, subjective norms, and control beliefs lead to the formation of behavioral intention. Ajzen (2006) suggests a positive correlation exists between these three constructs and behavioral intention; as attitudes become more favorable, behavioral intention should become stronger. The three constructs collectively help Tammy to form a positive association with breastfeeding, thus increasing her willingness or intention to practice the behavior. Intention, according to TpB, is assumed to be an immediate antecedent of behavior.

Social Cognitive Theory

The Social Cognitive Theory (SCT) is unique from most of the cognitive-behavioral perspectives because its emphasis is on the interpersonal aspect of behavior. At the interpersonal level it is assumed that individuals are influenced by both physical environment, such as space or equipment, and social environment, such as family members, co-workers, friends, and health professionals (National Cancer Institute, 2005). Many theories examine the relationship between behaviors and the social context; however, the Social Cognitive Theory is considered to be the most robust and is a more frequently used interpersonal theory in health education.

SCT provides a framework for designing, implementing, and evaluating programs by considering the relationship among the environment, the people, and their behavior (Bandura, 1986a). The environment provides situations for the individual to learn new behaviors or have existing behaviors modified by others. As the individual evaluates his own thoughts and feelings about the impact of his behavior in relationship to the outcomes on his social environment, he is motivated to either maintain or alter his current actions. Behavior is not simply the result of the environment and the person, just as the environment is not simply the result of the person and behavior (Glanz et al., 2002).

According to SCT, changing health behavior is highly dependent upon a person's self-efficacy. A person—with confidence—has the ability to attain behavioral goals, even when faced with obstacles (National Cancer Institute, 2005). The ability to exercise control over one's own behavior motivates a person to act and be persistent through challenges (Institute of Medicine, 2002). As behavior in a person changes, it results in changes in the way one responds to one's own environment, thus setting up a reciprocal relationship where the environment and behavior influence one another. For example, Calvin, a new employee at the bank, notices that most of his colleagues bring their lunch to work and eat quickly so they can use the remainder of their lunch hour to work out in the on-site exercise room. Although this was not something he did at his previous place of employment, he is now considering altering his lunch routine to include exercise. The availability of the gym in the physical environment along with the positive examples set by his co-workers in his social environment provide motivation for Calvin to consider modifying his lunch behaviors.

The concepts represented in the SCT are founded on constructs from cognitive, behaviorist, and emotional models of behavior change (National Cancer Institute, 2005). A closer examination of the concepts provides insight into SCT's usefulness as an effective approach to behavior change. The concepts (Glanz et al., 2002, p. 169) include:

- **Environment:** This consists of factors physically external to the person. The physical environment might include the availability of space or resources such as equipment. The on-site gym and workout equipment make it easier for Calvin to exercise during the day, and their availability clearly communicates his employers' desire for employees to practice healthy behaviors at work. Calvin's physical setting facilitates the performance of the behavior. The social environment includes the interactions between the person and other influential people. While working out, Calvin has the opportunity to meet other employees who share a common interest, expanding his social network. Not only does the gym remove a physical barrier to exercise, but the commitment to exercising by Calvin's co-workers also provides a positive social interaction.
- **Situation:** Situation refers to the positive and negative thoughts about the behavior in relationship to one's environment. It includes a person's perception of the place, time, physical features, and the activity (Glanz et al.,

2002). For example, if Calvin perceives that there is enough time to get a workout in and if he believes that participating in the lunchtime workout will impress his employer, his motivation to comply could be greater.

- **Reciprocal determinism:** Reciprocal determinism is the idea that a dynamic interaction exists among the person, the behavior, and the environment where each influences the other. Behavior is shaped by our environment; our behavior also can affect the environment, which in turn can affect our thoughts, which in turn affect our behavior. While working on the bench press, Calvin realizes he needs a spotter to safely lift the bar. Although Sam is only an acquaintance, Calvin's environmental need motivates him to ask Sam for help. Not only is Sam willing to help, but he also offers Calvin some tips to improve his form. When it is time for Sam to work on the bench press, Calvin volunteers to spot him. Calvin's desire to return the favor fosters a positive experience for both men, thus reinforcing the likelihood that they will help each other out again. Before long Sam and Calvin begin to schedule regular workouts at the same time.
- **Self-efficacy:** Self-efficacy is often considered the most important prerequisite for behavior change, which explains why it is considered a ubiquitous construct in health behavior theories (National Cancer Institute, 2005). It represents a person's confidence in the ability to perform a particular behavior by taking action and overcoming barriers. At the gym Calvin notices the addition of a new electronic rowing machine. If Calvin believes the use of the rowing machine will enhance his workout and that he is capable of following the printed guidelines to use the equipment correctly, he is more willing to give it a try. Although he may feel uncomfortable about trying the unfamiliar equipment, he draws on his previous success with other pieces of equipment to build his confidence in his ability to successfully use the rowing machine. Self-efficacy is a critical concept in that it serves as the initial motivation to try. The Roman poet Virgil captured the concept of self-efficacy in his statement, "They are able who think they are able" (Pajares, 2002).

They are able who think they are able.
—Virgil (about 40 B.C.)

- **Behavioral capacity:** This concept represents the fundamental knowledge and skills necessary to perform the behavior. If a person is to perform a behavior, he or she must know what the behavior is and have the skills to perform it. In order to safely perform an exercise or utilize the gym equipment, Calvin needs to have an understanding of how it works.
- **Expectations:** These represent what a person believes will occur if the behavior is performed. Through trial and error a person discovers that certain outcomes occur when a situation is repeated. The individual then can perceive the cause and effect relationship. As Calvin continues to lift weights, he notices that his biceps are getting larger and that the amount of weight he can lift is increasing. He attributes the cause of this change to be the effect of his lifting behavior.
- **Expectancies:** These are a value assessment of the positive and negative results of the behavior. Individuals strive to minimize negative outcomes

and maximize positive ones. As Calvin considers his family history of cardiovascular disease, he comprehends the important role his exercise regime plays in the prevention of chronic disease.

- **Self-control:** Self-control is the ability to set and work toward achieving personal goals related to the behavior. In order for the goal to be reached, the behavior must be performed. Calvin has decided to compete in a marathon. His goal requires him to train hard to build up the endurance needed to compete. Without exercising, Calvin will be unable to successfully attain his goal.
- **Observational learning:** Observing the successes and failures of others who have similar attributes contributes to a person's beliefs about his or her own capabilities (Pajares, 2002). Mentally the individual believes, "If they can do it, so can I!" While lifting, Calvin notices Peter, who is also in his early 30s, completing a 30-minute circuit training that combines the rowing machine with treadmill and exercise bike. Calvin thinks about his marathon training and decides that using a circuit method to train would be beneficial. Observations of Peter's behaviors motivate Calvin to change his exercise regime in order to meet his goal.

If they can do it, so can I!

- **Reinforcements:** These are internal and external motivators that increase or decrease the likelihood of reoccurrence of the behavior. Reinforcements provide a reason for performing or ceasing a behavior. Reinforcements can be tangible, such as an award, or intangible, such as praise from others. As Calvin continues to work out, he begins to feel stronger. This good feeling is an intangible motivator that increases the likelihood that Calvin will continue to exercise. Even marking his workout days on the calendar serves as a tangible reward, representing his efforts to meet his exercise goals.
- **Emotional coping responses:** These are techniques used by a person to manage excessive emotional stimuli. Negative emotional stimuli, such as anxiety or nervousness, can act as a barrier to the performance of a behavior. The responses can include managing one's thoughts about a situation or using external devices to reduce or enhance the emotional level. Suppose Calvin has an important presentation scheduled for the afternoon. Although he does not want to miss his workout, he is fearful he will not have enough time to get showered and dressed before his presentation. To ease his emotions, he decides to set the alarm on his watch to remind him to stop in time. The use of the external device serves as a strategy to manage his concern.

The comprehensive nature of the theory, with its many constructs, allows for application to many health issues. Social Cognitive Theory has been used to study a wide range of health problems including childhood obesity, alcohol abuse, smoking, childhood bullying, and self-management of chronic diseases such as arthritis, hypertension, and diabetes. The inclusion of interpersonal factors in cognitive-based perspectives provides insight into the social nature of behavior.

Theories from a Community-Level Perspective

If we are to contribute significantly . . . we must broaden our perspective . . . beyond the individual level.
—Albert Bandura

Exploring health from an individual perspective has merit; however, it is limited in its ability to influence the masses. Not only did Bandura recognize the importance of considering the social context at the individual level, but he also touted the need to amplify our health education efforts by using community-level perspectives. Bandura stated, "If we are to contribute significantly to the betterment of human health, we must broaden our perspective on health promotion and disease prevention beyond the individual level. This calls for a more ambitious socially oriented agenda of research and practice" (Bandura, 2004, p. 162). Community-level models explore methods to mobilize community members and organizations to change the way social systems function from an ecological perspective (National Cancer Institute, 2005). The major premise of ecological models is that interventions that address behavior on multiple levels will lead to greater changes that sustain themselves for long-term health-promoting habits. Multilevel ecological models have been widely applied in several areas such as tobacco control and even used to guide public health and the science policy agendas of Healthy People (U.S. Department of Health and Human Services [USDHHS], 2000). The Social Ecological Model (SEM), one example of an ecological model, considers the intricate interaction among individual, relationship, community, and societal factors. Each level functions to examine the behavior in relationship to the other levels (Dahlberg & Krug, 2002).

- **Individual:** The first level is similar to cognitive-behavioral perspectives in that it considers factors about the individual such as age, education, income, substance use, or history of abuse. When considering the use of oral tobacco among adolescents in rural communities, one would need to think about the characteristics of adolescent development. It would be important to consider the educational immaturity and desire to explore risky behaviors among adolescents when developing intervention efforts.
- **Relationship:** The second level expands to examine how relationships with peers, intimate partners, and family members increase the risk for the behavior. If using oral tobacco is the norm of a teen's closest social circle, it is likely to influence the teen's acceptance of the behavior.
- **Community:** In the third level, characteristics of settings such as schools, workplaces, and neighborhoods are explored. These characteristics are examined to identify elements that contribute to the behavior. The use of oral tobacco is generally more accepted in rural communities. The "mom and pop" owners of the local grocery may not see any harm in selling tobacco to minors. This discovery would direct health education efforts to target community members as part of the educational regime.
- **Societal:** Level four strives to look at the big picture to determine societal factors and cultural norms that create a climate in which the behavior is encouraged or inhibited. Societal factors such as health, economic, educational, and social policies are reviewed to discover avenues to effectively intervene. A community may discover it lacks policies that regulate

the sale of tobacco to minors. Proposing regulatory legislation within a community could provide an opportunity to enlighten the public on the negative ramification of tobacco use among adolescents. This, in turn, could act to alter the cultural norm.

Health education efforts can begin at any level in the model; however, it is the inclusion of each level in health promotion strategies that increases the chances of having a successful intervention.

Multiple strategies exist for intervening at the community level, each involving different approaches to affect change. Most community organizing models contain key concepts that are necessary to consider if measurable change is to be achieved. These key concepts (National Cancer Institute, 2005) include:

- **Empowerment:** The use of techniques to build confidence in the ability of individuals, organizations, or communities to improve their own quality of life. Presenting concerns to influential members of the community, along with a charge for them to help solve the social problem, allows community members to assume greater power over their own circumstances. This, in turn, fosters the development of community leadership in their effort to create desired changes. Case in point: As a result of community growth, the landfill will no longer be able to accommodate the amount of refuse being created. Projections indicate that the landfill will be at maximum capacity in 5 years. The director of the waste management system provides information to the mayor's office indicating a need to identify solutions to the land space problem. The mayor decides to form a committee with representatives from the local clergy, school district, chamber of commerce, and the Lions Club to explore options for the community. Bringing together influential players allows the community members to assume greater power and to expand their power from within to create desired change.
- **Community capacity:** Considers the ability of a community to identify and address social problems. Capacity looks at the willingness of community members to trust and to work with others for the greater good of the whole. Do community members share responsibility for each other and bond together with common activities, such as neighborhood watch groups? If a community wants to reduce the amount of refuse created by the community, health promotion efforts might emphasize the need for all the members of the community to join the efforts to reduce, reuse, and recycle.
- **Participation:** Identifies ways for community members to act as equal partners in the problem-solving efforts. Participation could be built through the formation of a neighborhood recycling program. Homeowner associations could encourage recycling programs and even provide some supplies to achieve this goal.
- **Relevance:** Considers the importance of allowing community members to create their own agenda based on what they believe to be the pressing needs. One must consider the importance of the issue of concern from the community members' point of view. Perhaps the explosive community

growth has resulted in traffic complications due to an inadequate number of lanes. Although the landfill situation looks bleak and is an issue of distress, a more pressing dilemma of immediate concern to community members might be an inadequate transportation system.

- **Issue selection:** Involves the dissection of a problem into smaller solvable parts. This concept breaks the issue down to allow community members to see smaller changes that will impact the larger problem. Perhaps the creation of policies related to the amount of garbage each household would be allowed to contribute (without additional charge) would motivate community members to self-regulate the amount of garbage they produce, thus encouraging the practice of the reduce, reuse, recycle concept. The addition of the new policy, in conjunction with neighborhood recycling promotion, represents small changes that function collectively to make a significant impact toward solving the landfill problem.
- **Critical consciousness:** Includes strategies to help community members identify the root cause of its social concern. The community may choose to disclose the problematic landfill situation by using television, radio, and newspaper ads, and a waste management hotline could be created to provide additional information for community members who seek it.

Neither contemplation of the navel nor the writing of pamphlets can be shown to be cost-effective.
—Mohan Singh

The preceding community organization model places emphasis on building power and encourages community members to develop their skills as active citizens (Parachini & Covington, 2001). The model is a grassroots-based, conflict-oriented approach designed to mobilize disadvantaged people to act on their own behalf (Fisher, 1997). Other community-based models differ in that there is less emphasis on grassroots efforts and more focus on the use of policy and regulatory infrastructures to promote change.

Another popular theory that addresses social problems from a community-based perspective is the Diffusion of Innovation Theory. Diffusion of Innovation is an attempt to maximize the exposure of previously successful programs. The previously successful intervention is often considered a "new" and innovative approach to the health concern. This approach attempts to avoid the phenomenon of "reinventing the wheel" by increasing the number of people who are reached by successful interventions (National Cancer Institute, 2005). The concepts of Diffusion of Innovation explain the process by which innovation, such as an idea, product, or social practice, is communicated from one person to another over time among members of a social system (Rogers, 2003). The concepts central to the theory are summarized as follows (Rogers):

- **Innovation:** The "new" idea, object, or practice is discovered by an individual, organization, or other unit of adoption. Consider the promotion of family planning methods in third world countries. Although strategies to regulate reproduction are common in the United States, other nations, such as Indonesia, Thailand, and Colombia, struggle with multiple barriers that inhibit the adoption of family planning behaviors. One common barrier to family planning models is the limited number of health professionals

available to provide services. It is common to have one doctor for thousands of people in Indonesia, thus the "innovation" would be to build a clinic without walls where laypersons become part of the staff under the direction of the physician.

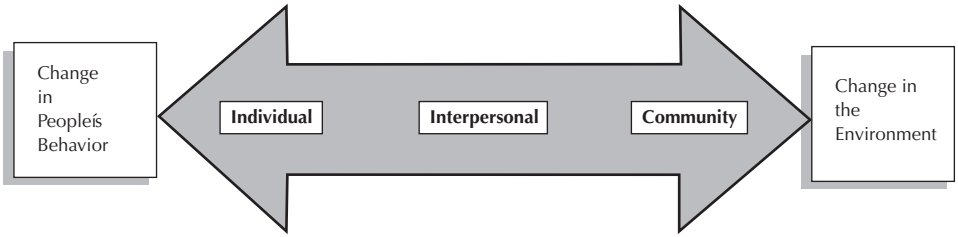
- **Communication channels:** Communication channels represent the means by which ideas are transmitted from one person to another. This can occur on an interpersonal or a mass media level. Laypersons working in the clinic work to educate clients on the various methods of birth control along with instruction on proper use. These laypersons might include religious leaders and other influential members of the village (Crossette, 1994).
- **Social system:** The joining of groups of individuals together to adopt the innovation represents the use of social systems. According to Rogers, social systems represent, ". . . a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (2003, p. 23). Uniting community organizations with governmental efforts also facilitates the adoption of an innovation. In Buddhist Thailand, for example, cutting fertility from more than 6.5 births to 2.1 per woman in a quarter of a century had much to do with government support and the efforts of the independent Population and Community Development Foundation (Crossette, 1994).
- **Time:** The amount of time it takes to adopt the innovation. How long it will take to institutionalize (be accepted as a normal procedure) the practice of using laypersons to provide family planning can have direct impact on the strength of the innovations. Innovations that have quick institutionalization are likely to sustain themselves and have a greater impact on public health.

Diffusion of Innovation Theory has been used to promote condom use, smoking cessation, and the use of new technologies by health practitioners. Like other community approaches it employs a multilevel approach to behavior change.

Change Strategies

Basically, health promotion strategies facilitate change from a continuum of two approaches: changes in people's behavior or changes in the environment (National Cancer Institute, 2005). These approaches can be subdivided into three ecological levels: individual, interpersonal, or community. Efforts that target the individual strive to alter a person's knowledge, skills, and attitude about behavior with the notion that changes in the individual behaviors might indirectly lead to changes in the environment. For example, when individuals adopt the practice of riding a bike to work, it results in an increased demand for bike lanes in the community. Innovations that emphasize community-level theory strive to make changes in the environment that indirectly influence the behaviors of the individual. As the number of bike lanes in the community increases more individuals ride their bike to work. Interpersonal-level theories tend to fall in the middle, investigating the relationship between individuals and their environments.

Figure 3-7 summarizes the continuum change strategies and the useful theories for each ecological level.



Ecological Level	Individual	Interpersonal	Community
Useful Theories	Health Belief Model Stages of Change Theory Decisional Balance Theory Self-Efficacy Theory Theory of Planned Behavior	Social Cognitive Theory	Social Ecological Model Community Organization Diffusion of Innovation Theory
Examples of Strategies	Individual counseling Health fairs Newsletters/flyers	Support groups Peer counseling	Bond elections Promoting change through policy

Figure 3-7
Change Strategies by Ecological Level
Source: Adapted from National Cancer Institute, 2005, p. 46.

Using Theories and Planning Models

Theories and planning models are tools available to practitioners to create solutions to health problems (National Cancer Institute, 2005). Like all tools, the ability to use them effectively comes with practice. Becoming comfortable with behavior change theories and planning models enhances a practitioner's ability to effectively plan innovations that maximize health promotion efforts. These tools provide a systematic approach to solving problems by looking at the health concern from a comprehensive perspective while narrowing the scope of the issue into manageable components.

Objective: After reviewing the case study, the reader will discuss three or more obvious barriers to the success of this workshop.

Case Study: John

John is offering a workshop for low-income expectant mothers as part of his work for the March of Dimes. He personally likes role-playing as a method, so he has written up several role-plays about life after the delivery. The site for the two-hour workshop is a nice upscale hotel, and he has mailed approximately 100 invitations. This is a very culturally diverse community with many Asians, Salvadorians, and Mexican Americans. John is surprised at the low participant turnout and very indignant when the few mothers-to-be in attendance walk out rather than participate in role-plays. (See Case Studies Revisited page 90.)

Questions to consider:

1. Based on the number of invitations sent, how many participants should John expect to attend?
2. What might be some barriers associated with the location John selected to host his workshop?
3. How might John's selected method (role-play) act as a barrier?
4. What suggestions would you make to help John improve his planning efforts?
5. How might the use of a planning model, such as PRECEDE-PROCEED have helped John identify these potential pitfalls?

Educational Principles

You should also review basic educational principles when determining which methods to employ. Have you applied as many educational principles as possible, such as reinforcement, repetition, and practice? Reviewing these principles will often trigger new ideas about which methods to use or not to use.

In order to address health issues through health education, it is important that we draw on the vast knowledge base that education has developed to tell us how to educate learners. The following principles, adapted from Gilbert's text (1981), are of enormous importance to health educators.

Principles Related to Motivation

Teaching is effective only when clients are motivated to learn. Some principles of motivation follow:

- Learning is more effective when the learner is motivated by results intrinsic to the experience.
- Individuals tend to repeat behaviors that are rewarded (reinforced).
- Immediate reinforcement is more effective than delayed reinforcement.
- Fear and punishment have uncertain effects upon learning. They may facilitate or hinder it, depending on the learner's individual reaction at the time.
- An individual learns best when he or she believes the learning is important.
- Learners can be helped to understand a concept, principle, or generalization by being shown how varied experiences relate to it and how it can be applied to a new situation.

Principles Related to Needs and Abilities

Clients can learn only to the extent of their abilities, and they are usually motivated to learn only that which they perceive as necessary. Therefore, educators must determine the needs and abilities of their client base. Principles related to this task follow:

- Behaviors sought should be within the range of possibility for the learner involved.
- Generally, the higher the educational level of any given group, the greater is the effectiveness of using the printed word.
- The lower the educational level, the greater is the need for oral or visual media.
- There are marked individual differences in any given group of learners.
- Individuals usually slant persuasive communications to fit their own biases. It is important to protect learners from your biases.
- Creative individuals show a preference for the complex and the novel.
- When problems or issues are a common concern, group thinking is an effective approach to learning.

Principles Related to the General Nature of Learning

Health educators, like any other educators, should be familiar with the following principles of the functions of learning:

- In order for learning to occur, repetition is usually required. Three exposures to the content are recommended.
- Learning should be an active process that involves the dynamic interaction of the learner with that which is to be learned.
- Other things being equal, recent experiences are more vivid than earlier ones.
- Learning generally proceeds from the general to the specific, and then to the general (whole–part–whole).
- Transfer learning is not automatic. The ability to apply prior knowledge or skills to a new context must be taught.
- Behaviors or skills sought must be practiced.
- Learning generally progresses from the known to the unknown, from the concrete to the abstract, and from the simple to the complex.
- Periods of practice interrupted by periods of rest result in more efficient learning than do longer periods of practice with few or no interruptions.
- Time spent recalling and discussing what has been read facilitates learning more than mere rereading.

Characteristics of Learner and Community

We must always consider the characteristics of the individuals and groups we are working with, namely, the following:

Age
Gender
Reading ability
Language skills/proficiency in English
Biases and beliefs held
Readiness to learn

Cultural and ethnic background
Motivation to learn
Learning preferences

Successful application of the previously mentioned theories and models depends on how these characteristics are addressed. For example, if this is a court-ordered alcohol education program, you may have good attendance in terms of the number of bodies, but it is usually a great challenge to get the minds in those bodies interested and attentive. Most community workshops mix ability groups, making it a further challenge to maintain a high interest level.

Principles Related to Adult Learners

Adult learners present a unique dynamic to the learning environment. The wide range of experiences and perspectives of adults dictate that they see a connection between learning objectives and application to their own lives (Edmunds, Lowe, Murray, & Seymour, 2002). Additionally, adults typically vary significantly in their preferences for how they learn as well as their aptitudes and abilities for learning. Edmunds, Lowe, Murray, and Seymour suggest several key differences between adult and child learners, including:

- Unlike children who rely on others to determine what is important to learn, adults are autonomous, preferring to decide for themselves.
- Adults are unwilling to accept information at face value and need to validate the information from their own perspective.
- Adults expect what they are learning to be immediately useful, unlike children who anticipate learning to be useful in the future.
- Adults use previous experiences as a canvas on which to add new information, unlike children who are often relatively inexperienced with limited viewpoints.
- Adults have the potential to be knowledgeable/creditable resources in the learning environment compared to the limited ability of children.

Robert W. Pike (2003), expert in human resource development and adult learning, has identified four fundamental principles related to adult learning. He refers to these as "Pike's Laws of Adult Learning." Although adults are the target of Pike's laws, his principles appear to be fairly universal for most learners.

His first law is related to experiential learning. Just as babies and children enjoy learning through experience, educational experts have discovered that adult learning is also enhanced by hands-on experiences. The ability to manipulate items or props in a hands-on situation enables the learner to "experience" the material and fit the new information into existing schemes.

Pike's second law is centered on the notion of self-directed learning. Learners are more apt to believe in and support their own ideas. Thus, the role of the educator is to design learning environments that allow participants to generate ideas, concepts, or techniques. The educator serves as guide, leading and clarifying, rather than as an all-knowing professor of information.

Adult learners need to see a connection between their personal lives and the learning objectives presented in the classroom.

The learning environment is often an overlooked aspect of learning. According to Pike's third law, there is a proportional relationship between the amount of learning and the amount of fun participants are having (Pike, 2003). Although having fun should never be the primary goal of an educational program, it is often a natural by-product of effective interventions. Creating a relaxed, comfortable environment where participants feel free to laugh, cry, and share personal experiences functions to tear down barriers to the learning process.

Pike's fourth law of learning sounds like the resounding gong of most health educators—behavior change equals learning. Actual changes in behavior are clear indicators that learning has occurred. The ultimate goal of all educational endeavors is to make a positive change in the participant's current knowledge, skill level, or attitude toward the behavior. The ability to apply the learning is what counts most; thus, providing ample opportunities to practice will increase the likelihood of retention (Edmunds et al., 2002).

Learning Preferences

It is common knowledge that individuals process information in different ways. A learning preference is a preferred method of taking in, organizing, and making sense of information. Learning preferences are often referred to as learning styles. Stewart and Felicetti (1992) define a preferred learning style as those educational situations under which a student is most likely to learn. "If students' learning styles are compatible with the teaching style of their instructors, they tend to retain more information, effectively apply it, and have a better attitude toward the subject" (Wirz, 2004). Learners can be classified according to their learning style/preference: visual, auditory, or tactile/kinesthetic.

Visual learners learn best by seeing. This type of student uses cues from the body language and facial expressions of others to fully understand the subject matter. Visual learners often think in pictures and learn best from visual displays such as diagrams, illustrations, videos, flip-charts, demonstrations, and handouts, and by eliciting memories (Wirz, 2004). If given the task of assembling a bicycle, the visual learner would rely heavily on his or her mental image of a completed bicycle and the graphic display in the directions as cues to complete the task.

Auditory learners learn best by listening. These learners interpret the meaning by listening to the tone, pitch, speed, and other nuances of speech. Ideal methods for auditory learners include lectures and small or large group discussions. When assembling the bike, the auditory learner would likely read the printed directions out loud, because written information has little meaning for him or her until it is heard (Figure 3-8).

Tactile/kinesthetic learners learn best by doing, moving, or touching. They prefer movement and concentrate best when do not have to sit still for long periods of time. Hands-on methods that allow the individual to explore and practice best facilitate learning for this group. The tactile/kinesthetic learner would likely toss the directions to the side when attempting to assemble a bike.

A health educator can easily accommodate varied learner preferences by selecting a mixture of methods within a program. Varying the strategies used for

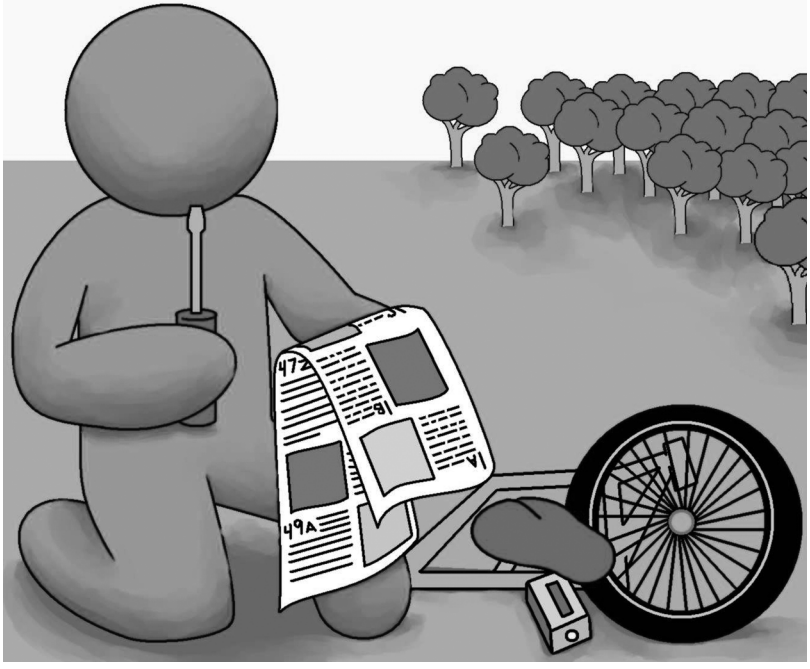


Figure 3-8
Learning Preferences

intervention decreases boredom while giving learners the opportunity to experience the content in a venue that optimizes their educational learning style.

Group Size

The size of the group will play an important role in method selection. Large groups, say over 100, make individual interaction difficult. Methods must be selected while keeping in mind the size of the group. Lecture is a way to share a considerable amount of cognitive information in a short time but usually is not effective for reaching affective or psychomotor objectives. Small groups offer flexibility in many ways but also put more pressure on the individual to participate. Ideally, small group size is from 4 to 6; however, groups can be as small as 3 or as large as 10 (Allen, Duch, & Groh, 2001). Groups with an odd number of members are recommended for greater success in working through conflicts. For projects involving research that culminates in a written report and/or an oral presentation, teams of three to five members can be quite effective (Howard, 1999).

Contact Time

The time you have to spend with a group will play a major role in the selection of appropriate methods. Certain methods simply cannot be used in a short period of time. Many activities require a certain amount of trust to be successful. Developing trust often involves icebreaking activities, which usually require time in order to create openness among the participants. Short workshops do not lend themselves to these activities. As the amount of contact time decreases the method selected must maximize the learning opportunity by ensuring that essential content is effectively delivered.

Objective: After reviewing the case study, the reader will identify two or more problems associated with the method James selected for his intervention.

Case Study: James

James is conducting a 2-hour workshop on alcohol abuse with 20 individuals who have been referred to this mandatory workshop for drinking and driving offenders. James has not worked with this type of group before and decides to use an icebreaker exercise designed to reveal personal details of the participants. The group members immediately become hostile and bombard poor James with comments like, "I don't want to be here anyway," "This information is no one's business but mine," "Just get on with the facts and let's all get out of here!" James cuts short the icebreaker and concludes the workshop as quickly as possible with a less than successful lecture on the dangers of alcohol abuse and driving. (See Case Studies Revisited page 90.)

Questions to consider:

1. What characteristics of the learners should James have considered when developing his intervention?
2. Why might the use of a personal icebreaker in this situation be an inappropriate method to select?

Budget

Quality health education need not be expensive, but it does require an appropriate budget. To compete successfully with unhealthy media messages and long-held unhealthy habits, we need and deserve a reasonable budget. Do you have enough money to use the best methods for the health education program? If you have limited resources, can you still achieve your objectives, or would you be better off limiting the number of programs but improving the quality of the programs offered?

Quality health educators should receive quality salaries for their time, and that requires an appropriate budget. Photocopies, DVDs, computer software, and other tools of the health educator all cost money.

Resources/Site

You must consider all the resources you have at your disposal. Do you have good facilities to break out into small groups? If you have access to a microcomputer lab, it opens up totally new possibilities. Will you have a quiet space for presentations? What about parking or transportation? If you have access to well-appointed teaching facilities, it opens up the use of many methods. This is especially true of those methods that include technology. Do the participants have Internet access? Of course, many quality health education programs have been offered without any facilities by reaching into homes or utilizing community settings. You work with what is available, and often the local setting is much better for achieving your objectives.

Characteristics of the Educational Provider

If you are the primary provider, what are your strengths as a health educator? What methods are you uncomfortable using? Although you should be willing to take some chances if you are to be successful, it is important you not

Be sure that the size of your group is appropriate for the type of program you are conducting.

set yourself up for disaster by selecting a method that will make you so uncomfortable that you cannot do a credible job. If certain methods seem central to achieving your objectives, it may be vital to employ them. Therefore, you may need to practice the method so you can be effective in using it, or perhaps you should bring in an outsider to conduct the method. Using such guests can often increase your comfort with a method while providing a needed activity for your target population. Again, the important principle is to use the correct method given your objectives.

The health educator must also be very cognizant of the influential role his or her personal attitude will have on the educational environment.

It is critical that you communicate a sense of excitement and support for the intervention. If you are not energized about the content being presented, why should your participants be? People are naturally drawn to optimistic individuals; thus, the health educator should strive to maintain a positive, supportive attitude that will in turn foster a positive learning climate.

Cultural Appropriateness

It is extremely important that you consider the cultural characteristics of the group you are targeting. Many programs have failed because of this issue. The best protection is to establish an advisory group from the group being targeted. This small group can preview your methods and give you some idea of what response to expect from the participants. Another, less formal way to get some idea is to sit down with a few participants prior to the event and ask them if they think the method would work and be appropriate. (See also Chapters 8 and 9.)

Using a Variety of Methods

Why use a variety of methods? Following are some reasons:

1. It makes it more likely you will achieve your objectives.
2. It may prevent disruptive behavior.
3. It may ensure participant interest.
4. It is more fun for the presenter and learner.
5. Not all learners respond positively to the same methods.

Remember, in health education we are often working with hard-to-reach groups, and anyone gets tired of the same presentation method. Always do what you can to make your presentation interesting, and you will have a better chance of achieving your objectives. By keeping people interested you will also minimize disruptive behavior, such as demonstrated lack of attention or even outright hostility. During community workshops some participants may actually walk out. The first time you have a large number of people walking out on your presentation, you will be very upset, but the problem may simply be a lack of variety or poor method selection. Variety is more fun for you too. You will lose interest yourself if you do things the same way each time. Try new methods, and you will find your task much more enjoyable.

Some Comments on Method Choice

At the elementary and secondary levels, straight lecture or textbook methods are *considered nonfunctional* (Fodor & Dalis, 1974, p. 53).

Each instructor must develop his or her own technique of facilitating. Learning is greatly increased if students are motivated and interested in what they are doing. One of the major criticisms of health education programs is that they are dull. Developing a caring, humanistic approach toward participants should help health educators make their classes more exciting and challenging for the students. The learning process can and should be made enjoyable and interesting.

Any teaching technique or procedure must actively involve the learner if it is to be effective. According to Pike (1994), the average adult can "listen with understanding" for approximately 90 minutes, and "listen with retention" for approximately 20 minutes. As the level of intelligence decreases, the ability to retain information naturally decreases. Pike recommends the "90/20/8 rule," suggesting that no session we teach run more than 90 minutes, the method should be changed at least every 20 minutes, and participants should actively manipulate the content every 8 minutes (Booth, 2007). Active participation can be either direct or vicarious. In direct participation, the student is physically involved in the activity; in vicarious participation, he or she is a viewer of an activity that is going on in another place or another time. Either way, the goal is for the individual to be affected positively and provided perceptions and experiences contributing to the attainment of desirable long-range cognitive, affective, and action goals (Kime, Schlaadt, & Tritsch, 1977, p. 96).

Different learning opportunities should not be used for the sake of variety alone. True, a variety of learning techniques is of value in that variety tends to break the monotony for the teacher as well as for the student, but there are other important reasons for using different learning opportunities: (1) to meet a variety of objectives, (2) to meet a variety of student needs and interests, and (3) to stimulate a variety of senses (Oberteuffer, Pollock, & Harrelson, 1972, pp. 138–139).

One of the most important generalizations that emerges from systematic comparisons of programs and experiments with positive results and those with negative findings (no effect) is that the greater the variety in educational methods used, the more likely the program or experiment will show positive results. This generalization applies both with individuals and with populations. At the individual level, variety in education methods apparently helps to surround the learner with communications appealing to different senses and modes of learning that are mutually supportive (Green, 1976, p. iv).

Montambeau and Finch (2000) believe that learning is related to the method selected, as shown in Figure 3-9. The more active and involved the learner becomes, the more likely he or she will be to learn. Hence, the least effective strategy is simple lecture, with no learner activity, and the most effective occurs when the learner is teaching others and, thus, immediately applying what has been learned to the fullest extent.

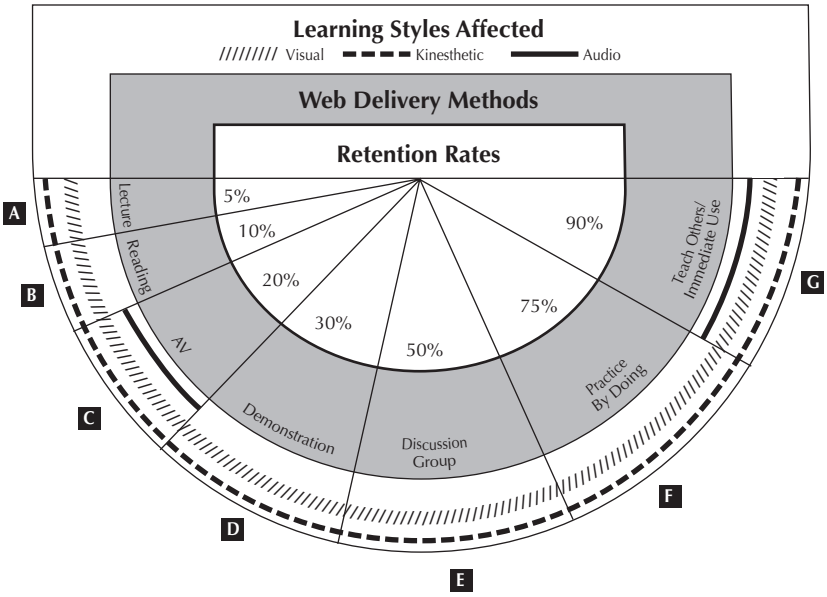


Figure 3-9
Learning Retention Rates According to Strategy
Source: From Montambeau & Finch, 2008. Reprinted with permission.

The Learning Environment

The mental/emotional environment can be influenced by the physical environment in which we conduct our classes or workshops. We must do what we can to make the total environment as pleasant as possible. If we have control over the space, we should strive to develop a cheerful, positive appearance that is conducive to learning. It is common sense that a room that is warm and pleasant is an enhancement for good learning. Select warm colors and organize the space to be inviting. Adding colorful paper and posters also sets a positive mood. Be certain to change the colors and posters on a regular basis. Like variety in method selection, variety in the environment stimulates learning. Often in community settings we have limited control over the physical setting.

Objective: After reviewing the case study, the reader will explain the relationship between the learning environment and learner performance.

Case Study: Susan

Susan inherits a classroom that is run-down and gloomy in appearance. Many years ago it was painted a battleship gray, which has now faded. The bulletin boards are old and worn. She believes that this is contributing to a negative atmosphere and wants to do something about it. She has requested through her principal that it be refreshed. She discusses the problem with her students, who organize a fund-raising drive that results in $145 for paint and paper. Over the break students volunteer to help scrub

Rooms that are decorated cheerfully with warm colors offer an inviting learning environment.

and paint the room. The transformation is dramatic. The 3 days of vacation time spent painting result in a major change in the total environment. Susan notices a significant change in the classroom climate. (See Case Studies Revisited page 91.)

Questions to consider:

1. Do you believe Susan's outcomes in the classroom climate were worth her personal investment? Why or why not?
2. How might the inclusion of the students in the renovation project foster an effective learning environment?

Noise Levels

Noise can be a major distraction in the learning environment. Select a site free of distractions as much as possible. Soft background music can sometimes overcome some noise from the outside. Other noise can come from participants and can also be a distraction or could simply indicate a high degree of interest. Noise must be evaluated in terms of what helps achieve learning. Many classrooms are so quiet that learning is unlikely to be taking place. Noise, therefore, is not always bad. If we desire to increase learning retention, noise levels will likely increase if the methods used involve active learning. Participants need opportunities to show enthusiasm and ask questions. The reason for the noise is an important consideration. All participants should have an opportunity to hear and be heard.

Seating Arrangements

The way you organize your seating is very important. Most situations allow for some change. Determine what would be the best seating arrangement for the objectives you hope to achieve. If you want interaction, a circle might be best. If you feel you need most interaction to be between you and the group, a semicircle might be best. If it is a large group, you might consider multiple rows with your position elevated. If you want small-group work, you might consider small clusters. Figures 3-10 through 3-15 depict various seating arrangements.

Cluster Seating (Figure 3-10): Arranging four or five desks in such a manner that the participants face one another.

Positives:

- Facilitates group work and activities.
- Facilitates learning from others and peer education.
- Allows for hands-on learning.

Negatives:

- Some participants will have their back to the instructor, requiring participants to turn during active instruction.
- The arrangement could distract from the ability to practice independently.

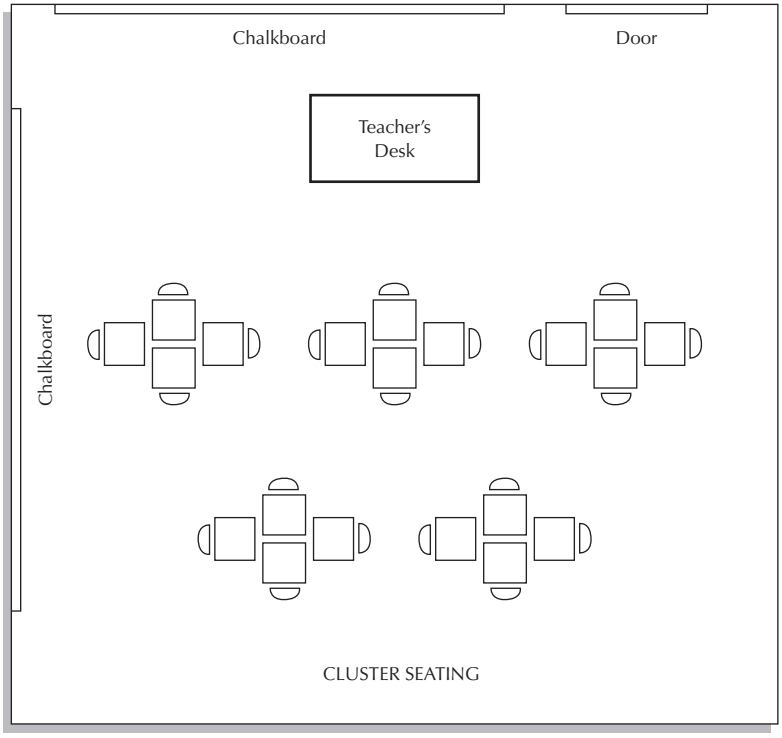


Figure 3-10
Interaction and Small-Group Work

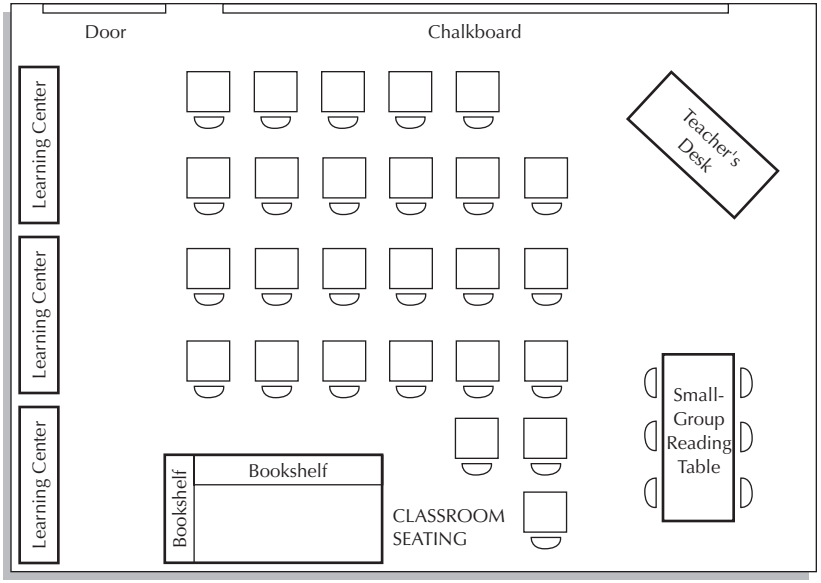


Figure 3-11
Flexibility with Control

- Group dynamics could inhibit learning (mismatched ability level or personality of the participants).
- Limits the instructor's ability to regulate activity.

Traditional Classroom Seating (Figure 3-11): Participants are all facing the front of the room in parallel rows and columns.

Positives:

- Emphasizes the role of the health educator as the instructional leader.
- Accommodates a maximum number of people.
- Ideal for independent activities.
- Allows focus of attention to be centralized on the instructor, screen, or board.
- Provides participants with a sense of personal space.

Negatives:

- Creates natural barriers to conversation, thus limiting discussion among participants.
- Limits the mobility of the presenter to the front of the room.
- The zone of teaching emphasis becomes the front and center of the arrangement. Participants seated on the sides, back, and corners might not participate equally with those seated in the middle or front.

Circular Seating (Figure 3-12): All seats are positioned fairly close, facing into the center of the room.

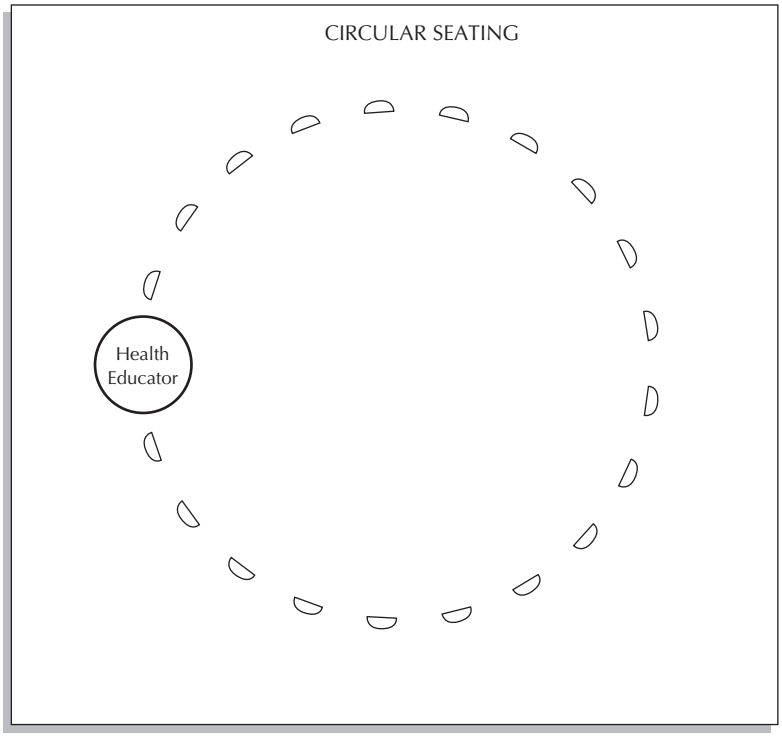


Figure 3-12
Guided Interaction

Positives:

- Promotes a sense of equality among participants.
- Facilitates equal interaction and participation.
- All participants are "exposed" to the health educator and other participants.
- Promotes the role of the health educator as "part of the group" in lieu of an authority figure.

Negatives:

- Loss of anonymity might make some participants feel uncomfortable.
- The proximity of desks promotes side conversation among neighboring participants.
- Limits the ability of the instructor to control off-task behavior.

U-Shaped Seating (Figure 3-13): Desks are arranged in parallel rows on one side of the room facing the parallel rows on the opposite side with an open space in the middle. The two rows are connected by an additional perpendicular row of inward-facing desks. The health educator can be located in the open portion of the U shape or can minimize his or her presence by standing behind the perpendicular row.

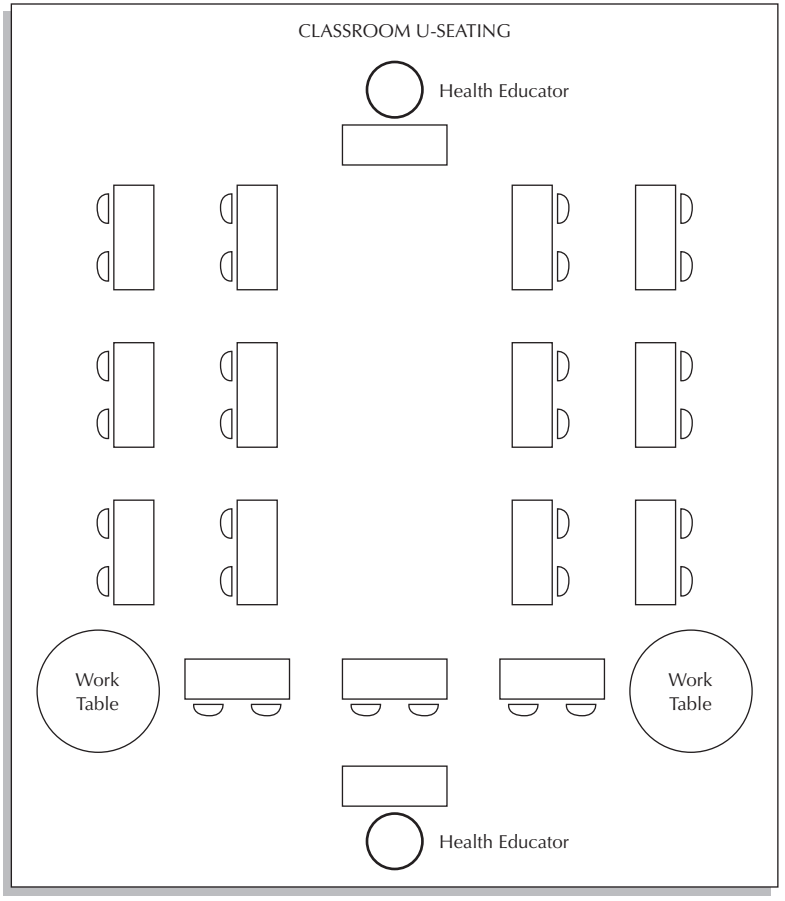


Figure 3-13
Flexibility with Emphasis on Interaction

Positives:

- Useful for demonstration.
- Useful for debate.
- Encourages eye contact among participants.
- Health educator has greater freedom of movement.
- Promotes interaction among participants.
- Seating can be easily altered to create buzz groups.

Negatives:

- Creates a barrier among participants by dividing the room into sides.
- The zone of emphasis becomes the middle, potentially de-emphasizing students located at the ends and corners.
- The proximity of desks promotes side conversation among neighboring participants.
- The arrangement could distract from independent practice.

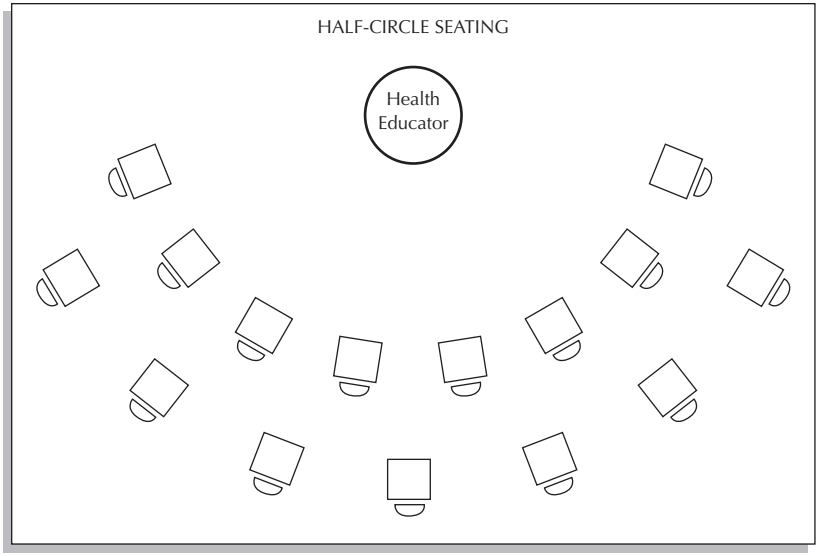


Figure 3-14
Controlled Interaction with Health Educator in Controlling Position

Half-Circle Seating (Figure 3-14): Seats are arranged in a semi-circle facing the health educator located in the middle.

Positives:

- Facilitates class discussions with an understanding that the health educator is the discussion leader.
- Allows the health educator greater freedom of movement among participants.
- More relaxed than parallel rows with minimal loss of control by instructor.

Negatives:

- Requires a large amount of space.
- The zone of emphasis becomes the middle, potentially de-emphasizing students located at the ends.

Board Room Seating (Figure 3-15): Design is similar to the U shape with parallel and perpendicular seating; however, the space between desks/tables is removed, creating a conference table.

Positives:

- Facilitates problem-solving activities by increasing the proximity of participants and reducing personal space.

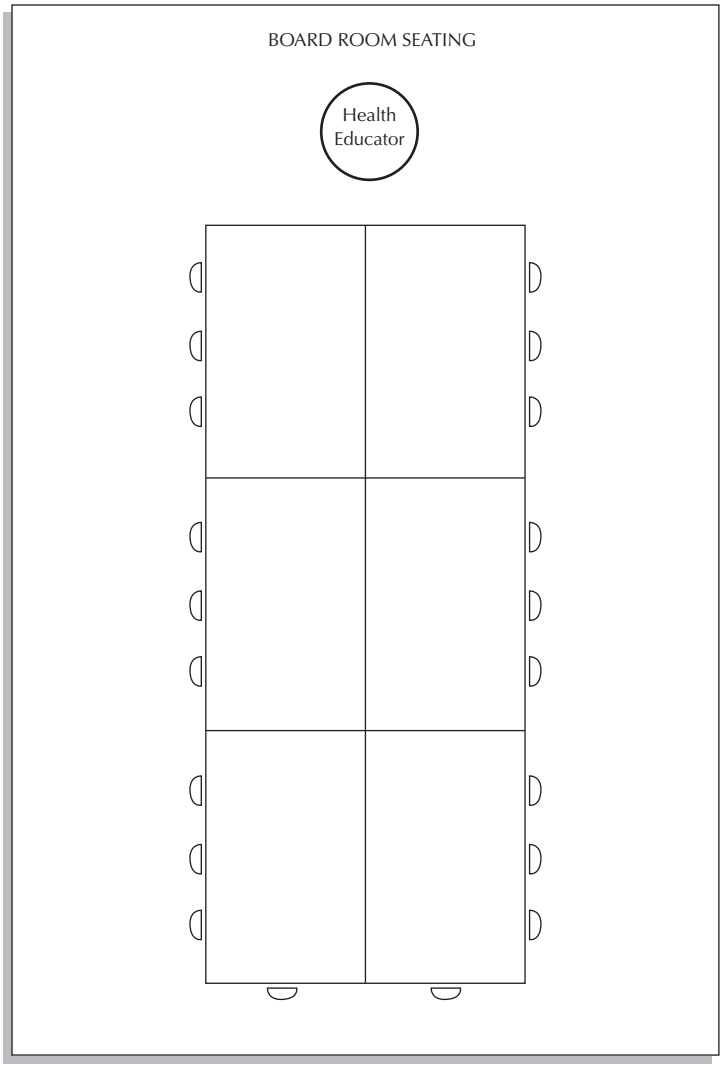


Figure 3-15
Controlled Interaction

- The instructional leader is clearly defined but easily shifted to other members in the group.
- Promotes a business-like environment and a sense of formality.

Negatives:

- The close proximity of participants could be uncomfortable for learners.
- Not conducive for larger groups.
- Eye contact is limited among participants seated on the same side.

It is important to plan ahead and not let seating happen simply by accident. Arrive early for workshops and plan your environment. Arrange the seating and let people know it is not okay to change it. If you do not want people sitting in the back, then do not place seats in the back. If you are in the classroom, do not let students pick where they sit until you know them well. Certain students or participants should never sit together. Be certain to also consider any special needs students have such as hearing or sight limitations. Putting someone in an incorrect seat can produce a behavioral problem. For example, a participant who cannot hear may become very disruptive simply because he or she cannot participate.

Using the Total Environment

In the past many health education programs have assumed that the few contact hours of the program could lead to major changes in the target population without giving consideration to the total environment in which individual members exist. It is important that we give consideration to the total physical and mental climate in which these people live.

Although we may not have the capability to significantly alter this environment, we can probably provide the knowledge or skills to alter perceptions of the environment. That is, we might help participants overcome feelings of lack of control or helplessness or we might provide information on where to get help to change the environment.

Objective: After reviewing the case study, the reader will describe two or more environmental barriers ignored by Maria, which may have resulted in poor compliance.

Case Study: Maria

Maria has conducted a prenatal care workshop for residents in the community who qualify for subsidized housing. The major objective was to increase knowledge regarding the reasons to seek prenatal care and increase compliance. Maria selected a variety of methods that emphasized the positive health outcomes among women who received prenatal care. The workshop was well attended, and the information seemed to be received with interest. Post-workshop assessment showed knowledge was significantly increased. A 6-month follow-up, however, shows no increase in seeking care compliance. (See Case Studies Revisited page 91.)

Questions to consider:

1. If Maria's goal was to increase prenatal care among her participants, how might her stated objective have led to inappropriate method selection?
2. What do you believe might be potential barriers to this target population that hinder prenatal care?

Packaging the Total Intervention Strategy

How your methods fit together to form your intervention package is important in achieving your objectives. Are the methods complementary and reinforcing? Do the methods break up the time together so that you can more easily hold the attention of your intended audience? Have you appealed to different styles of learning? Have you applied as many educational principles as possible, such as reinforcement, repetition, and practice?

Common Mistakes in Method Selection

Beware of the following common mistakes in method selection:

1. Selecting a method that you personally like but that is not the best method for achieving your stated objectives
2. Underestimating or overestimating the time required to conduct a method properly
3. Selecting an inappropriate method for the characteristics of the group
4. Not reinforcing key points

Principles of Engagement

The Centers for Disease Control and Prevention has developed a set of principles of engagement to promote quality community involvement in community health projects. These principles, presented in Table 3-2, can and should be applied to community health programs.

For more information and tools related to this chapter visit http://healtheducation.jbpub.com/strategies.

Table 3-2 Principles of Community Engagement

Before Starting a Community Engagement Effort . . .
1. Be clear about the purposes or goals of the engagement effort, and the populations and/or communities you want to engage.
2. Become knowledgeable about the community in terms of its economic conditions, political structures, norms and values, demographic trends, history, and experience with engagement efforts. Learn about the community's perceptions of those initiating the engagement activities.
For Engagement to Occur, It Is Necessary to . . .
3. Go into the community, establish relationships, build trust, work with the formal and informal leadership, and seek commitment from community organizations and leaders to create processes for mobilizing the community.
4. Remember and accept that community self-determination is the responsibility and right of all people who comprise a community. No external entity should assume it can bestow to a community the power to act in its own self-interest.

Table 3-2 Principles of Community Engagement (continued)

For Engagement to Succeed . . .

5. Partnering with the community is necessary to create change and improve health.
6. All aspects of community engagement must recognize and respect community diversity. Awareness of the various cultures of a community and other factors of diversity must be paramount in designing and implementing community engagement approaches.
7. Community engagement can only be sustained by identifying and mobilizing community assets, and by developing capacities and resources for community health decisions and action.
8. An engaging organization or individual change agent must be prepared to release control of actions or interventions to the community, and be flexible enough to meet the changing needs of the community.
9. Community collaboration requires long-term commitment by the engaging organization and its partners.

Source: U.S. Department of Health and Human Services, 1979.

EXERCISES

1. Select one of the theories/models or elements of a theory/model described in this chapter and apply it (them) to a specific health intervention. For example, consider HIV education for a community youth group. You could apply the Health Belief Model as a whole, elements of the Health Belief Model, or maybe you want to focus on the Theory of Planned Behavior of condom use. State the health issue on which you will focus, select the theory/model/element, and then briefly outline an intervention, describing the methods that will operationalize the theory.

2. One of the educational principles related to motivating the learner states: *Fear and punishment have uncertain effects upon learning. They may facilitate or hinder learning.* You are conducting a workshop for middle-aged women on preventing cervical cancer. Briefly describe how this educational principle could have an impact on your workshop.

3. One of the educational principles related to the needs and abilities of the learner states: *The lower the educational level, the greater the reliance on oral or picture media.* You are conducting a workshop for 10-year-old children on safety in the home. Briefly describe how this educational principle could have an impact on your presentation, and give concrete examples of how you would incorporate this principle.

4. You are planning to conduct a series of community workshops on weight control. List four *characteristics of the learner* that should be considered in planning, and briefly describe why each is important.

5. Interview a health educator regarding what models and theories he or she uses in the practice of health education.

CASE STUDIES REVISITED

Case Study Revisited: Molly

Molly addressed most of the concepts in the IBCF; unfortunately, her failure to account for predisposing and enabling factors has limited the effectiveness of the intervention. The program successfully provided the requisite knowledge about the importance of fruit and vegetable consumption, the necessary skills for evaluating healthy snack choices, and promoted a positive attitude about eating healthy. She failed to consider financial burden (enabling factor) associated with eating healthier foods. It is also possible, however, that the snacks in the vending machine were not the personal preferences of the students. Perhaps Molly should have included in her program a method that allowed students to determine what should be found in their healthy vending machine. The method would provide Molly with direction for the selection of fruits and vegetables while addressing predisposing factors related to personal preference. Reducing the cost of the items seems like an obvious solution; however, this may not be a viable option without additional funding to subsidize the cost of the healthier food. Molly might consider adding methods to promote the vending machine foods as "student choices" and tout the benefits of the healthier foods for just a few more cents, thus pointing out the positive aspects of the change and reinforcing the likelihood of snack purchase. (See page 55.)

Case Study Revisited: John

John has much to learn about workshop conduct and method selection. John sent out 100 invitations . . . how many people should he expect to attend? If health educators get a 50% attendance rate from invitations, they are usually thrilled! Is it likely that low-income individuals will be willing or even able to travel to an upscale hotel outside their community? John's attendance might have improved had he conducted the workshop at a site in the target community. Because of a personal interest in a strategy, John may have selected an inappropriate method for this population. Did he consult local community leaders about his presentation and discuss the most effective approaches he could utilize? Probably not. When health educators work with groups that they are unfamiliar with, it is essential that research or consultation of some type be performed in order to optimize effective strategy selection. (See page 69 and Chapters 8 and 9.)

Case Study Revisited: James

James obviously had not made a good match between his strategy selection and learner characteristics. In addition, using a revealing icebreaker exercise in a short, once-only workshop where trust could never be established was an error and not a good use of limited contact time. This example points to the necessity of thoroughly examining all the elements of learner characteristics

and presentation conditions (group size, contact time) before proceeding with an intervention. Too many health educators have had to learn the hard way . . . through painful experience. (See page 75.)

Case Study Revisited: Susan

Susan has demonstrated an understanding of the effects that the environment can have on learning, and she has shown a great deal of initiative in enhancing her own particular environment. The atmosphere in Susan's classes may not change overnight, but she has optimized the possibility for change. Additionally, including the students as participants in the renovation project gives the students a sense of ownership and responsibility for learning in their classroom. Health educators should not underestimate the effects that the physical environment can have on learning, and in some cases how easily the environment can be improved. (See page 79.)

Case Study Revisited: Maria

Maria has conducted a useful workshop that obviously met her objective, providing some needed factual information. Unfortunately, her objective did not adequately support her goal of increasing compliance to seek prenatal care. Maria failed to consider the total environment (physical and mental) of her population and just what compliance would necessitate. Maria provided no information on the accessibility of the clinic or how to get there, and she failed to emphasize the very low costs involved. Including objectives, selecting methods to address skills related to accessing the clinic, and considering attitudes concerning barriers associated with cost might have produced more favorable compliance. She gave no real thought to the total environment of this group or the potential barriers to effecting a positive behavior change. (See page 87.)

SUMMARY

Selecting the appropriate educational intervention is vital to achieving your objectives.

1. The selection of a method should always take into account the objectives to be achieved.

2. Some other important considerations are
- Educational principles
- Theory and model application
- Adult learners
- Characteristics of the learner
- Learning preferences
- Group size
- Contact time
- Budget
- Resources/site/environment
- Characteristics of the educational provider
- Cultural appropriateness
- Using a variety of methods
- Packaging the total intervention strategy

3. The total environment must be considered when planning for instruction.

4. Principles of community engagement can greatly enhance the likelihood of success.

REFERENCES AND RESOURCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179–211.

Ajzen, I. (2006). Constructing a TpB questionnaire: Conceptual and methodological considerations. January 2006. Retrieved June 9, 2008, from http://www.people.umass.edu/aizen/pdf/tpb.measurement.pdf

Ajzen, I., & Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behaviors. *Journal of Personality and Social Psychology*, *27*, 41–57.

Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior.* Englewood Cliffs, NJ: Prentice-Hall.

Allen, D. E., Duch, B. J., & Groh, S. E. (2001). Strategies for using groups. In B. J. Duch, S. E. Groh, & D. E. Allen (Eds.), *The Power of Problem-Based Learning* (pp. 1–274). Sterling, VA: Stylus Press.

American Association for Health Education, National Commission for Health Education Credentialing, & Society for Public Health Education. (1999). *A Competency-Based Framework for Graduate-Level Health Educators.* Allentown, PA: The National Commission for Health Education Credentialing, Inc., American Association for Health Education, and the Society for Public Health Education.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191.

Bandura, A. (1977). *Social Learning Theory.* Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of Social and Clinical Psychology*, *4*, 359–373.

Bandura, A. (1986a). *Social Foundations of Thought and Action: A Social Cognitive Theory.* Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior*, *31*(2), 143–164. Retrieved June 23, 2008, from http://www.sophe.org/ui/socialCognitive2.pdf

Bardsley, P., & Beckman, L. (1988). The health belief model and entry into alcoholism treatment. *International Journal of the Addictions*, *23*, 19–28.

Becker, M. (Ed.). (1974). *The Health Belief Model and Personal Health Behavior.* Thoroughfare, NJ: Slack.

Becker, M., & Janz, N. (1985). The health belief model applied to understanding diabetes regimen compliance. *Diabetes Educator*, *11*, 41–47.

Berra, Y. (n.d.). Yogi Berra quotes. Retrieved April 7, 2009, from http://www.brainyquote.com/quotes/quotes/y/yogiberra141506.html

Booth, A. (2007). In search of the information literacy training "half-life." *Health Information & Libraries Journal*, *24*(2), 145–149.

Casey, T. A., Kingery, P. M., Bowden, R. G., & Corbett, B. S. (1993). An investigation of the factor structure of the Multidimensional Health Locus of Control scales in a health promotion program. *Educational and Psychological Measurement*, *53*, 491–498.

Champion, V. (1985). Use of the health belief model in determining frequency of breast self-examination. *Research in Nursing and Health*, *8*, 373–379.

Clark, N. M., & Dodge, J. A. (1999). Exploring self-efficacy as a predictor of disease management. *Health Education & Behavior*, *26*(1), 72–89.

Cornish, E. (1980). Toward a philosophy of futurism. *Health Education*, *11*, 10–12.

Creswell, W. H. (1984). Health education issues. In L. Rubinson & W. F. Alles (Eds.), *Health Education: Foundations for the Future.* St. Louis: Times Mirror/Mosby.

Crossette, B. (1994, September 7). A third-world effort on family planning. *The New York Times*, A8. Retrieved July 7, 2008, from http://query.nytimes.com/gst/fullpage.html?res=9D01E2D81038F934A3575AC0A962958260

Cummings, K. M., Becker, M. H., & Maile, M. C. (1980). Bringing the models together: An empirical approach to combining variables used to explain health outcomes. *Journal of Behavioral Medicine*, *3*, 123–145.

Dahlberg, L. L., & Krug, E. G. (2002). Violence—a global public health problem. In E. Krug, L. L. Dahlberg, J. A. Mercy, A. B. Zwi, & R. Lozano (Eds.), *World Report on Violence and Health* (pp. 1–56). Geneva, Switzerland: World Health Organization.

Dalkey, N., & Helmer, O. (1963). An experimental application of the Delphi method to the use of experts. *Management Science*, *9*, 458.

Dennison, D. (1977). Activated health education. *Health Education*, *8*, 24–25.

Dennison, D. (1984). Activated health education: The development and refinement of an intervention model. *Health Values, 8*, 18–24.

Dennison, D., Frauenheim, K. A., & Isu, L. (1983). The DINE microcomputer program: An innovative curricular approach. *Health Education, 14*, 44–47.

Dennison, D., Prevet, T., & Affleck, M. (1980). *Alcohol and Behavior: An Activated Health Education Approach*. St. Louis: C.V. Mosby.

Denison, J. (2002). Behavior change—a summary of four major theories. Family Health International. AIDSCAP Behavioral Research Unit. Retrieved June 23, 2009, from http://fhi.org/nr/rdonlyres/ei26vbslpsidmahhxc332vwo3g233xsqw22er3vofqvrfjuvbwyzc1vqjcbdexyz13m5u4mn6xv5j/bccsummaryf&ourmajortheories.pdf

DiBlasio, F. A. (1986). Drinking adolescents on the roads. *Journal of Youth and Adolescence, 15*, 173–189.

DiClemente, C., Prochaska, J. O., Fairhurst, C., Velicer, W., Velasques, M., & Rossi, J. (1991). The process of smoking cessation: An analysis of precontemplation, contemplation, and preparation stages of change. *Journal of Consulting Clinical Psychology, 59*, 295–304.

Donnermeyer, J. F., & Davis, R. R. (1998). Cumulative effects of prevention education on substance use among 11th grade students in Ohio. *Journal of School Health, 68*(4), 151–157.

Edmunds, C., Lowe, K., Murray, M., & Seymour, A. (2002). Ultimate adult learning. The ultimate educator: Achieving maximum adult learning through training and instruction; Chapter 3. Retrieved July 11, 2008, from http://www.ojp.usdoj.gov/ovc/assist/educator/files/chapter3.pdf

Eiser, J. R. (1985). Smoking: The social learning of addiction. *Journal of Social and Clinical Psychology, 3*, 357–446.

Fishbein, M. (Ed.). (1967). *Readings in Attitude Theory and Measurement*. New York: Wiley.

Fishbein, M., Middlestadt, S. E., & Hitchcock, P. J. (1994). Using information to change sexually transmitted disease–related behaviors. In R. J. DiCemente & J. L. Peterson (Eds.), *Preventing AIDS: Theories and Methods of Behavior Interventions* (pp. 61–78). New York: Plenum Press.

Fisher, R. (1997). Social action community organization: Proliferation, persistence, roots, and prospects. In M. Minkler (Ed.), *Community Organizing and Community Building for Health*. Rutgers, NJ: Rutgers University Press.

Fodor, J., & Dalis, G. (1974). *Health Instruction*. Philadelphia: Lea and Febiger.

Frazer, G. H., Kukulka, G. G., & Richardson, C. E. (1988). An assessment of professional opinion concerning critical research issues in health education. In J. H. Humphrey (Ed.), *Advances in Health Education: Current Research* (Vol. 1). New York: AMS Press.

Gilbert, G. G. (1981). *Teaching First Aid and Emergency Care*. Dubuque, IA: Kendall/Hunt.

Glanz, K., Lew, R. A., Song, V., & Cook, W. A. (1999). Factors associated with skin cancer prevention; practices in multi-ethnic population. *Health Education, 26*(3), 344–359.

Glanz, K., Patterson R. E., Kristal, A. R., Feng, Z., Linnan, L., Heimendinger, J., et al. (1998). Impact of work site health promotion on stage of dietary change: The working well trial. *Health Education and Behavior, 25*(4), 448–463.

Glanz, K., Rimer, B. K., & Lewis, F. M. (Eds.). (2002). *Health Behavior and Health Education* (3rd ed.). San Francisco, CA: Jossey-Bass.

Green, L. (1976). *Determining the Impact and Effectiveness of Health Education as It Relates to Federal Policy*. Washington, DC: Office of the Deputy Assistant Secretary for Planning and Evaluation/Health, Education and Welfare.

Green, L., & Kreuter, M. (2005). *Health Program Planning: An Ecological Approach* (4th ed.). New York: McGraw-Hill.

Green, L. W., & Iverson, D. (1982). School health education. *Annual Review of Public Health, 3*, 321–328.

Green, L. W., & Kreuter, M. W. (1990). Health promotion as a public health strategy for the 1990s. In *Annual Review of Public Health* (Vol. 11). Palo Alto, CA: Annual Reviews.

Green, L. W., & Kreuter, M. W. (1991). *Health Promotion Planning: An Educational and Environmental Approach*. Mountain View, CA: Mayfield.

Green, L. W., Kreuter, M. W., Deeds, S. G., & Partridge, K. B. (1980). *Health Education Planning: A Diagnostic Approach*. Palo Alto, CA: Mayfield.

Green, L. W., Levine, D. M., & Deeds, S. G. (1975). Clinical trials of health education for hypertensive outpatients: Design and baseline data. *Preventive Medicine, 4*, 417–425.

Green, L. W., Levine, D. M., Wolle, J., & Deeds, S. G. (1979). Development of randomized patient education experiments with urban poor hypertensives. *Patient Education and Counseling, 1*, 106–111.

Grimley, D., Prochaska, J. O., Velicer, W. F., & Prochaska, G. (1995). Contraception and condom use adaption and maintenance. A stage paradigm approach. *Health Education Quarterly*, 22(1), 20–35.

Grizzell, J. (2007). Behavior change theories and models. Retrieved May 15, 2008, from http://www.csupomona.edu/~jvgrizzell/best_practices/bctheory. html

Haire-Joshu, D., Auslander, W. F., Houston, C. A., & Williams, J. H. (1999). Staging of dietary patterns among African American women. *Health Education & Behavior*, 26(1), 90–102.

Harrison, J. A., Mullen, P. D., & Green, L. W. (1992). A meta-analysis of studies of the health belief model with adults. *Health Education Research, 7*(1), 107–116.

Herold, E. (1983). The health belief model: Can it help us understand contraceptive use among adolescents? *Journal of School Health*, 53, 19–21.

Hester, N., & Macrina, D. (1985). The health belief model and the contraceptive behavior of college women: Implications for health education. *Journal of American College Health*, 33, 245–252.

Howard, S. (1999). Guiding collaborative teamwork in the classroom. *Journal of Effective Teaching*, 3(1). Retrieved July 11, 2008, from http://www.uncwil .edu/cte/et/articles/Howard/

Jessor, R., & Jessor, S. (1977). *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth*. New York: Academic.

Jillson, I. A. (1985). The national drug abuse policy delphi: Progress report and findings to date. In L. A. Turoff (Ed.), *Delphi Method: Techniques and Applications* (pp. 119–154). Reading, MA: Addison-Wesley.

Kelly, G., Mamon, J., & Scott, J. (1987). Utility of the health belief model in examining medication compliance among psychiatric outpatients. *Social Science Medicine*, 25, 1205–1211.

Kerlinger, F. N. (1986). *Foundations of Behavioral Research* (3rd ed.). New York: Holt, Reinhart and Winston.

Kime, R., Schlaadt, R., & Tritsch, L. (1977). *Health Instruction: An Action Approach*. Englewood Cliffs, NJ: Prentice Hall.

King, K., Price, J. H., Tellojahann, S. K., & Wahl, J. (1999). High school teachers' perceived self-efficacy in identifying students at risk for suicide. *Journal of School Health*, 69(5), 202–207.

Kirscht, J. (1974). The health belief model and illness behavior. In M. Becker (Ed.), *The Health Belief Model and Personal Health Behavior* (pp. 403–418). Thoroughfare, NJ: Slack.

Kuhn, J. (1970). *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Levenson, H. (1974). Activism and powerful others: Distinction within the concept of internal-external control. *Journal of Personality Assessment*, 38, 377–383.

Levine, D. M., Green, L. W., Deeds, S. G., Smith, C., Chwalow, A. J., & Finlay, J. (1979). Health education for hypertensive patients. *Journal of the American Medical Association, 241*, 1700–1703.

Levine, D. M., Morisky, D. E., Bone, L. R., Lewis, C., Ward, K. B., & Green, L. W. (1982). Data-based planning for educational interventions through hypertension control programs for urban and rural populations in Maryland. *Public Health Reports*, 97, 107–112.

Maiman, L., & Becker, M. (1974). The health belief model: Origins and correlates in psychological theory. In M. Becker (Ed.), *The Health Belief Model and Personal Health Behavior* (pp. 336–353). Thoroughfare, NJ: Slack.

McGuire, W. (1981). Behavioral medicine, public health and communication theories. *Health Education, 12*, 8–13.

Montambeau, J., & Finch, J. (2008). Beyond bells and whistles: Affecting student learning through technology. The College of Charleston, South Carolina, Department of Academic Computing. Retrieved July 22, 2008, from http://www.cofc.edu/bellsand whistles/research/retentionmodel.html

Mullen, P., & Iverson, D. (1982). Qualitative methods for evaluative research in health education programs. *Health Education*, 13, 11–18.

National Cancer Institute. (2005). Theory at a glance: A guide for health promotion practice (2nd ed.). Retrieved June 1, 2008, from http://www.cancer .gov/theory.pdf

Oberteuffer, D., Pollock, M., & Harrelson, O. (1972). *School Health Education*. New York: Harper and Row.

Pajares, F. (2002). Overview of social cognitive theory and of self-efficacy. Retrieved June 12, 2008, from http://www.emory.edu/EDUCATION/mfp/eff.html

Parachini, L., & Covington, S. (2001). Community organizing toolbox: a funder's guide to community

organizing neighborhood funders group. Retrieved April 20, 2008, from http://www.aecf.org/tarc/publications/pubs_toolbox.php

Parcel, G., & Meyer, M. P. (1978). Development of an instrument to measure children's health locus of control. *Health Education Monographs, 6*, 149–159.

Parcel, G., Nader, P. R., & Rogers, P. J. (1980). Health locus of control and health values: Implications for school health education. *Health Values, 4*, 32–37.

Parcel, G. S. (1984). Theoretical models for application in school health education research. *Special combined issue of Journal of School Health 54*, 39–49 *and Health Education 15*, 39–49.

Parraga, I. M. (1990). Determinants of food consumption. *Journal of the American Dietetic Association, 90*, 661–663.

Pike, R. (1994). *Creative Training Techniques Handbook* (2nd ed.). Minneapolis: Lakewood.

Pike, R. W. (2003). *Creative Training Techniques Handbook* (3rd ed.). Amherst, MA: HRD Press.

Prochaska, J. O. (1979). *Systems of Psychotherapy: A Transtheoretical Analysis.* Homewood, IL: Dorsey Press.

Prochaska, J. O. (1994). Strong and weak principles for progressing from precontemplation to action on the basis of twelve problem behaviors. *Health Psychology, 13*(1), 47–51.

Prochaska, J. O., Norcross, J., Fowler, J., Follick, M., & Abrams, D. (1992). Attendance and outcome in a worksite weight control program: Processes and stages of change as process and predictor variables. *Addictive Behavior, 17*, 35–45.

Prochaska, J. O., Redding, C. A., Harlow, L. L., Rossi, J. S., & Velicer, W. F. (1994). The transtheoretical model of change and HIV prevention: A review. *Health Education Quarterly, 24*(4), 471–486.

Rakowski, W., Dube, C., Marcus, B., Prochaska, J., Velicer, W., & Abrams, D. (1992). Assessing elements of women's decisions about mammography. *Health Psychology, 11*, 111–118.

Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). New York: Free Press.

Rosenstock, I. (1974). Historical origins of the health belief model. In M. Becker (Ed.), *The Health Belief Model and Personal Health Behavior* (pp. 175–183). Thoroughfare, NJ: Slack.

Rosenstock, I., Stretcher, V., & Becker, M. (1994). The Health Belief Model and HIV risk behavior change. In R. J. DiClemente & J. L. Peterson (Eds.), *Preventing AIDS: Theories and Methods of Behavioral Interventions* (pp. 5–24). New York: Plenum Press.

Rosenstock, I. M., Stretcher, V. J., & Becker, M. (1988). Social Learning Theory and the Health Belief Model. *Health Education Quarterly, 15*, 175–183.

Rotter, J. B. (1954). *Social Learning and Clinical Psychology.* Englewood Cliffs, NJ: Prentice Hall.

Rubinson, L., & Alles, W. F. (1984). *Health Education: Foundations for the Future.* Prospect Heights, IL: Waveland.

Rubinson, L., & Baillie, L. (1981). Planning school-based sexuality programs utilizing the PRECEDE model. *Journal of School Health, 51*, 282–287.

Stainbrook, G., & Green, L. W. (1982). Behavior and behaviorism in health education. *Health Education, 13*, 14–19.

Stewart, K. L., & Felicetti, L. A. (1992). Learning styles of marketing majors. *Educational Research Quarterly, 15*(2), 15–23.

Strauss, A., & Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques.* London: Sage.

Tarabokia, J. R. (1985). *Forecasts by Selected Professional Health Educators and Their Implications for Health Education: A Delphi Application.* Unpublished doctoral dissertation, Brigham Young University, Provo, UT.

Toohey, J. V., & Shireffs, J. H. (1980). Future trends in health education. *Health Education, 11*, 15–17.

Travis, R. (1976). The delphi technique: A tool for community health educators. *Health Education, 7*, 11–13.

U.S. Department of Health and Human Services. (1979). *Principles of Community Engagement.* Atlanta, GA: U.S. Public Health Service.

Velicer, W. F., Prochaska, J. O., Fava, J. L., Norman, G. J., & Redding, C. A. (1998). Smoking cessation and stress management: Applications of the Transtheoretical Model of behavior change. *Homeostasis, 38*, 216–233.

Wallston, K. A., & Wallston, B. S. (1978). Preface to health locus of control. *Health Education Monographs, 6*, 101–105.

Wallston, K. A., Wallston, B. S., & DeVillis, R. (1978). Development of the multidimensional health locus of control scales. *Health Education Monographs, 6*, 160–170.

Wallston, K. A., Wallston, B. S., Kaplan, G. D., & Maides, S. A. (1976). Development and validation

of the health locus of control scale. *Journal of Consulting and Clinical Psychology*, *44*, 580–585.

Wirz, D. (2004). Students' learning styles vs. professors' teaching styles. *Inquiry*, 9(1). Retrieved July 15, 2008, from http://www.vccaedu.org/inquiry/inquiry-spring 2004/i-91-wirz.html

Wodarski, J. (1987). Evaluating a social learning approach to teaching adolescents about alcohol and driving: A multiple variable evaluation. *Journal of Social Science Research*, *10*, 121–144.

Wolfgang, J., & Dennison, D. (1981). The effects of a heart health education workshop. *Journal of School Health*, *51*, 356–359.