5

Chapter 5 – Establishing and Supporting Relevance

Forethought

If there is one question that signifies an issue with the relevance of instruction it is, "Why should I have to study this?" The traditional answer in school is either the one portrayed in the cartoon (Figure 5.1) or a comment about the subject matter being required by the curriculum. In the workplace, the number one answer is "Because it will help you on the job," or the trainer, like the teacher, will simply point out that it is required. Most of the time these are not very satisfying answers because if it were apparent that the content was useful the student probably wouldn't be asking the question! Another problem is that frequently the instructor might not have a good answer other than to say that it is a required subject. To build a true sense of perceived relevance in the learners the teacher must have a clear understanding of the importance of the instructional content. It is great to say that the content is useful if it is, indeed, true and if it can be demonstrated convincingly to the students. However, even if the content isn't particularly useful in a literal sense there are other things that are important in the learning environment that can be used to build relevance. But one thing is certain: the teacher or trainer must have a clear belief in the relevance of the content before being able to convince the students!

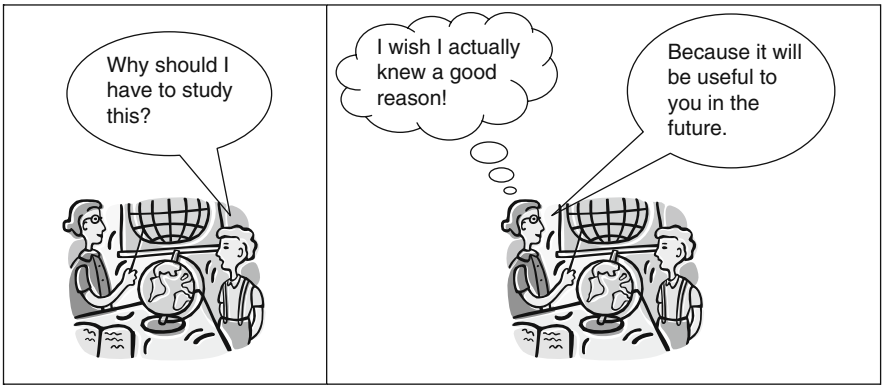

Figure 5.1. Trying to Answer the Relevance Question.

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Introduction

Why do people choose to do the things they do? From a radically concrete perspective, there are as many reasons as there are situations. Every situation could be viewed as having something unique about it. But, from a more general perspective, peoples' choices can be understood in terms of a variety of psychological concepts and theories, one of the most broadly accepted of which is expectancy-value theory (Steers & Porter, 1983; Vroom, 1964) which was briefly introduced in Chapter 2. This theory postulates that people choose to pursue a given goal when the expected outcome is something they desire and they have a positive expectancy for achieving it. This relationship is considered to be multiplicative in which behavior potential is a function of expectancy times value [BP = f (E x V)]. This means that both terms must have positive values or the result will be zero behavior potential. The second term in the equation which is based on goals, motives, and values is the part that applies to relevance.

But, as we know, participation in school is a requirement and seldom the result of a voluntary choice based on one's values and expectancies. What, then, are peoples' expectations of a course with respect to relevance? This chapter contains several psychological concepts that help explain relevance and the other part of the equation, expectancies for success, will be discussed in the next chapter on confidence.

What Is Meant By Relevance?

Relevance refers to people's feelings or perceptions of attraction toward desired outcomes, ideas, or other people based upon their own goals, motives, and values. The greater the attraction associated with a given goal, the greater the likelihood that a person will choose to pursue that goal assuming that it is perceived to be achievable. Relevance is often viewed from a purely pragmatic perspective. When students, including adult participants in training, ask why they should be studying a given topic they most often want to be told or shown how it will be useful to them in their jobs or have a practical application in some other part of their lives. This is a legitimate expectation but not one that can always be fulfilled as an immediate consequence of a lesson or course. Learning the concepts of torque and acceleration in an auto repair course and how to apply them can have immediate practical benefits, but this will probably not be true when the same concepts are taught in a theoretical physics course at the high school level.

However, it is possible to create a sense of relevance in the absence of immediate utility because there are many other psychological characteristics that are related to relevance. People can have a high level of intrinsic motivation in a topic even when there is no practical benefit. For example, one of my sons developed a keen interest in dinosaurs when he was 4 years old and he acquired detailed knowledge of their names, habits, and

habitats. His expertise was acknowledged by his preschool teacher in a newsletter in which she described a unit of work on dinosaurs that she had taught and she commended my son as their "resident expert whose knowledge greatly exceeded my own." For some reason, this particular interest can be observed in many preschool and elementary school children. What, then, are some of the factors that help explain the concept of relevance?

Psychological Basis for Relevance

Key Question for Relevance:

In what ways will this learning experience be valuable for my students?

Certainly, a sense of relevance occurs when the content to be learned is perceived to be useful to one's work, but it can also be enhanced when there is a match between teaching and learning styles, when there is a match between the content and one's personal interests, when one can relate prior knowledge and experiences to the current content, and when the content and performance requirements are consistent with one's personal and cultural values. Thus, the foundation for relevance lies in understanding such concepts as the dynamics of goal choice, psychological needs and motives, future orientation, interests, intrinsic motivation, personal and social values, and a host of affective and emotional states such as feelings of connectedness and perceived empathy.

Goal Choice

Typically, people have many goal choices but at any given moment in time the achievement of some goals will be desired more strongly than others. People choose goals that have the highest perceived benefit relative to other potential goals with respect to intrinsic interest and perceived benefits of the expected outcomes. One way of characterizing a person's affective attitude toward a goal is by using the concept of *valence* (Vroom, 1964). If a person prefers the attainment of a certain outcome to not attaining it then that outcome has a positive valence. It will have a negative valence if the person wishes to avoid it or is indifferent toward attaining that outcome. The strength of the valence results from the instrumental value of the goal; that is, the perceived connection between accomplishing the given goal as a means to accomplishing subsequent goals, and the intrinsic value of the goal; that is, the degree to which the goal is valued as an end-in-itself. Together, instrumental value and intrinsic value contribute to the expected satisfaction to be obtained by achieving the outcome. In other words, expected satisfaction is influenced by both intrinsic and instrumental consequences. An outcome can be valued for its own sake and for its perceived connection to the attainment of other valued outcomes. For example, an

apartment dweller in a large city with good public transportation may not have a functional need for a car but greatly desires one because of the anticipated satisfaction of driving the car as a pleasurable experience in and of itself. In the more typical situation, a person will desire a car because it will enable one to fulfill several outcomes after acquiring it, such as a mother with several children who will use it to transport them, go to the grocery store, go shopping, and visit friends. For her, having a car would be a goal with a very high valence. And in a still different situation, a young professional man might desire a sporty car for both intrinsic and instrumental reasons including the pure pleasure of driving it, his expectation of being admired for having such a car, and for its functional uses in going to work and so forth.

Early psychological theories that attempted to explain goal-oriented behavior were reductionistic in nature, which means that the psychologists tried to reduce explanations of behavior to their most elemental component. Two of these approaches were the *instinct* theories and *drive* theories. Instinct theorists such as James (James, 1890) and McDougal (McDougall, 1908, 1970) tended to regard all motivated behavior, as opposed to learned behavior, as instinctive. This theory was developed primarily from the study of animals but presumed to also apply to humans. However, in humans, it was assumed that even though some behaviors were instinctual in nature, they did not always result in exactly the same kind of behavior. Food seeking would result in similar behaviors but would be modified by a given culture's concept of what constitutes edible food, but other so-called instincts, such as gregariousness, were much vaguer and not universal among humans, which they must be in order to be a true instinct. Thus, instinct theory was weak because virtually any observable behavior could be given a label and designated as an instinct. Some examples are listed in Table 5.1. Furthermore, attaching a label to a behavior does not constitute an explanation of it. By identifying something as an instinct, it

Table 5.1. Examples of Instincts Listed by James (1890) and McDougall (1908).

Examples of Instincts			
James		**McDougall**	
Rivalry	Curiositye.	Parental care	Sympathy
Pugnacity	Sociability	Combat	Self-association
Sympathy	Shyness	Curiosity	Submission
Hunting	Secretiveness	Food seeking	Mating
Fear	Cleanliness	Repulsion	Constructiveness
Acquisitiveness	Modesty	Escape	Appeal
Constructiveness	Jealousy	Gregariousness	
Play	Parental love		

precludes having a theory of motivation that can be subjected to prediction and validation. Also, there was no overarching theory or taxonomical rules to guide the creation of lists of instincts; psychologists could create unending lists of behavioral descriptors and call them instincts.

Another set of theories that provided explanations of some aspects of motivated behavior were known collectively as drive theory. The basic principles of drive theory are based on the concept of homeostasis which means that the organism tries to maintain a sense of balance. Motivation results from a state of imbalance caused by deprivation in regard to physical and psychological needs and desires. It is important to note that not all needs automatically result in drives, and drives can result from desires, not just needs. Thus, it was necessary to have a theory to explain the origin and operation of drives, and the best known was that of Hull (1943). However, it was Woodworth (1918) who introduced the concept of **drive** and he proposed that it has three characteristics: *intensity*, *direction*, and *persistence*. Intensity refers to the level of activation of the drive and its accompanying emotional level. Direction refers to the object, or goal, of the drive, and persistence to the tendency to continue the goal-seeking behavior until it is achieved and the state of equilibrium is restored.

Hull formalized drive reduction theory by expressing it in terms of a formula which stated that the strength of a behavior depends on the strength of the drive combined with habit strength. Habit strength refers to how well the pattern of behavior that leads to drive reduction has been learned, drive refers to the need or desire that is in a state of disequilibrium. In other words, a state of disequilibrium such as hunger will not automatically lead to food seeking behavior unless the organism has learned a set of relationships, habits, between food seeking behaviors and the acquisition of food which then reduces the strength of the hunger drive. Hull also postulated the relationship to be multiplicative: behavior = drive x habit.

As with other theories of motivation and behavior, drive theory can explain some aspects of behavior such as those that are relatively fixed and mechanical, but many aspects of motivated behavior are explained more effectively other kinds of theories such as cognitive theories that are more holistic in nature. Cognition refers to the thought processes that occur internally when we try to understand our actions, interpret the world around us, and engage in decision making.

Tolman: Purposive Behavior

One of the early cognitive theories that offered an alternative to drive theory was that of Tolman (1932). Instead of postulating a drive mechanism, Tolman's basic assumption was that behavior is *purposeful* in that it is always directed toward or away from some particular outcome. This is another way of saying that behavior is goal oriented and tends to be *persistent*, *patterned*, and *selective*. Regarding the first of these three

characteristics, people tend to persist in their efforts to achieve a goal until it is obtained, but this simple assumption has complex implications. This is because people have multiple goals and goal conflicts might occur during the process of trying to achieve an initial goal. For example, a person who is trying to lose weight will vow when going to bed and first arising the next morning to strictly follow a healthy diet during that day. But as the day progresses, this goal is frequently supplanted by other goals related more to eating habits that provide immediate gratification and stress reduction. A dramatic and humorous example of this can be illustrated with the so-called "stress diet." There are many variations of this, but a typical one would be something like the one in Figure 5.2.

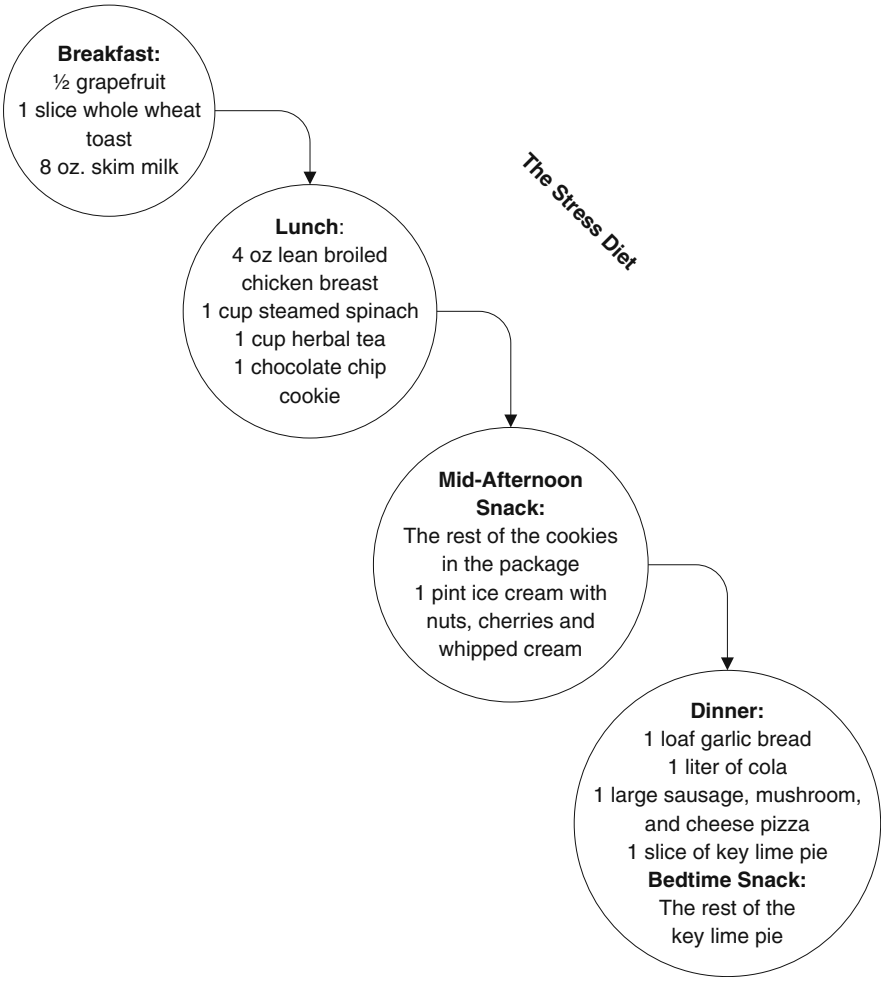

Figure 5.2. Illustration of a Goal Shift on Diet.

A characteristic of behavior that contributes to persistence is Tolman's second assumption that there tend to be *consistent patterns* of behavior leading to goal attainment. For example, most of us have habitual routes that we follow from our homes to our places of work and consistent patterns of behavior at work. That is why we might never see acquaintances with whom we are in relatively close proximity but who have different daily patterns. It also explains one of the reasons why it is difficult to change behavior. Having established a pattern such as the one represented in Figure 5.2, it is extremely difficult to change because it is habitual and satisfies powerful goals related to stress reduction.

Tolman's third characteristic is *selectivity* which means that we make deliberate decisions about the paths to follow to obtain our goals. It also implies that we tend to choose the easiest or most direct path, especially for pragmatic goals such as getting to work on time. For different types of goals, we might choose different paths, such as maximum exposure to historical sites in the available time if our goal is to tour Civil War battlefields. But, even here, the principle is the same. We select the most effective and efficient path to achieve our goal.

Tolman also introduced the concept of *expectancies* in reference to the expectation that a given set of behaviors will lead to a specific goal. His concept of expectancies is rigorous in that it is based upon learning a set of behaviors that lead to the goal, not faith or "hunches." These expectancies are developed over a period of time during which the organism develops a *cognitive map* of the environment. The cognitive map includes acquired knowledge as to the location of a goal and a series of steps that lead to goal attainment. These concepts do not necessarily imply metacognition but simply reflect a learned set of relationships. These concepts were validated in the study of infra human subjects such as rats, but they also apply to psychological situations and human performance. For example, much of this book is based upon a cognitive map of the primary motivational influences on learning and their relationships to each other which resulted in the macro models of learning and performance presented in Chapter 1. This cognitive model supports the development of expectancies that one can achieve given motivational goals by following a set of steps prescribed by the motivational design process embedded in the theory and model. Cognitive maps and the closely related concept of *mental models*, which can be developed to articulate people's perceptions, decisions, expectancies and cognitive maps (Craik, 1943; Johnson-Laird, 1983), continue to be the subject of active research in instructional theory and the learning sciences (Johnson-Laird, 2005; L. Westbrook, 2006).

Lewin: Field Theory

In contrast to drive theory which is primarily an environmental theory and the cognitive theory of Tolman, Lewin (Lewin, 1935, 1938) introduced *field theory* which is an interaction theory based on expectancy-value concepts. Lewin's theory attempts to account for the many forces that

are interacting at any given time to influence behavior and how a given behavior is the result of these multiple influences. Lewin (1935) postulates that a person's behavior is the result of interactions of the person and the perceived environment, or life space which refers to one's psychological reality. It is important to note the role of perceived environment versus physical environment in this theory. For Lewin, a person's reality consists of the totality of perceptions, attitudes, prior knowledge, and so forth which can vary substantially from the actual physical environment. This concept is also a central assumption in constructivist theory (Duffy, Lowyck, & Jonassen, 1993) which emerged much more recently than Lewin's work. In Lewin's theory a person's life space can be represented geometrically by a figure with an outer boundary that is subdivided into parts (Figure 5.3). The parts are called regions and are separated by boundaries which vary in terms of their permeability. The various regions are related to each other in terms of "tensions," or magnitude of connectedness.

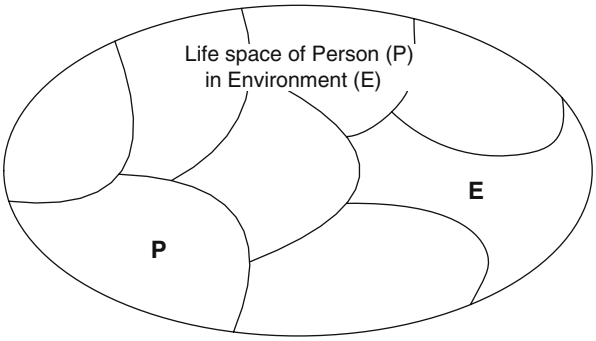

Figure 5.3. Example of Lewin's Life Space Representation (Based on Lewin, 1935).

A person tries to reduce tensions between regions by achieving the relevant outcomes. For example, the mother who lives in an environment in which car ownership is accepted and has multiple outcomes that can be achieved by obtaining a car would have a strongly positive valence for car ownership because these goals would have only a thin separation from each other and the acquisition of the car would neutralize the tensions among those regions. This is illustrated by the four adjacent regions in the center and upper left part of Figure 5.4. There might be a slight reduction in tensions among the other regions because the mother would have less need to grow vegetables, it would be relatively easy to get provisions for dinner, and she might have more time for personal recreation such as reading. But, a traditional Amish farmer whose religion forbids the use of cars and even electricity for personal comfort would have a strongly negative valence toward owning a car because its potential utilitarian benefits would

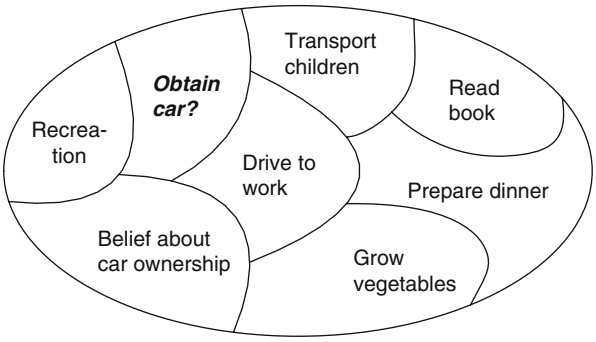

Figure 5.4. Examples of Regional Activities and Attitudes.

not create a tension between the two sets of goals and beliefs. The boundary between car ownership and fulfilling one's transportation needs would be impermeable. This person would have a different goal, such as owning a horse and buggy or a good pair of shoes that would take the place of owning a car.

Lewin's work laid the groundwork for a better understanding of the interactive effects of multiple goals. With respect to students and their motivation to learn, there are many types of goals, some of which are desirable in a school situation and some are not. For example, we want students to be motivated to achieve; we do not want them to be motivated to cheat or procrastinate. We want them to be motivated to be cooperative and persistent; we do not want them to be motivated to be uncooperative or lazy. Our challenge as educators is to relate our instruction to the desirable goals that students already have and to shape or modify goals that are undesirable. Subsequent researchers have provided additional guidance and clarification.

Motives

Research on the goal directedness of behavior, including Lewin's work, has a long history. It includes the early drive theories (Hull, 1943) which suggest that motivation results from deprivation with regard to elemental drives which are primary physical, but can be psychological by means of association. If people are hungry, thirsty, afraid, or lonely, for example, they will be goal directed to satisfy those needs. When they succeed in reaching a state of satisfaction, or homeostasis, they will no longer be motivated to pursue goals related to those needs.

Tolman (1949) worked from a different set of assumptions. He postulated that behavior is purposive, that people have motives and goals that result from needs and desires that activate behavior, but that these needs are not necessarily the result of deprivation. His work builds on many of the ideas of Lewin (1935) who suggested that there are forces in the

environment as well as within ourselves that help define our goals and stimulate us to action. This perspective is also present in the work of Murray (1938) who viewed motivation as resulting from a combination of internal needs and external, environmental, pressures.

All of this work helped set the stage for the well-known work of Maslow (1954) and McClelland (1976). One of the problems in the earlier research was that there was no taxonomy of needs. Researchers would create new "needs" every time they observed some new aspect of behavior. Maslow brought order to this situation by proposing a theory which postulated that there is a hierarchy of needs and that lower order needs must be satisfied or sufficiently under control in the "eyes" of the individual before higher order needs will be pursued. The five levels of needs are

- physiological, which refers to hunger and thirst,
- safety and security, referring to the continued ability to provide for housing and basic physiological needs,
- love and belongingness, which includes companionship as well as long-term relationships,
- self-esteem, as obtained from achievement and recognition, and
- self-actualization, which is defined in terms of reaching one's highest potential.

This list has had great appeal to practitioners in the workplace and in education, but has received criticism from researchers because it is difficult to validate. But, from a practical application perspective, this theory helps us understand that motivation to succeed in school, which relates primarily to the fourth level, self-esteem, cannot be fully activated if a child never gets enough to eat, is afraid, and is isolated from his or her peers. However, a challenge to this theory is to understand what is meant by a satisfied need. This is a highly subjective issue. For example, a first semester freshman in college might expect to have a comfortable apartment, a car, and a generous allowance before feeling that his lower level needs have been met. But, when people are highly motivated to achieve they can endure high levels of deprivation. For example, artists and aspiring actors may be satisfied with only minimal levels of food and shelter while pursuing their dreams, but even then, there is a level at which their lower order needs must be met before they are motivated to learn.

In contrast to the work of Maslow, McClelland (1976) focused on three needs: achievement, affiliation, and power and his conceptual foundation is different from the need deprivation concept of many earlier theories. Deprivation does not account for why a need, or motive, can grow instead of diminishing even as it is being realized. For example, people high in the need for achievement do not move into a state of equilibrium following success as would be predicted by need theory. Instead, they tend to be stimulated to achieve more and higher levels of success. Therefore, McClelland postulated that equilibrium is transient and occurs when one approaches the fulfillment of a desired affective state, and following the

achievement of a goal one's desires can change causing a new state of disequilibrium. That is why some people can never seem to get enough with respect to a desired goal. Salesmen constantly try to surpass last year's goals and athletes continually strive to achieve new "personal bests."

Achievement, Affiliation, and Power

The three motives studied by McClelland and his colleagues can be extremely useful in helping to understand the behavior of people in school and work and to match instructional environments to individual learning styles. People who are high in the *need for achievement* enjoy moderate challenges because they like to take risks, but they want to succeed. If a task is too easy, they get no pleasure from success. If it is too difficult, they do not get to experience success and they do not like to fail. They set personal standards of excellence and try to achieve them in competition with others, by doing something unique, or by simply reaching a higher personal level of accomplishment. They tend not to like to work in groups, as they want to set their own direction and be personally responsible for their outcomes.

The most traditional method for measuring need for achievement is the Thematic Apperception Test (TAT). It is a projective test which consists of presenting an ambiguous stimulus and then asking the respondent to fantasize and create a story about it. Projective tests can be highly unstructured as in the Rorschach test, popularly known as the inkblot test in which the respondent is shown an abstract figure of black ink on a white background made by putting a few drops of black ink on a large sheet of white paper, folding it, and pressing it. The resulting image is somewhat abstract and used by clinical psychologists to evoke stories that reveal their clients' innermost feelings, thoughts, and values. They can be useful when used properly by a trained therapist, but are not designed to conduct research on specific psychological constructs such as the need for achievement. The TAT uses pictures or verbal leads as a stimulus and then asks respondents to make up vivid, imaginative stories. Four questions are used to help stimulate the imagination of the respondent. The first question is, "What is happening? Who are the people?" The respondents have approximately 5 minutes to respond to each of the six stimuli that are typically administered. The stimulus materials resulted from extensive research on pictures, and later verbal leads that had an effective combination of situational cues and ambiguity to evoke a variety of motive predispositions. Scoring of the resulting stories was based on a strictly defined rubric and trained reviewers can achieve inter-rater reliability estimates of .90 and higher.

In contrast, people high in *need for affiliation* are more interested in personal relationships. They like to have warm, satisfying relationships with other people. This refers to friendships, not just romantic attachments. They think about their friends, they nurture the friendship, and they get upset if there are problems or departures. They enjoy working in groups and letting the group take credit for results without having to have

personal recognition in a way that sets them apart from the group. They tend not to make good leaders because they are more concerned about whether people like then than whether they are setting and enforcing rules and standards.

Finally, people high in the *need for power* feel good when they have been able to have an influence on the behavior of others. With immature people, this influence can be self-serving and destructive. But, mature people with a high need for power enjoy exerting their influence in a way that benefits their organization and other people. This characteristic is associated with good managers and teachers.

These needs are not mutually exclusive. A given person can have high or low levels on all or any combination of them. Teachers sometimes encounter challenges from children with a high need for power. They might challenge the teacher's ability to control the behavior of the children in the classroom. In this situation, the teacher will have to establish leadership before other motivations, such as achievement, will be exhibited by the learners. Children with any combination of these needs can be accommodated by using a variety of assignments and working conditions, such as group work, that allow students' needs to be met most of the time even if they are frustrated some of the time.

Competence

The concept of competence was introduced by White (1959) as a fundamental motive which refers to "an organism's capacity to interact effectively with its environment" (p. 297). Like the other "motive theorists," White moved away from the drive theory assumptions of motivation based on the alleviation of deprived states which did not explain voluntary actions that led to pleasurable states. He postulated that the attainment of competence could not be attained from the energies associated with drives or instincts and, furthermore, a state of equilibrium in humans if not other species is not a desirable state for it results in boredom. As White points out, when people are under excessive stress as in wartime or with excessive workloads, a period of stress reduction and equilibrium appears to be highly desirable. But once it is achieved, people soon become restless and seek external stimulation. Instead of desiring an absence of stress, people seem to not only desire but need an optimal level of stimulation. Hebb's (1958) extensive research on the behavior of people under conditions of stimulus deprivation illustrates that people will begin to produce their own stimuli in the form of hallucinations when there is virtually no input from the external environment. Research on people such as orphans and infants who experience severe social deprivation do not mature properly. As Hebb (1958) put it, "The animal reared in isolation is a permanent screwball at maturity: motivationally, socially, intellectually abnormal" (p. 109). He is referring primarily to research on dogs and people. Thus, the development of

competence by means of exploratory behavior is an important component of cognitive and social development.

White (1959) introduced the concept of *effectance* motivation to explain the mechanism that leads to the development of competence. For example, even in play activities children seem to enjoy discovering the effects they can have on the environment and, conversely, the effects the environment has on them. Feelings of satisfaction result from these interactions and not from solving them in a process leading toward homeostasis. White defines the result of these activities as *feelings of efficacy*, which should not be confused with the concept of self-efficacy (Bandura, 1977) which refers to one's expectations of being successful in pursuing a goal. Feelings of efficacy refer to the satisfying feelings of mastery or insight as one interacts with the environment. Furthermore, people are more likely to engage in competence-building explorations when the stimulus environment is moderately complex relative to the challenge level of the task. If the task is too easy, boredom sets in; if too difficult, then cognitive processing becomes more narrowly focused and one is less attentive to all of the potentially relevant cues in the environment (Tolman, 1949).

Even though they have had separate lines of development, the competence motive has some things in common with the achievement motive. Elliot & Dweck (2005a) argue that competence is the core of achievement motivation. They claim that the concept of achievement has not been clearly defined in the literature and they identify two fundamental weaknesses in the literature. First, they say that it "lacks coherence and a clear set of structural parameters" (p. 4). The concept is difficult to operationalize and the achievement motivation literature contains multiple conceptualizations and methodologies that are not consistently related to a central concept. Second, they say that the achievement motivation literature is too narrowly focused and does not incorporate many aspects of behavior that could fall under the general question of understanding achievement-striving behavior. With these assumptions as a starting point they propose that the concept of competence motivation be used to replace the concept of achievement motivation. They, and the numerous authors in their book (2005b), present conceptual and empirical papers which explore this basic issue. It is too soon to know whether the vast literature on achievement motivation will be reconceptualized as they propose, and one could question some of the characterizations of both achievement motivation and competence motivation as they are portrayed in various parts of this book, but it is certainly an intriguing proposal and contributes to a more holistic approach to understanding this literature which is, in itself, useful.

Future Orientation and Future Time Perspective

Another influence on the valence of a goal is one's *future orientation* which Raynor (Raynor, 1969, 1974) defined primarily in terms of the instrumentality of an immediate goal with regard to future goals. That is, if

an immediate goal is perceived to be connected to the attainment of future outcomes then the perceived utility of the immediate goal will be stronger depending on the value of those outcomes. Thus, goals that require the completion of prerequisite courses or certification exams before one is allowed to continue along a desired academic or professional path can have high valences, even to the point of causing anxiety because the higher the instrumentality the higher the cost of failure. This relationship also applies in achievement-focused situations in which a cluster, rather than a linear progression, of accomplishments must be completed in order to achieve a final goal, as in the Boy Scouts where one must earn a combination of required and elective merit badges to attain the prestigious level of Eagle Scout. This is a refinement and expansion of Tolman's field theory concepts of goal strength being related to the tensions between a given goal and contingent goals.

Another concept related to future orientation is *future time perspective* (FTP) which refers to one's perceived temporal distance between the present and a future event. Some people perceive future events to be much closer in time than other people do. Those with a short FTP focus more on the present and their motivation to accomplish an immediate goal is not strengthened by the perception of possible future benefits. In contrast, those with a long FTP see a much closer connection between current activities and future goals and the expectation of future benefits strengthens their immediate motivation. De Volder and Lens found that 11th graders' motivation was positively correlated with the value they attached to future goals and to their perceived instrumentality of their current schoolwork for helping to achieve those goals.

However, these correlations have to be qualified by considering students' attitudes toward the future. Van Calster et al. (1987) found in a study with 230 Dutch-speaking male high school student between 17 and 19 years old that regardless whether perceived instrumentality (PI) was high or low, there was a relatively low correlation with motivation to learn among the students who had a negative attitude toward the future (Figure 5.5). However, as the attitudes toward the future became more positive there was a steadily growing increase in

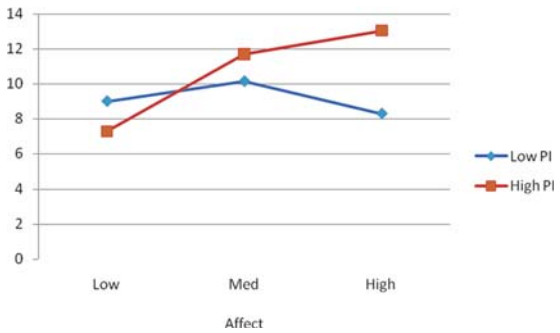

Figure 5.5. Correlation of Attitude toward Future and Perceived Instrumentality with Motivation To Study (Based on Data from Van Calster, Lens, & Nuttin, 1987).

the correlations between PI and motivation to learn. In contrast, they found that students with positive attitudes toward the future but low PI had a much lower correlation with motivation. The group of students who had medium-to-high positive attitudes toward the future but low PI had the greatest number by far of underachievers. Thus, the authors conclude that efforts to raise the PI of immediate tasks can increase motivation for students with positive attitudes toward the future but is not likely to do so for those with negative attitudes.

In an extensive review of the literature on gender and orientations toward the future, Greene & DeBacker (2004) found gender differences in each of five different theoretical orientations: achievement motivation, future time orientation, perceptions of future selves, expectancy-value theory, and social cognitive research on perceived instrumentality. Even though there was cross-cultural diversity among the studies they reviewed, they found a fairly consistent and historically stable pattern for men who tended to have a longer future time perspective but with a somewhat narrow focus on goals related to employment and financial security. In contrast, women tended to have greater diversity in their goal orientations for the future. Their goals focused more on marriage and family but it has become more commonplace for them to include goals related to employment and a career. There also appeared to be a strong sociocultural influence on the overall future orientation and goal orientations among men and women.

Still another aspect of future orientation that can have an influence on the design of motivating learning environments relates to whether individuals see their futures as being limited or open-ended and this tends to be related to age (Lang & Carstensen, 2002). When people have more long-term or open-ended time perspectives they tend to focus more on knowledge acquisition goals that are instrumentally related to desired future states. When future time perspective is more short-term and limited, the focus shifts more toward managing personal networks. In a study conducted in Germany with 480 adults ranging in age from 20 to 90 years of age, Lang and Carstensen (2002) affirmed that younger people tended to have a more open-ended time perspective in contrast to a more limited time perspective with older people and the goals of the two orientations differed as one would predict. People with a limited time perspective tended to reduce the size of their personal networks focusing more on socially and personally satisfying relationships. The personal networks of people with an open-ended time perspective tended to be larger and included people who could contribute to their knowledge related goals and future achievements. However, factors other than age can influence this future time orientation. Fredrickson and Carstensen (1990) found that age differences in goal selection disappear based upon the conditions people find themselves to be in or imagine themselves to be in. For example, young people who are anticipating a major change such as relocating to a new environment or older people

who imagine the creation of a life extending medical advance will form goals independently of their actual ages. Also, conditions that influence one's life expectancy independently of age also have influences on goal selection that are the same as found with age differences. Carstensen and Fredrickson (1998) found that within a group of young men who were HIV patients, those who still had a relatively open-ended life expectancy also had more of a long-term future time orientation while those who were closer to the end of their lives displayed the characteristics of older adults. Thus, as people approach their actual or perceived end-of-life they tend to focus more on emotionally meaningful goals rather than career focused goals. In spite of this, there can be age-independent orientations as with young people who fear the future acting more like old people and older people who remain psychologically young having a life space that is filled with multiple and contingent goals.

Goal Orientation

Several motives that affect people's behavior have been described, and another is *goal orientation*. This refers to whether people are focused more on the outcomes of their goal striving behavior or the activities in the process leading toward the goal. The two most frequently described sets of concepts in this regard are task versus ego orientation and mastery versus performance orientation.

Nichols (1984) studied the development of attributional behaviors in children and he noted a distinctive difference between children, and adults for that matter, who are task oriented versus ego oriented. *Task-oriented* people tend to focus on how to accomplish the task and other elements of getting the job done. *Ego-oriented* people tend to focus more on what is going to happen as a result of doing the task. They worry about external evaluations and what people are going to think about them.

Similarly, Dweck (1986) made a distinction between *learning goals* and *performance goals*. A person who is motivated by learning goals likes to seek challenging tasks, believes that skills can be learned, focuses on task mastery, and believes that abilities can be improved with effort. In contrast, a person who is performance oriented is more concerned with appearing to be competent, wants to succeed with minimal effort, believes that ability is fixed, and is concerned about social comparisons and symbols of success.

Greater levels of anxiety are associated with ego, or performance, orientation. The fear of failure or, at the very least, of not succeeding at a high level, can become so strong that people are almost unable to make any progress at all. Their fear of potentially negative outcomes paralyzes them. In contrast, the person who is task, or learning, oriented is better able to concentrate on achieving as well as possible under whatever the existing conditions are.

Even though these characteristics are often presented as a dichotomy, there are many qualifying conditions to take into consideration. For example, extreme orientations in either direction can be maladaptive as was illustrated above in relation to performance orientation. But, even a task or learning orientation can become maladaptive when one's standards become so high, so perfectionistic, that they become unattainable. However, people generally possess both types of orientations in varying degrees. A person can be contemplating the consequences of success of failure without having it become debilitating. This person might be perfectly well able to focus on the task and, in fact, a moderate degree of performance orientation can heighten arousal and lead to better performances.

It is useful to keep this pair of concepts in mind when designing learning environments. If people are learning skills for which they have little background or confidence, it is best to design the environment to maximize task orientation while minimizing a focus on the performance requirements. Later, after the learners begin to achieve a level of mastery, the performance conditions can be increased to help them strengthen their skills. For example, if the students know they will be faced with a challenging test such as the Scholastic Aptitude Test, their preparatory instruction can begin with a focus on practicing the skills to be performed on the test, such as analogies. As the instruction progresses, the students can be given practice tests with not time limits. And then, the conditions can be changed to be identical with the conditions under which they will take the test. Similar strategies are used when teaching such things as playing a musical instrument or a skill such as gymnastics.

These concepts are especially useful when diagnosing performance problems. Often, a student's difficulties in learning a new skill can be grounded in an excessively high level of ego-orientation or performance anxiety. Helping the student to focus on the task itself and engaging in some desensitization activities regarding the performance environment can help reduce anxiety.

Interest

John Dewey is credited with introducing the concept of *interest* in relation to learning in his monograph entitled "Interest and Effort in Education" (Dewey, 1913). His thesis was that effort by itself does not result in effective learning; interest must be coupled with effort before real learning will take place. He said, "Practically the appeal to sheer effort amounts to nothing. When a child feels that his work is a task, it is only under compulsion that he gives himself to it. At every let-up of external pressure his attention, released from constraint, flies to what interests him. The child brought up on the basis of 'effort' acquires marvelous skill in appearing to be occupied with an uninteresting subject, while the real heart of his energies is otherwise engaged (p. 1)."

His concept of interest was somewhat different from current conceptualizations and research, but in many ways he anticipated the current research. To some degree, he was equating interest with intrinsic motivation and effort with extrinsic motivation with the implication that interest leads to approach behaviors and extrinsic motivation leads to avoidance behaviors. It is certainly desirable to have intrinsic interest in a learning situation, but people can be highly motivated and learn effectively even with extrinsic goals.

One of the areas relevant to instruction and learning in which interestingness has been studied is discourse processing or, in other words, learning from textual materials. Schank (1979), who made several early contributions, especially in regard to story-telling narratives, postulated that events which deviate from our normal expectations arouse interest more than expected events. For example, a 83-year-old man who dies of a heart attack while making a purchase in a convenience store would not attract much interest, but if his heart attack occurred while trying to help the clerk foil a robbery it would be of interest. Shank distinguished between firm and predictable interest arousing events such as death, danger, power, and sex which he called "absolute interests" in contrast to "relative operators" such as unexpectedness or novelty which are contextual in relation to an individual. Shank listed several conditions that help elicit interest, two of which (when there are violations of expectations and when relevant information is missing as in detective stories) are related to Berlyne's work on the curiosity concept (Chapter 4). The third one in which the content of the event is related to salient themes such as the ones he called absolute interests is more centrally a part of the relevance category. Even though the concept of interest has elements of curiosity arousal, its most central attributes are related more to relevance issues such as personal goals, past experience, and established interests.

Much of the early research on interestingness, including Shank's (1979) was in the context of learning from text, or discourse analysis, which is relevant to instructional design and learning. Hidi & Baird (1986) conducted a literature review in which they divided the existing studies according to whether they dealt with stories or, in other words, narratives whose primary purpose is to entertain and which employ many of the attributes of curiosity arousing events (Berlyne, 1954b) or expositions whose functions are more to inform, explain, or persuade. In their discussion of storytelling narratives, Hidi and Baird (1986) point out that interest has both emotional and cognitive components. The former are aroused more by human dramatic situations (Wilensky, 1983) or Shank's absolute interests, while cognitive interest tends to result more from curiosity stimulating stimulus characteristics such as incongruity, unexpectedness, novelty, paradox, etc. which Berlyne (1954b) called "collative variables." Hidi & Baird (1986) also point out that in contrast to some writers who distinguish between interest arousal being primarily in the external stimulus or in the

individual, their position is that it results from the interaction of the stimulus and the person which helps account for variations among people's reactions to similar stimulus events.

The research on interestingness in expositions was hampered, according to Hidi & Baird (1986), because little was known about the kinds of passages that readers find interesting in this type of text and because most of the existing research had been done on college-level textual material and specially constructed passages designed for research. Little had been done with kindergarten through 12th grade materials which tended to include anecdotal stories and passages high in human interest. Flesh (1948) had developed a human interest formula that could be used to rate text material, but it seems not to have been used in these studies.

Another complication exists with regard to the effects of interestingness on recall, especially when the interesting content is auxiliary to the important content. Hidi & Baird (1986) found that students had the highest recall for content that was interesting to them or had personal meaning to them regardless of whether this information was part of the important, superordinate, content of the reading or just subordinate content. Hidi, Baird, & Hildyard (1982) tested free recall of content from three types of material from actual school textbooks: expositions, interesting narratives, and mixed versions in which interesting but unimportant passages were inserted into the important expository content. They found that in the mixed text material, there was significantly less recall of important information. They concluded that the narrative insertions actually reduced the recall of important information.

Garner, Gillingham, and White (1989) introduced the concept of "seductive augmentation" to refer to information which they called irrelevant; that is, interesting but unimportant. As this expression has been used in this body of literature (for example, Harp & Mayer, 1998) it refers to information that is irrelevant to the primary message in the passage or to the learning objectives in an instructional program, but not necessarily irrelevant to the general topic. This is a more restricted use than in the broader literature in which material considered to be irrelevant would have no relationship to the topic. In the present context, seductive augmentation such as an anecdote about seacoast homes in Mississippi that were destroyed by Hurricane Katrina or a picture of endangered sailboats, or a picture of trees bent over from the force of the wind (Figure 5.6 right) that is inserted in text that is describing the principles of hurricane formation would be irrelevant to the central purpose of the text even though it is tangentially related to the topic by illustrating the destructive force of hurricanes. In contrast, an illustration of the cloud formations in a tropical storm preceding a hurricane (Figure 5.6 left) would be relevant. Garner et al., (1989) extended the work of Hidi, et al., (1982), by comparing recall of key points from an expository passage and the same passage with interesting content (seductive detail). The experiment was conducted with college-age adults

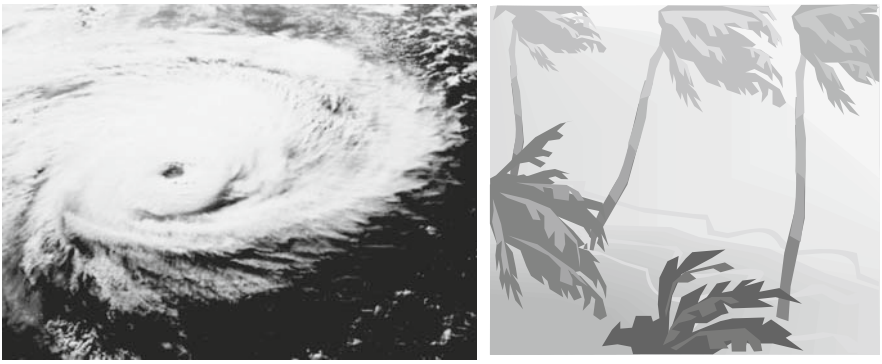

Figure 5.6. Relevant Versus Irrelevant Illustrations in a Lesson About Hurricane Formation.

and with 7th graders. In both cases, the presence of seductive detail interfered with recall of key points.

Intuitively, it would seem that adding material to make text, especially scientific text, more interesting would engage the reader into a more careful reading of the material which would then lead to greater learning. However, the previous studies did not obtain this result because, it was assumed, that the irrelevant but interesting material diverted attention from the central content of the passages. Harp and Mayer (1997) proposed making a distinction between emotional interest, which referred to the kinds of seductive details included in previous studies, and cognitive interest which referred to information that added explanatory detail to the content. They also used a combination of text and illustrations. Seductive detail in the text included interesting but irrelevant information such as the following: "Approximately 10,000 Americans are injured by lightning every year. Eyewitnesses in Burtonsville, Maryland, watched as a bolt of lightning tore a hole in the helmet of a high school football player during practice. The bolt burned his jersey, and blew his shoes off. More than a year later, the young man still won't talk about his near-death experience" (p. 94).

Seductive illustrations consisted of pictures of the same events described in the text and cognitive interest consisted of a series of drawings illustrating six steps in the lightening formation process. Their results were consistent with previous research which illustrated the interference effect of seductive detail and previous research on learning from text which illustrates the beneficial effect of relevant illustrations (Fleming & Levie, 1978). Harp & Mayer in a subsequent publication (Harp & Mayer, 1998) concluded that the interference effect of seductive details results from their prompting of inappropriate organizational schemas rather than distracting or disrupting the reader.

From a completely different perspective that is an expansion of the work on interest in text, two linguists (Sperber & Wilson, 1986) have postulated that relevance is a central requirement, if not the most important element, in communication and perception. In any setting, we will pay attention to novel stimuli only to the extent that we perceive a connection to something important in our own lives. If there is no connection, then we tend to ignore them. For example, if you enter a room and a group of people is already there, you will tend to scan the room. You will tend to notice people who are potentially threatening or intimidating either because of their size, their appearance, or their manner. As long as you feel this threat, you will continue to pay attention to them, even if it is indirect. However, additional information sometimes dissipates the potential threat and you lose interest. For example, if an average man observes a particularly handsome male whom he imagines to be a potential threat to his relationship with his wife or girl friend he will feel anxious. But if he then sees that the man is happily married and does not have a "roving eye," then he will soon ignore him unless there is some other basis of association. However, people whom you recognize as friends, friends of friends, etc., will attract your attention. Other people will be neutral; there will be nothing about them that leads you to a second glance. You might not even recognize them on the street the next day. If you start talking to someone you have not previously known, you will try to determine whether you have enough shared interests and experiences to stimulate further conversation and a possible acquaintance. If not, you move on. Underlying all of these actions, according to Sperber and Wilson (1986), is the principle of relevance. Both our visual and verbal communications function according to this principle. We establish and maintain visual and verbal communication when there is relevance to our lives.

Intrinsic Motivation

The concept of *intrinsic motivation* is different from interest in that it refers more to self-initiated attraction toward particular goals or activities because of their intrinsic interest and the need satisfaction that results from pursuing the given intrinsic interest, particularly in regard to the needs for competence and self-determination (Deci, 1975). In contrast, as we have seen, interest refers to the attraction or concern we feel toward events or objects because they touch upon our most basic needs and fears, or absolute interests (Schank, 1979). Interest can also be generated when events include characteristics such as novelty, unexpectedness, and other curiosity arousing features. Thus, interest tends to be more situational in nature than the broader concept of intrinsic motivation.

One can develop intrinsic interest in a topic even when the goal or task was extrinsically motivated at first. For example, when I was in graduate school and the end of the semester approached together with the huge pressures to write papers and prepare for exams, I found that I would become intensely interested in the topic I was researching even if I had

previously been somewhat indifferent toward it. I would find numerous references to documents that were directly related to my topic but went beyond my immediate requirements, and I would see references to tangential topics that intrigued me. I made notes of the references and planned to read them after the semester ended. Which I never did! Later, when I began to teach theories of learning, cognition, and motivation, including the topic of intrinsic versus extrinsic motivation, I recalled those experiences and tried to explain them to myself. They didn't seem to fit either category because the course requirement was extrinsic and success in the class was instrumental to obtaining my doctoral degree. But, I would develop a high level of what seemed to be intrinsic motivation but it would disappear when the semester ended. Thus, I called it "situational intrinsic motivation" because it was necessary to develop a high degree of interest in order to put forth the tremendous effort required to meet all the deadlines. While in that state I regarded these interests as being deep and abiding, as in a condition of intrinsic motivation. Yet they faded quickly after the semester ended. It wasn't until I read self-determination theory (Deci & Ryan, 1985) that I found a formal explanation in terms of internalized extrinsic motivation. In my case, the motivation did become somewhat internalized, but just not as intensely as during the final weeks of the semester.

Deci (1975) explained that intrinsic motivation is tied to basic need satisfaction, in particular the needs for competence and *self-determination*, or *autonomy*. However, Deci and Ryan point out (Deci & Ryan, 2000) that intrinsically motivated activities are not undertaken for the purpose of satisfying these needs, but because they "are freely engaged out of interest" (Deci & Ryan, 2000, p. 233). In order for intrinsic motivation to be sustained, there must be satisfaction of the needs for competence and autonomy. It should not be assumed that the converse of this condition is true; that is, engagement in intrinsically motivated behaviors is necessary for the satisfaction of these needs which can also be met by activities that are not intrinsically motivated, but it is necessary to experience feelings of competence and autonomy to remain intrinsically motivated. These concepts are embedded in *self-determination theory* (SDT) (Deci & Ryan, 1985) which accounts for goal selection and the psychological needs that underlie the maintenance of goal-directed behavior. Thus, SDT incorporates the concept of interest combined with competence and autonomy which form the basis of the dynamics of intrinsic motivation.

It is not uncommon in the literature for the distinction between intrinsic and extrinsic motivation to be portrayed as a dichotomous contrast. However, in the context of an SDT sub-theory called Organismic Integration Theory (OIT) Deci & Ryan (Deci & Ryan, 1985; Ryan & Deci, 2000) present a taxonomy of human motivation with six categories that include amotivation, four types of extrinsic motivation, and intrinsic motivation (Table 5.2). This taxonomy was developed to explain different types of extrinsic motivation and the kinds of contextual factors that contribute to the development of a particular motivational orientation.

Table 5.2. A Taxonomy of Human Motivation According to Deci and Ryan (Based on Deci & Ryan, 1985; Ryan & Deci, 2000).

Type of Motivation	Characteristics
Amotivation	Lacking an intention to act or, in other words, a condition of indifference toward a goal or activity.
Extrinsic motivation (four types):	
External regulation:	Motivated by an external demand or requirement. This is the traditional view of extrinsic motivation which was contrasted with intrinsic motivation in early studies (Condry, 1977).
Introjected regulation:	Externally controlled but the person is motivated internally by a desire to obtain approval and esteem by performing well. This is consistent with Nicholls' (1984) concept of ego orientation.
Identification:	This is regulation through identification; that is, the requirement is external but the person identifies with its importance which results in a degree of intrinsically generated motivation. For example, a military recruit who must undergo physical fitness training but embraces it because of its importance for survival in combat.
Integrated regulation:	Motivation in this case is characterized by a behavior that is required but has become completely internalized. Thus the person has become self-motivated. This is similar to intrinsic motivation but the behavior is still being performed for instrumental reasons to accomplish external outcomes.
Intrinsic motivation:	This is the condition of a behavior being performed for its inherent pleasure and not because of instrumental contingencies.

It is important to realize that this is a taxonomy, not a hierarchy. It is not necessary to move through a lower level, with regard to degree of internal regulation, before going to a higher level. Frequently, behaviors that are totally externally regulated become more internally regulated as one becomes more familiar with the characteristics of a situation. For example, a new employee's compliance with rules regarding punctuality,

politeness in communication, dress code, and personal appearance (facial hair, etc.) might initially be motivated totally by a desire to avoid unpleasant consequence; hence, extrinsically controlled. But, after gaining experience and seeing the disruptions that occur to the work environment when people are not willing to be "team players," this employee might move to the level of identification which combines a degree of internal regulation with the external requirements. In summary, a person's initial motivation for an activity or task can be in any category of the taxonomy and it can jump to any other category depending on the person's experience in that situation.

One of the important conclusions from the research on interest and intrinsic motivation is that in a learning environment your instruction does not have to have an immediately practical outcome in order for the learners to experience relevance. If you can make connections between your course content and their intrinsic interests or, at the very least, their situational interest, their motivation to learn is likely to be positive.

Flow

The psychological concept of *flow* (Csikszentmihalyi, 1975) refers to being completely absorbed in an activity to the point that you are not conscious of distractions, you are in a high level of intrinsic motivation, you are not thinking about success or failure, your attention is totally focused on your task, and you progress unconsciously from one thought or activity to the next. Being in a state of flow is to have achieved a maximum state of perceived relevance. According to Csikszentmihalyi (1990), the three primary factors that represent a state of flow are interest, concentration, and enjoyment.

Research on flow has been done in many different contexts including education, gaming, sports, and various professions. Many of the studies focus on what happens when people are in a state of flow (Csikszentmihalyi, 1975), but there is also curiosity about how to achieve this state. According to Csikszentmihalyi (1990), achieving a state of flow is facilitated by overlearning so that one is able to approach tasks holistically as a singular integrated action rather than as a series of discrete actions to be performed. This state can be achieved in the context of a well-learned performance activity such as playing a solo on an instrument or even in an orchestra, but it can also be achieved in tasks that are not so well structured. For example, in the process of doing research, taking notes, and generating themes for a research paper, one can become so absorbed in the task that a sense of the passage of time disappears.

However, overlearning a task or becoming highly task oriented in a goal-oriented process does not explain why flow sometimes occurs and sometimes not. In an effort to gain a greater understanding of the relationship between flow and its relationship to other factors in the environment,

Shernoff et al., (Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003) studied conditions that are related to the positive engagement of students in high school classrooms. They collected data from 526 high school and middle school students in a longitudinal study. Data were collected from 12 different research sites across the country during the first, third, and fifth years of the study. The students who participated were randomly selected and stratified by academic performance, gender, race, and ethnicity. Data were collected by means of an Experience Sampling Method (ESM). Each participant had a package of response forms that contained 45 items on the front and back of a single sheet of paper. Participants wore wristwatches which could be buzzed by an electronic paging system. Upon being signaled, the participant was expected to immediately pause and fill out one of the response forms. They were asked to describe their location, the activities they were engaged in, and their thoughts by responding to a series of Likert-type items ranging from 0 (low) to 9 (high).

One measure was degree of engagement in the given task. This was assessed by asking about their levels of interest, concentration, and enjoyment, which are the components of flow. A second category was attention for which they simply indicated whether they were thinking about school-related topics (math, taking notes, how to write their paper, etc.) or non-academic topics (friends, eating, going home, romantic interests, or nothing at all). The final category, quality of experience, included four sub-variables: mood (happy, sociable, strong, proud, active), esteem (self-worth, ability, accomplishments, meeting expectations, and personal control), academic intensity (challenge, importance of topic to personal goals, concentration, and personal importance), and intrinsic motivation (interest, enjoyment, desire to engage in the activity).

These measures were correlated with three categories of independent variables (Table 5.3). One was challenge/skill level which had four levels: flow, anxiety, relaxation, and apathy. Another was type of classroom activity that was occurring at the time of the response and this had five levels. The third category was school subject in which nine different sub-categories of subjects were included.

In general, the results of this study confirmed the theoretical expectations that flow states defined as high in challenge and high in skill were associated with overall higher levels of engagement including the three sub-components of engagement (Table 5.4). Higher levels of engagement were also associated with higher levels of relevance and control. With regard to how students spent their time in school, they were involved with group work, including labs, 15% of the time, engaged in discussion 9%, and watching TV or videos 7%. The rest of the time they were engaged in individual work (23%), listening to lectures (21%), doing homework or studying (7%), and taking exams (13%). Students reported the highest levels on all dependent variables when doing group work and taking exams. They also reported high levels of attention when doing individual work. With respect

Table 5.3. Independent Variables and Levels (Based on Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003).

Challenge/Skill	Classroom Activity	School Subject
Flow (high challenge, high skill)	Lecture	Math
Anxiety (high challenge, low skill)	TV/video	English
Relaxation (low challenge, high skill)	Exam	Science
Apathy (low challenge, low skill)	Individual work Group work	Foreign language History Social studies Computer science Art Vocational education

to school subjects, the major relationships that were found are listed in Table 5.4, and it can be observed that overall students reported their academic classes to be more intense and their non-academic classes to be more intrinsically interesting.

In summary, this study illustrated many cogent relationships among school characteristics and emotional characteristics. The study is particularly valuable in illustrating the different kinds of strengths and problems across the various subject areas and instructional methods in school classroom settings. However, it is also of interest to examine factors that influence flow in online activities due to the prevalence of computer-based self-directed learning programs and e-learning courses which often combine self-directed learning with instructor and student-to-student interfaces.

Studies of flow in the context of engagement in web activities can offer insight into relationships that may affect web design for optimal online learning experiences, especially in the context of self-directed learning. Chen, Wigland, and Nilan (1999) investigated whether the concept of flow could be meaningfully applied in a web context and if so what conditions on the web are associated with being in a state of flow. Csikszentmihalyi (Geirland, 1996) said that,

> A Web site that promotes flow is like a gourmet meal. You start off with the appetizers, move on to the salads and entrées, and build toward dessert. Unfortunately, most sites are built like a cafeteria. You pick whatever you want. That sounds good at first, but soon it doesn't matter what you choose to do.

Table 5.4. General Summary of Major Findings in Shernoff et al. (Based on Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003).

Dependent Variables	Independent Variables			
	Challenge/Skill	Instructional Relevance and Control	Classroom Activities	School Subjects
Engagement	In all of the dependent variable categories, the flow condition (high challenge, high skill) had the highest correlation and the apathy condition (low challenge, low skill) the lowest. With few exceptions, the other conditions were as expected.	Higher levels of relevance and control were associated with higher levels of engagement.	Students reported higher levels on all dependent variables in relation to doing group work and taking exams. In addition, they reported high levels of attention when doing individual work.	Engagement was highest for art and computer science followed by vocational education and social studies.
Interest				Same as above for interest and enjoyment, but not concentration.
Concentration				
Enjoyment				
Attention				Highest in math, science, and computer science. Lowest in history, English, and social studies.
Quality of Experience				
Mood		High control was associated with more positive levels of mood and also with esteem.		Art was correlated with mood, intensity, and motivation, but not esteem. Math and science rated as most intense but not most motivating.
Esteem				
Intensity		High relevance was associated with high intensity.		
Motivation				

> Everything is bland and the same. Web site designers assume that the visitor already knows what to choose. That's not true. People enter Web sites hoping to be led somewhere, hoping for a payoff.

Analogies such as this are useful in helping conceptualize and understand the emotions associated with the situation, but they need to be supplemented with a more precise definition. When working on the Web one can experience many different emotions including such things as frustration, fun, and skepticism. In order to distinguish flow states on the Web from these other conditions, Chen, Wigand, and Nilan (1999) defined four characteristics:

1. it must provide immediate feedback;
2. it must offer clear rules allowing Web users to follow and clear goals to pursue;
3. it must provoke enough complexity which should not be easily exhausted; and
4. it must create dynamic challenges, not static ones (p. 589).

They prepared a questionnaire which they distributed to active web users and received 327 replies. The questionnaire presented three descriptions of flow states that had been created by Csikszentmihalyi (1975) and used in other studies (McQuillan & Conde, 1996). These descriptions were from a rock climber, a composer, and a dancer:

> My mind isn't wandering. I am not thinking of something else. I am totally involved in what I am doing. My body feels good. I don't seem to hear any-thing. The world seems to be cut off from me. I am less aware of myself and my problems.
>
> My concentration is like breathing. I never think of it. I am really quite oblivious to my surroundings after I really get going. I think that the phone could ring, and the doorbell could ring, or the house burn down or something like that. When I start, I really do shut out the whole world. Once I stop, I can let it back in again.
>
> "I am so involved in what I am doing. I don't see myself as separate from what I am doing."

The questionnaire asked the respondents whether they had ever experienced a state such as this while working on the web. People who answered "yes" where then asked what they were doing and to provide additional explanation about how they felt the last time they experienced this feeling. The questionnaire also asked them if they had experienced feelings of time going by too fast, enjoyment, being in control, and challenge. Each time, they were asked to describe what they were doing when they felt this way.

The researchers found that three categories of activities accounted for the majority of conditions in which respondents experienced flow: research on the Web, information retrieval on the Web, and creating Web pages. While this is interesting, the important finding was that the antecedents of flow; that is, the conditions that led to flow were clear goals, immediate feedback, and matched skills and abilities. However, more recent research raises questions about uses of the Internet at work for personal enjoyment. In other words, workers sometimes if not frequently use the web as a digression from work and find it enjoyable. Questions arise about the relationship between flow and these procrastination activities. The researchers found that popular diversionary activities such as online

games, online chat, online telephony, and blogging are the best predictors of problematic use of the Internet which refers to socially unacceptable and even criminal Internet uses, Internet procrastination from work, and flow. Their study signals the need for additional inquiry into these issues and this would certainly be an issue in education. Many instructors have a policy against the use of laptop computers in the classroom because students use them, whenever they can get away with it, for divergent activities such as shopping and social networking.

It is interesting to note that the three antecedents of flow identified by Chen et al. (Chen, Wigand, & Nilan, 1999) are also goals of, if not actual characteristics of, web-based learning activities. However, one could question whether these three antecedents by themselves would differentiate flow from procrastination. A challenge in web-based instruction is that there are many types of distractions that can, on the one hand, keep students fully engaged in Web activities but, on the other hand, distract them from the learning goals. Deimann and Keller (2006) describe several of these such as *lost in hyperspace*, *cognitive overload*, and *seductive details* which all refer to various types of distractions when working on the Internet and also describe how volitional; that is, self-management strategies must sometimes be employed to help students stay on task. This raises interesting questions about flow as an inherently beneficial state of mind versus a sometimes diversionary state of mind and how to promote flow within a designated goal-oriented activity!

Transition

Clearly there is a rich foundation for the concept of relevance. The various theories and concepts provide a basis for specifying several subcategories and many specific strategies for helping to instill a sense of relevance in the learners. As can be seen, these go far beyond the simple concepts of usefulness or authenticity to encompass elements of personal style and background experience. The following section provides a taxonomy of relevance subcategories and examples of strategies.

Strategies for Relevance

"Why do we have to study this?" How many times have you heard this question, or asked it yourself? This is the classical "relevance" question. As we have established, it is very difficult for students to be motivated to learn if they do not perceive there to be any relevance in the instruction. If the extrinsic rewards, such as recognition, promotion, or material rewards are strong enough, then students will see the instruction as being relevant to accomplishing these goals, but these rewards will not make the content of the instruction more personally relevant. There are almost always extrinsic

rewards associated with performance in school, but the type of motivation that results from this could be called motivation to achieve instead of motivation to learn. To stimulate the motivation to learn, it is best to build relevance by connecting instruction to the learners' backgrounds, interests, and goals. Following (Table 5.5) are three major categories of relevance strategies, examples of the primary question to be asked in regard to each, and samples of the kinds of tactics that are related to each category. The first category can include both extrinsic and intrinsic goals, but the second and third are primarily intrinsic in nature.

R.1. Relate to Goals

> When teaching a course on data processing, Jim used application examples and practice exercises based on the types of data and clients that the learners would find on their jobs.

All of the motivational self-help books and how to achieve success books tell us that having a clearly defined goal is a necessity. Think about the times in your own life when you have been highly motivated. Did you have a goal that you were excited about achieving, such as a vacation that you were

Table 5.5. Subcategories, Process Questions, and Main Supporting Strategies for Relevance.

Concepts & process questions	Main supporting tactics
R1. Goal Orientation How can I best meet my learner's needs? (Do I know their needs?)	Provide statements or examples of the utility of the instruction, and either present goals or have learners define them.
R2. Motive matching How and when can I link my instruction to the learning styles and personal interests of the learners?	Make instruction responsive to learner motives and values by providing personal achievement opportunities, cooperative activities, leadership responsibilities, and positive role models.
R3. Familiarity How can I tie the instruction to the learners' experiences?	Make the materials and concepts familiar by providing concrete examples and analogies related to the learners' work or background.

longing to take, attracting the attention and interest of a "special someone," obtaining a degree or special award? Most of the time the answer will be, "yes." When people have clearly defined goals, it is much easier to determine whether you can build a connection between them and what you are teaching, even if the connection is somewhat remote.

But what if your learners do not have clearly defined goals, or if there is no clear and immediate connection between your content and the kinds of goals that they might develop? Many of the tactics implied by the following process questions will help learners see connections to actual or potential goals. Two specific tactics are "before and after" comparisons and future wheels. You have observed before and after comparisons all of your life. They are one of the most popular advertising techniques for showing the benefit of a new product. You can use the same technique to illustrate how mastery of your content can lead to good things in the future.

A related technique is to use a future wheel when students do not perceive any future value for the present subject. A nice feature of this technique is that they generate the potential connections to their future needs and goals, not you. This technique is somewhat like mind mapping. Have each student draw a circle in the center of a blank sheet of paper. Give the following instructions: "Imagine that you successfully learn this material. How might this benefit you in the future? Think of all the things this might lead to, or help you with. For each one of them, draw a line out from your circle, put another circle at the end of the line, and put the item in it. Draw a separate line and circle for each item you can think of." After they complete this task, then have them repeat the process for each of the new circles. And, do it one more time. When the students have finished, they will be amazed to see how many potential benefits there are to the current subject. You may also be surprised at the number and kinds of connections they make.

Not all goals are projected into the future. Some can be very close at hand. The following list contains tactics for highlighting the present worth of the content as well as projecting it into the accomplishment of future goals.

Present Worth

1. State the immediate benefit of the instruction if it is not self-evident.
2. Include comments, anecdotes, or examples that stress the intrinsic satisfactions of the subject of instruction.

Future Value

3. Include statements describing what the learner will be able to do after finishing these instructional materials.

4. Ensure that at least some of the examples and exercises are clearly relate to the knowledge and skills that the students will need in the future.
5. Tell the student how the successful accomplishment of this instruction is related to future goal accomplishment (e.g., is success in this instructional situation important for admission to subsequent courses, selection of a major area of study, or admission to advanced levels of study, salary increase, job retention, or promotion).
6. Tell the learner how this instruction will improve his or her general life coping skills.
7. Encourage the learner to think of this instruction as contributing to the development of an intrinsically interesting area of study and development.

An Example

The activity presented in Figure 5.7 illustrates how a facilitator can discover what issues and problems the learners have in regard to the topic of a lesson or workshop. This activity allows the facilitator to do some "on the spot" needs assessment to find out how to connect his or her course objectives to the needs and interests of the learners. In this exercise, participants individually list problems in Part 1. Then, the facilitator calls upon each participant to mention one problem in turn and keeps rotating through the class until no one has any more items to contribute. Next, the class discusses the list and combines similar items. In Part 2, every one copies the list onto their worksheets and then rates each item as follows:

Y = This is a motivational problem that I believe I should be responsible for solving.

N = This motivational problem is outside my control. There is nothing I can do about it.

?? = I'm not sure how to classify this problem.

After everyone has finished, the facilitator has everyone compare notes and they discuss their various opinions. The facilitator relates the problems to the objectives of the class and points out that there might be ways to deal with some of the "uncontrollable" problems, which is what typically happens after the class learns the motivational design process.

R.2. Match Interests

> In a course on basic marketing concepts and techniques, Mark allowed groups to select their own marketing objectives and strategies during competitive group exercises.

There is more to relevance than utility; that is, connecting instruction to goals is utilitarian in that it based on achieving external outcomes. To

Have You Ever Had A Problem with Student Motivation?

Part 1: List of Motivational Problems

What kinds of motivational problems do you encounter in the classroom or with the materials you produce? List three or more motivational problems faced by you or other developers of instructors in the courses you deliver. In other words, what kinds of motivational problems are presented by the participants (students) or situation?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Part 2: Ratings of Motivational Problems

(Instructions will be provided by your facilitator.)

Y = _____

N = _____

? = _____

Y	N	??	Group List of Problems
__	__	__	1. _____
__	__	__	2. _____
__	__	__	3. _____
__	__	__	4. _____
__	__	__	5. _____
__	__	__	6. _____
__	__	__	7. _____

What techniques can you use to build a stronger sense of relevance?

Figure 5.7. Hooking Into Learner's Concerns.

develop a holistic approach to relevance, and to compensate for situations where the instructional content is only weakly related to learner goals, there are several things you can do to engage the learners. People are more motivated to achieve in situations where they receive personal recognition and are valued as both human beings and for the contributions they can make. In

classrooms, learners will feel more interest and relevance when they feel that the teacher knows them, takes a personal interest in them, and cares about whether or not they succeed. This is why teacher behaviors such as eye contact, knowing the students' names, and unobtrusive conversations with students all make the student experience higher levels of relevance in that setting.

The use of role models and stories about the challenges faced by real individuals who had to work and strive to achieve personal goals in fields of study that are relevant to the subject matter are tactics that undoubtedly have their origins in antiquity. But, they still work. That is why this is a common theme in literature, movies, and even advertising. Also, a teacher's emotional displays of enthusiasm and other feelings of challenge and achievement can help inspire some students, awakening vicarious interests in the content that may persist as a new, internalized interest and even career focus. Even when we do not adopt the interests of an enthusiastic person, we tend to be motivated by that person and are interested in what they have to offer.

The way in which you teach a subject can also inspire a feeling of relevance, at least for the duration of the unit of work. For example, people who have a strong desire for achievement will feel a higher level of relevance for a topic if you organize competitions or other opportunities for them to set personal goals and excel. Many students will respond positively to cooperative group work that provides a relaxing context in which to talk and collaborate with other students. However, some of the students who have a high desire for personal achievement will probably not enjoy group work if their grades are dependent on the performance of the group. Your challenge as a teacher is to use a variety of teaching methods that allow the needs of the various students to be met. This will increase their overall sense of relevance of the requirements of the situation to their needs and will make them more receptive to learning even if the relevance of the topic itself is not readily apparent.

Basic Motive Stimulation

1. Use personal language to make the learner feel that he or she is being talked to as a person.
2. Provide examples (anecdotes, statistics, etc.) that illustrate achievement striving and accomplishment.
3. Include statements or examples that illustrate the feelings associated with achievement.
4. Encourage the learner to visualize the process of achieving and succeeding, and the feelings associated with it.
5. Include exercises that allow for personal goal setting, record keeping, and feedback.
6. Include exercises that require cooperative work groups.
7. Include puzzles, games, or simulations that stimulate problem-solving, achievement-striving behavior.

8. In the exercises (including puzzles, games, and simulations), encourage the learners to compete against each other, themselves (i.e., trying to beat their own record), or against a standard.

Role Models

9. Use anecdotes about noteworthy people in the area of study, the obstacles they faced, their accomplishments, and the consequences.
10. Use examples, testimonials, etc., from persons who attained further goals after successfully completing the course of instruction.
11. Include references to, or quotations from, people who can convincingly describe the benefits of the particular skill/knowledge area.

R.3. Tie to Experiences

> Leslie began a workshop on accounting software applications by asking each participant to describe the amount of experience each had with any kind of accounting software.

Quite a few years ago, one of the largest international hotel-motel companies, headquartered in the United States, used an advertising slogan of "no surprises." They were trying to establish the concept that you, the customer, could always expect the same, predictable high-quality service and familiar amenities of their hotels. This would relieve the weary traveler of the stresses of dealing with unfamiliar surroundings and not knowing what to expect. This slogan reflected the tendency of people to be interested in things that are related to interests that they already have. It has long been known that most of the participants in the audience to hear a controversial speaker already agree with the speaker. The participants desire confirmation of things they already believe.

A primary goal of education, which is to expand students' minds and stimulate both critical and creative thinking, would seem to contradict the desire for familiarity. One way to achieve both goals is to find ways to connect new, unfamiliar content to past knowledge and experiences of the learners. Then, transition them into new knowledge and perspectives (see the activity in Table 5.6). The following analytical questions offer some suggestions in this regard.

Connection to Previous Experience

1. Include explicit statements about how the instruction builds on the learner's existing skills or knowledge.

2. Use analogies or metaphors to connect the present material to processes, concepts, skills, or concepts already familiar to the learner.

Table 5.6. An Example of Linking the Unfamiliar to the Familiar.

CASE: THE SOCIAL STUDIES CHALLENGE

In his 9th grade social studies class, Gil Perkins had to teach a thematic unit on cities. It focused on politics, economics, education, and other aspects of a city's infrastructure such as distribution systems (food and merchandise) and communications. He had trouble motivating the interest of the students in his rural Midwestern school with respect to this module. Almost none of them had ever been to a large city. Their impressions were formed by the excitement, drama and, usually, violence of television programs set in large cities. In contrast, this social studies information was not interesting or relevant to them.

After reading some material about "inquiry teaching," Gil began his unit this year by asking the class, "What would happen in a town of 12,500 people if the food supply were cut in half overnight?" The students were both surprised and intrigued by this question, which referred to a town the size of theirs. A lively discussion followed in which speculation turned into thoughtful discussion based on their knowledge of the close interactions of people in the town and the surrounding farms, ranches, and dairies.

After 20 minutes, Gil interrupted and asked the class what would happen if the food supply were cut in half overnight in a city of 1,250,000 people, and he named some cities of that approximate size. The discussion took a very different turn. It was much more speculative and reflected the values and beliefs of the students based on their home backgrounds, travel experience, and television preferences. It soon became obvious that they were dealing purely in speculation and could not meaningfully analyze the situation.

At that point Gil introduced the new module and explained how the things they would learn would help them better understand what might happen. Before beginning, he and the class summarized a list of their key questions and predictions. As he taught the material, Gil had the students relate it to the small town situation and to the list of questions and predictions.

Options for Individualization

3. Give the learner choices in the content of assignments (e.g., is the learner allowed to choose examples and topics of personal interest for at least some of the assignments).
4. Give the learner choices in the type of assignment (for example, allow the learners to select from a variety of means to accomplish a given end).

Summary

This principle of relevance has strong application in a classroom. Children will process information much more effectively and efficiently, and be more motivated to pay attention and learn if they perceive personal relevance. There are many ways to transmit this sense of relevance. It can come from the content of a communication, the personal warmth, attention, and enthusiasm of the teacher who generates a vicarious sense of interest in the students and from activities that are deliberately designed to build bridges to the students' past experiences.

Some researchers in motivational design (Means, Jonassen, & Dwyer, 1997) have, like Sperber and Wilson (1986) who are from a different professional discipline, postulated that relevance is the most important component of motivation. However, they found that the other dimensions of motivation are also important. As illustrated in the various concepts of motivation and their synthesis into the ARCS model, there does not appear to be any single motivational concept that is by itself most critical. That is why a holistic approach is desirable. However, there is no denying that relevance is one of the most important influences.