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Chapter 7 – Managing Outcomes for Satisfaction

Forethought

One of my favorite quotations from the professional literature of instructional design is by Don Tosti who asked at the beginning of one of his articles (Tosti, 1978), "If feedback is desirable, why do people go to such lengths to avoid giving or receiving it" (p. 19)?

Assuming that he is correct, why do you think this is? Is it because, as illustrated in Figure 7.1, we usually associate feedback with criticism? What do you think?

Feedback can be a powerful tool for building positive motivation and also for killing people's motivation. The principles covered in this chapter help explain uses of feedback together with other factors that influence intrinsic and extrinsic motivation.

Figure 7.1. Effects of Feedback on Motivation.

Introduction

What makes us either persist or lose interest in a goal and what makes us feel good about our accomplishments? For many years psychological research focused primarily on the effects of external consequences on behavior (rewards, punishments, and indifference) while educators tried valiantly to maintain a belief in the importance of intrinsic satisfactions of learning. Now, there is ample evidence to support both positions as being important to understanding why people are or are not satisfied with the consequences of their behaviors.

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Intrinsic motivation, which can also be called intrinsic satisfaction, can result from feelings of mastery and from the pleasure of having succeeded at a task which was meaningful and challenging. If you design instructional content and learner activities that are at an optimal level of challenge and for your audience and are perceived by them to be worthwhile, then you have set the stage for intrinsic satisfaction. This appears to be rooted in several innate characteristics of people. As indicated by the research that supports the first three components of the ARCS model, people like a certain amount of novelty, they like to feel competent, they like to build knowledge and skills in areas of personal interest and importance, and they like to experience a degree of control, or autonomy. When all of these conditions are met in a learning environment, then intrinsic satisfaction will result or be sustained from successful achievement. When these conditions are not met, students lose interest. For example, children love to learn new tasks, such as how to tie their shoes. They will play with them repeatedly until they master the task. Once mastered, they are not interested in tying their shoes for fun anymore, only when they need to. In other words, the intrinsic pleasure is gone after they achieve mastery. Researchers (McMullin & Steffen, 1982) have confirmed what parents know from experience, which is that children are more interested in tasks, such as puzzles, when the difficulty level increases slightly as their competence increases.

Why, then, do these conditions that support intrinsic motivation not occur more often? It would require an ideal environment to constantly achieve this standard. There are many reasons why children and adults are in the courses they take, and the choices of content in those courses are based on decisions ranging from tradition through convenience to actual needs. The most common reason why people are in a given course is because it is required. This is true for children in school, for adults who are trying to earn degrees or certification, and for adults who are responding to the requirements of their workplace. In many of these settings, it is the extrinsic rewards that ''motivate'' people to attend. These rewards can be positive as in obtaining degrees, certificates, and pay raises, or negative as in avoiding punishment or other undesirable outcomes. Furthermore, in school settings, teachers are required to ''grade'' students to indicate who has achieved certain levels of competency and who is superior to whom. Consequently, it is not the exclusive or even primary role of the teacher, from an institutional perspective, to promote intrinsic satisfaction. Also, people want things in life; they want more than just ''feeling good.'' To do this, they have to be competitive and acquire the skills and credentials to support their goals. For all of these reasons, teachers are challenged to manage the use of extrinsic reinforcements together with creating conditions for intrinsic satisfaction.

Another complication with trying to design environments that result in positive feelings of satisfaction results from the interactions between extrinsic reinforcements and states of intrinsic motivation, especially when

you compare your situation to other people's. You will be happy if the outcomes of your behavior meet or exceed your expectations but disappointed if your expectations are not met or if you perceive them to be unfair compared to what other people receive. These issues are the basis for this chapter's focus on conditioning theory, interactions between extrinsic reinforcement, and cognitive evaluation as they relate to satisfaction and continuing motivation.

Psychological Basis for Satisfaction

Key Question for Satisfaction

What can I do to help the students feel good about their experience and desire to continue learning?

Reinforcement and Conditioning

That the effects of *extrinsic reinforcement*s can have a powerful influence on behavior is amply demonstrated by the *operant conditioning* literature. The use of positive reinforcements increases the frequency of the responses that lead to the reinforcement. This is generally true, but as the literature shows, there are many complicating elements. One of the first concerns the issue of what is a reward? An outcome that is rewarding for one person might not be so rewarding for someone else. After identifying outcomes that will have a rewarding effect, there is the issue of how often to give them; that is, what schedule of reinforcement to use. And there are the even more complicated issues of when to ignore undesirable behaviors so that they will extinguish, or to use punishment to decrease the frequency of a behavior. There is a vast literature on this subject (Beck, 1990), but fortunately there are a few basic principles that an instructional designer and teacher can use to help ensure the effective use of positive consequences. These have to do with recognizing success when it occurs, timely use of feedback and praise (Brophy, 1983), and using tangible rewards consistently, even if they are primarily symbolic rewards in the form of tokens and privileges (Pintrich & Schunk, 2002).

Behavioral psychology played a strong role in the development of instructional psychology and applications to the design of learning materials. Examples of these such as programmed instruction and a course design model called the Personalized System of Instruction are described in Chapter 2. Those early applications have evolved into more complex theories and models of instruction (Gagné, Wager, Golas, & Keller, 2005; Reigeluth, 1983, 1999), but the basic principles of behavioral conditioning contained within those models are still valid and must be managed effectively in an effective and appealing learning environment. Regardless of one's overall commitment to a given theory of instruction or learning,

people generally tend to sustain or increase behaviors that have positive results relative to their values and goals and avoid those that have detrimental outcomes.

Classical Conditioning

Anne is in her car at an intersection waiting to cross a major thoroughfare. When the traffic light turns green she accelerates only to notice that an 18-wheel truck coming at a high speed from her right is not going to stop. She slams on her brakes and narrowly avoids being crushed. Afterward her autonomic nervous system reacts like an explosion of lights, raucous sounds, and ricocheting steel balls in a Japanese pachinko parlor. She has to pull to the side of the road to wait for her heart to stop pounding and her adrenaline to subside. Eventually, she continues to work thankful to be alive.

The next day she has to stop at the same intersection. When the light turns green she is far more cautious and proceeds safely on her way. Even so, she finds that her heart is pounding, her blood is pulsating, and she is short of breath.

What has happened? Why is she having these reactions even though she was in no danger? She is experiencing a type of conditioning called Pavlovian or Classical conditioning. It results when a normally irrelevant stimulus event occurs in association with a reflexive, or unconditioned, stimulus and response. In Anne's case, the intersection which previously had no particular significance to her is now associated with her naturally occurring bodily response to an unexpected near-death experience. For a few days, that intersection will trigger the same neurological responses in her body, but with less intensity and the effect will extinguish as time goes by unless it happens again.

This behavioral phenomenon was first reported by Ivan Pavlov (1906) who was a Nobel Prize winning Russian physiologist. While studying the digestive processes of dogs, he would put meat powder on their tongues to induce the involuntary response of salivation. After a period of time, as a dog would become more familiar with the experimental conditions, he observed that the dog would begin to salivate before the meat powder was placed on its tongue. With continued observation, Pavlov noticed that there were cues such as the clinking sound of the metal bowl used to carry the meat powder that signaled the onset of salivation. Thus, it appeared that the dog had learned to associate the clinking sound with the arrival of meat powder and this produced salivation before the dog could detect the smell or taste of it. He called these learned salivation responses "salivary secretions" and this process became a major focus of his research (Pavlov, 1927). It refers to the conditioning of a reflex, which by definition is not normally under voluntary control, so that it is stimulated by a previously neutral stimulus.

Formally, this process of conditioning reflexes begins by identifying an *unconditioned stimulus* (UCS) and *unconditioned response* (UCR) which means that the UCS evokes the UCR without any previous conditioning.

Examples of this other than dogs salivating in the presence of food include the familiar flexing of the lower leg in response to a tap on the patellar tendon, a feeling of relaxation after smoking a cigarette due to decreased flow of oxygen to the brain, a feeling of pleasantness after viewing an aesthetically pleasing stimulus, and heart palpitations and shortness of breath following an unexpected and dramatic threat.

The next step is for a neutral stimulus to occur regularly in the presence of the UCS → UCR pairing. Based on the frequency and intensity of this association, the neutral stimulus will begin to evoke the response and is then known as a *conditioned stimulus* (CS). The UCR now becomes a *conditioned response* (CR) which means that it is still a reflexive response, but it can now be stimulated by a CS.

Classical conditioning can occur in many ways in everyday life. A child who is ridiculed by a teacher or other children in a math class may react with shame and embarrassment. If this happened fairly often or was traumatic enough, then the math classroom itself could become the conditioned stimulus and the child would begin to have the negative feelings while approaching and entering the room. Similarly, a reflexive reaction to a choking sensation is for the throat muscles to contract. If choking is not a common problem for a person, but it happens one time when trying to swallow a tablet, the person can develop difficulties in taking medicine. The appearance of the pills (CS) can result in a tightening of the throat muscles (CR) which then increases the difficulty of swallowing the pills. In reality the relaxed human throat can easily swallow a palm-full of pills but the conditioned response interferes.

The conditioned response can become stronger as a result of *stimulus generalization* which occurs when the conditioned response to a specific stimulus also occurs in response to similar stimuli, which is what happens in the development of a phobia. For example, the student who evidenced an anxiety reaction when approaching the math classroom could develop a similar reaction when approaching a science classroom, especially if math were included in the science instruction or if something causes him to experience embarrassment in that room. This generalization could continue to spread until the student developed a generalized state of anxiety in reaction to attending school.

Conditioned responses can be weakened and *extinguished* by following a process of disassociating the CS with the CR. For example, the student could spend time in empty classrooms. Gradually, the conditioned response would disappear, just as it did with Anne after repeated crossings through the intersection without incident. And, assuming that a counselor was involved with the process, the student could be assured that he would not be ridiculed upon reentering the normal classroom.

Classical conditioning can be a factor in students' motivation to learn. If we consider the previous example, students can develop reactions of fear and withdrawal because of an unpleasant experience in a particular

learning situation. On the other hand, learning environments can be arranged to foster feelings of relaxation and happiness. When elementary school teachers decorate their rooms with colorful and happy images, part of the intent is to develop these pleasant associations. While this can be helpful, it is most important for teachers to be sensitive to the influence of their words and actions on students. Teachers who mistake patronizing or sarcastic comments for cleverness can cause a strongly unpleasant emotional reaction in their students. Mindfulness of their power and influence is critical in avoiding these kinds of situation.

Operant Conditioning

Anne has just purchased a cup of coffee from a vending machine. When she reaches into the coin return pocket to get her change she discovers that it contains an extra fifty cents which was probably left by a previous customer. She is delighted by this small but unexpected "find." On her way out of the self-service canteen she checks the coin pockets in the other machines but they are all empty. The next day she doesn't get extra coins in her change but she does find twenty-five cents in one of the other coin pockets. Every day for a week she checks all of the coin pockets without success. Then, she gradually stops checking them.

Once again Anne's behavior has been influenced by an unexpected event in her environment. Is the same type of thing happening here that happened at the intersection? In both cases her behavior was conditioned by a stimulus event following her behavior, but the second example is quite different from the first one. In the first case, a response that normally occurs only automatically as a reflex became associated with an environmental stimulus that continued to trigger the response until it extinguished. In the second case, a naturally occurring behavior (reaching into the coin pocket for change) became associated with a rewarding consequence (getting some extra money).

This type of learned association is called operant conditioning and it consists of managing the consequences of a behavior to either increase or decrease the frequency of that behavior. The relationship between a behavior and its consequence is known as a contingency and contingency management refers to the implementation of specific types of relationships. There are four types of stimuli that can be used as consequences of a behavior:

+S^{+} Administer something pleasant. This is *positive reinforcement*. It consists of receiving a reward such as food, tokens, awards, or praise after performing in behavior that meets the requirements of the person who is managing the reinforcement system.

−S^{-} Take away something unpleasant. This is known as *negative reinforcement* and it occurs when a person is allowed to move from an aversive, or unpleasant, conditioned to a more positive one. And for

example, a teenager who has had to endure several hours of silence in his room because he was not doing his homework is allowed to turn the stereo back on after completing his assignments. It is important to note that negative reinforcement is reinforcement, not punishment, because it leads to an increase in the frequency of the desired behavior.

+S^{-} Administer something aversive. This is one type of punishment and it consists of inflicting something unpleasant on the person whose behavior is being managed. Examples of this type of positive punishment are spankings or having to pay a fine for speeding ticket.

−S^{+} Take away something pleasant. This type of *negative punishment* is used frequently. It consists of such things as requiring a child to study in his or her room after misbehaving (''time out''), taking away a child's cell phone or iPod if they misuse it, or a spouse who withholds affection after being ignored for too long. This type of punishment often precedes negative reinforcement which consists of reinforcing correct behavior by ending timeout, returning the equipment, or once again being affectionate.

Another component of contingency management pertains to the stimuli that precede the occurrence of a behavior. For example, sometimes children behave properly in a school classroom and sometimes they don't. Typically, they behave properly if the regular teacher is in the classroom assuming that the teacher has good classroom management skills, but the children might misbehave if the teacher leaves the room for an extended period or if they have a substitute teacher. In this example, the presence of the teacher is the discriminative stimulus (S^{D}); that is, the characteristic of the environment that signals that a given contingency is in effect. In other words, if the teacher is in the classroom, students know that they will be rewarded for good behavior and punished for inappropriate behavior. Actually, the teacher would like for the children to behave properly as soon as they enter the classroom regardless of whether she is there or not. In other words, the teacher would like for the classroom to be the discriminative stimulus that signals to the children that good behavior is called for. But, the children learned that if the teacher is not present there is no consequence for misbehavior. This does not mean that the children will misbehave, but it means that other elements in the children's personalities and values will exert the primary influence on their behavior. Thus, the classroom itself becomes a *nondiscriminative* (S^{Δ}) or neutral stimulus.

When a parent, teacher, or other behavioral specialist is trying to establish a new behavior, it is customary to provide continuous reinforcement; that is, to reinforce every occurrence of the desired behavior or at least a close approximation of it. Sometimes it is necessary to shape the behavior from an initial rough approximation to the exact behavior that is desired. For example, if a supervisor is attempting to use positive reinforcement to improve a newly hired, inexperienced employee's behavior who

does not always return from breaks on time or get back to work right away, the supervisor will first make a positive comment each time the employee is back at his desk on time. If this is successful, the employee will have a more regular pattern of promptness but might continue to waste time with frivolous activities before actually getting back on task. In this case, the supervisor will stop reinforcing the employee for promptness and watch for a time when the employee begins working immediately after returning from the break. The supervisor might say, "Jack, it's great to see that you jumped right back into that project immediately after your break!" Thus, shaping refers to rewarding successive approximations of a performance that become closer and closer to the ultimate target behavior. This process is used with great success in training animals.

In actuality, *continuous reinforcement* is seldom used for very long. If every occurrence of the behavior is reinforced, the behavior will normally extinguish rather quickly if the reinforcements cease. More sustained patterns of behavior can be achieved by using schedules of reinforcement which have two dimensions. One dimension consists of interval versus ratio frequency of reinforcement and the other consists of fixed versus variable intervals. Interval schedules are based on time; that is, a reward is given for the first response after a specified amount of time. In a ratio schedule the reward is given after a specified number of responses. An interval schedule can be fixed or variable; that is, the interval can be specified as five minutes, two hours, or any appropriate period of time. Or it can be a variable interval which means that the reward is offered at unpredictable moments during a specified amount of time before or after the interval limit. If the interval is 10 minutes, the reward can be offered after, for example, two minutes or 14 minutes. Similarly, in a variable ratio schedule in which reinforcement is given on the average after every 20 responses, the reward may occur after 5 responses or 19 responses. Behaviors are maintained for longer periods of time with variable schedules because it is more difficult to determine if one is in a long interval or large ratio or if extinction has actually set in.

Token Reinforcement Systems

A token economy is a system that incorporates the systematic use of reinforcements to manage behavior, encourage learning performance, or increase learner motivation. In these systems target behaviors are specified and tokens are awarded for those behaviors. When enough tokens are accumulated by one of the participants they can be exchanged for a tangible reward such as a small toy, a school supplies item, or a special privilege. These systems can be used in school classrooms, custodial centers for adults with developmental problems, or other supervised environments. Parents sometimes use these systems to establish regular patterns of behavior such as habits of personal hygiene. The expectation is that by providing extrinsic rewards until the behavior becomes well established the behavior will

eventually become intrinsically satisfying. The extrinsic rewards are gradually withdrawn during this process. Thus, there are three primary components to a token reinforcement system (Jenson, Sloane, & Young, 1988, p. 170): (1) the tokens to be dispensed, (2) the rules for earning the tokens, and (3) the backup reinforcers to be earned.

Tokens can be anything that does not already have value, such as coins, associated with them. Commonly used tokens are shiny stars, plastic chips, or marks on a progress chart. The rules for earning them must be clearly specified to the students as when students receive a token for every 10 minutes they work quietly on an assigned task. Tokens can also be awarded based on the amount and quality of work completed and displaying appropriate behavior in the classroom. For these different contingencies, there are two basic methods of using tokens. The first is to reward students with tokens for behaviors that you want to increase, such as raising their hands before talking. The second type of goal is to decrease undesirable behaviors. This can be done by giving the students an amount of tokens and then charging them a penalty for doing the target behavior, such as touching their neighbor or texting during class. Also, tokens can be awarded for every occurrence of the target behavior or on a schedule as in any other application of behavioral management contingencies. Then, at specified intervals tokens can be exchanged for the backup reinforcers such as small toys, edible items, or special privileges such as getting to spend a certain amount of time playing an Internet game. It is usually best for there to be a range in value in the assortment of reinforcers. Having some high-value gifts along with lower valued ones provides the learners with an incentive to earn more tokens or to save their tokens until they acquire a sufficient amount to get their desired prize.

Token reinforcement systems grew rapidly in popularity in the 1960s and in 1972 Kazdin and Bootzin published an evaluative review (Kazdin & Bootzin, 1972) of the work done up until that point in time. They observed that this methodology had been employed with diverse settings and audiences including psychiatric inpatients, the mentally retarded with regard to ward, self-care, and classroom behaviors, children in classroom settings, delinquents, and autistic children. They found some applications to be effective and others less so, but they identified several problems that can become obstacles to success. One is staff training. They found that it was not uncommon for staff members to fail to implement the token system appropriately. Staff would become indifferent, not fully understand the contingency structure, and not provide tokens consistently. They also found instances of client resistance which might be expressed in the form of disruptive behavior, breaking rules, complaints, and anger. In school settings, children might react negatively by simply not cooperating or actively trying to disrupt the system. Another problem that they identified was client nonresponsiveness to the contingencies. This could happen for several reasons including failure to perceive the contingencies or inability to remember them with the more severely disturbed or retarded ones or

because they did not find the system to be compelling enough to excite their interest. This would be more of a problem with finding appropriate backup reinforcers and an effective schedule than with capability problems. Still another area of problems has to do with being present to observe and reward the target behaviors when they occur or simply not observing them. This was especially true in residential centers, but it is a challenge even for a teacher in a classroom due to the many challenges of teaching, monitoring behavior, and meeting individual needs. In a follow-up review, Kazdin (1982) found that the same challenges to implementation still existed, especially in regard to staff preparation. Successful programs required great attention to staff training and supervision to ensure that the programs were implemented as designed. He also found that there were few successful programs outside the realm of research and demonstration projects. Institutional programs which were his major focus simply required too many resources with regard to personnel, supervision, and availability of backup reinforcers. Smaller programs, such as those that a teacher might implement in a classroom, were more frequent, but even those tended to have limited life spans due to the extra demands placed on teachers to supervise and maintain the project after the novelty effect wore off.

Token economies are used most often for managing behavior to improve personal habits and discipline, but they can also help to improve learning. O'Leary and Drabman's (1971) thorough review of the literature describes many successful applications of this process even though there were failures. The studies they reviewed were predominately positive in terms of decreases in disruptive behavior, increases in study behavior, increases in academic achievement, and beneficial unexpected outcomes such as better attendance and bartering for tokens among the students. In a more recent review of literature and experimental study, Truchlicka, McLaughlin, and Swain (1998) developed a token system to improve the spelling and other areas of academic performance of middle school special education students with behavior disorders. The students could also earn points for completing homework, being on-task behavior, and behaving properly in the hallways. They used a combination of reinforcements for these behaviors and response costs (penalties) for unacceptable behavior such as "wasting time, playing with objects, incomplete assignments, not following directions, talk-outs, swearing, cheating, fighting, coming to class late, and failing to bring academic materials to class" (p. 3). They implemented the system with three of these special students and obtained positive results with each of them. Their review of literature focused on more recent studies, relative to the earlier (Kazdin, 1982; Kazdin & Bootzin, 1972; O'Leary & Drabman, 1971) reviews, which confirmed many of the positive applications of token systems in academic settings. Finally, similar positive results were obtained by Filcheck et al. (Filcheck, McNeil, Greco, & Bernard, 2004) in the use of a token system to manage disruptive behavior in a preschool classroom. They also considered reviewed methodological issues and generalizability and concluded with several observations regarding

critical success factors in these systems. Like Kazdin and Bootzin (1972), they pointed out the importance of careful design and rigorous implementation on the part of the teacher and other members of the project.

Even though there are many positive examples of token systems, there are also those that do not succeed. O'Leary and Drabman (1971) indicate that there are three primary reasons for this. The first concerns problems with the program itself, which Kazdin and Bootzin also discuss in detail. The second is problems associated with the teacher, which is similar to problems with implementation due to problems with the staff as described above. For example, it can be extremely challenging to implement a token system effectively in regular classrooms which typically have quite a few students. The students monitor the teacher and can become quite competitive. They are likely to make social comparisons in which they challenge the teacher to provide them with the same reward that was given to another student. For example, Billy might complain to the teacher that Sally raised her hand four times to answer questions and got three tokens but he raised his hand four times and only got one token. Thus it can be extremely time-consuming for the teacher to manage the token reinforcement system effectively to avoid complaints and at the same time not have it detract from the learning environment. The third area consists of problems with the specific population used in the token system. Some groups will not respond positively to it due to negative peer pressure and other issues.

Relationship Between Extrinsic Reinforcement and Intrinsic Motivation

Generally speaking, as discussed in Chapter 5, intrinsic motivation seems to be comprised of a personal interest in a given task or subject (Schank, 1979) combined with perceptions of increases in competence (White, 1959) and personal control over one's choices and courses of action (deCharms, 1968). The achievement of personal goals under these conditions of personal control, which White calls *effectance motivation* in relation to one's desire to satisfy the need for competence, lead to a positive emotional outcome which he calls *feelings of efficacy* (p. 322). In contrast, the use of reinforcement contingencies to manage another person's behaviors tends to take personal control away from that person and put it in the hands of the performance manager and it has long been noted that extrinsic controls and incentives can have a detrimental, undermining effect on intrinsic motivation and learning (deCharms, 1968; Harlow, 1953; Hunt & Sullivan, 1974; White, 1959). Among the best known early studies of this issue were those conducted within the framework of *cognitive dissonance theory*. Festinger and Carlsmith (1959) demonstrated that there was greater behavior change among subjects who were paid small amounts of money to lie about how interesting a dull experiment was than among subjects who were paid a large amount of money. The low-paid subjects actually begin to enjoy the experiment more than they had prior to being paid. A large

number of studies, summarized by Condry (1977, p. 460) confirmed in various ways that the larger the extrinsic influences and rewards the less change and internalization there is. They explained the results in terms of cognitive dissonance theory which presumes that people try to obtain internal consistency between their thoughts and actions and that they will change their behaviors or interpretations of them when there is dissonance. Thus, when people received a large amount of money for lying they could accept the fact that they were doing it for the money. But with a small reward it perhaps continued to bother their conscience to lie and so they changed their opinion about the object of the lie. From the perspective of social learning theory, deCharms (1968) observed that when a task is perceived to be undertaken for instrumental reasons (that is, to achieve an external goal or externally controlled incentive) it becomes less intrinsically interesting and satisfying.

Continued research on this topic illustrates that there are complex relationships between the implementation of extrinsic reinforcers and intrinsic motivation. Studies of reinforcement generally followed a pattern of measuring the frequency of a target behavior to establish a baseline, measuring the frequency after implementing a reinforcement schedule, and then withdrawing the reinforcement schedule at which time the frequency was expected to return to the baseline. But Deci (1971, 1972) conducted several studies which indicated that the use of intrinsic rewards can actually decrease intrinsic interest. He used several different methods, but in a typical one, when subjects who were allowed to freely play with puzzles or magazines were put into a situation where they were rewarded (paid) for solving puzzles, the amount of time they spent on puzzles versus magazines decreased below the baseline when they were put back into the play situation. There were speculations that the subjects had simply satiated their interest in puzzles, but subsequent research has confirmed that extrinsic rewards can have an undermining effect on intrinsic interest (Condry, 1977; Deci & Porac, 1978; Lepper & Greene, 1975). But, extrinsic rewards do not always decrease intrinsic interest as when people get paid for their work and also love what they are doing. The extensive research on this topic has revealed several concepts that help explain the interactions of extrinsic rewards and intrinsic interest.

A key element in determining whether a reward will have a positive or detrimental effect on intrinsic motivation is related to whether the reward has an *informational or controlling effect*. A reward such as praise that informs a person of successful achievements on optimally challenging tasks can increase intrinsic motivation providing the praise attributes the outcomes to the performer's actions. For example, telling a student that, "I am impressed by the creative way you solved the design challenge posed by our client" will increase the architectural student's feelings of efficacy and intrinsic motivation. Telling the student that you are pleased because he implemented the exact solution that you told him to could be perceived as

having a controlling influence and decrease intrinsic motivation (Brophy, 1981).

The *timing of a reward* can influence its effect on intrinsic motivation. For example, several researchers have compared a condition in which one group of students are told in advance that they will receive a reward after completing a learning task, while a comparison group is given a reward unexpectedly after doing the task. In the expected reward condition subjects were less interested in the task afterward and their performance was sometimes lower than in the unexpected reward group. The task interest of those receiving the unexpected reward was not affected except those whose initial intrinsic interest was low. These students showed a substantial increase in interest following the experiment (Lepper, Green, & Nisbett, 1973). In these studies the reward was *exogenous* to the task. That is, the reward was not logically connected to the task, as in receiving a candy bar after finishing a math homework assignment.

In contrast, a condition in which expected rewards are not likely to reduce intrinsic motivation is when the reward is *endogenous* to the task; that is, when the reward is a natural component of the task as in winning money at poker or getting paid for your work. However, Condry (1977) questions whether these outcomes can be called rewards since they are an integral part of the task–outcome relationship. Winning money at poker is not a ''reward'' that is being administered by someone else according to their contingency rules, assuming that it is a fair and honest poker game. Winning money is an expected result of having and exercising sufficient skill in relation to the element of luck that is inherent in the game. Getting paid at work is the natural result of contractual relationship of exchanging one's effort and talent for remuneration. Demotivation can occur when the contingencies governing this relationship are violated and performance can be affected by the relationship, as in piece rate methods of payment, but the outcomes are not ''rewards'' that are extrinsic to the expected results of the task performance.

In considering these relationships between extrinsic reinforcements and intrinsic motivation it is important to remember that they apply to situations where subjects already have a degree of intrinsic motivation. When they have no intrinsic interest in a task, and in the frequently used example of getting a child to brush his teeth, extrinsic rewards in the form of tangible rewards (tokens that can be exchanged for a trip to the toy store) or controlling type of praise (''You will make daddy very happy if you brush your teeth,'' and ''That's great! You made daddy very happy by brushing your teeth,'') can be used to establish the behavior which will presumably become self-sustaining.

However, these issues take still a different dynamic in fields such as performing arts and sports. In the performing arts, including film actors and pop music stars, the extrinsic rewards can be enormous. Yet, in many of the

arts it requires years of effortful practice (Ericsson, 2006) to be accomplished and competitive. It is doubtful that the expectation of extrinsic rewards could, in and of themselves, sustain the motivation and diligence of these aspiring performers. Even in sports it often takes an extremely high level of competitive spirit and intrinsic motivation to persist in the effort to attain a prestigious, and financially rewarding, assignment. The interplay of intrinsic and extrinsic motivation in contexts such as these is complex and of interest for further study.

Cognitive Evaluation and Satisfaction

On pay day at work, when your graded paper is returned in a class, when a judgment is rendered against you after a close call in a weekend softball game, and in most situations where there are outcomes related to your performance you have a reaction. You might feel happy, angry, disappointed, relieved, or indifferent, or you might experience judgmental reactions about the fairness, appropriateness, or stupidity of the outcome. Reactions such as these are not based purely on the outcomes; they are based on your expectations and social comparisons relative to the outcomes. In other words, people compare what actually happens to them to what happens to others and to their own expectations. For example, you might experience considerable anxiety about a task such as learning to dance, passing a math test, or traveling to a foreign country only to find that it is much less threatening than you expected. Hence, you will feel relief. On the other hand, you might experience either exhilaration or disappointment depending on how the experience compares to your expectations. If you receive a raise in pay at work or avoid a pay cut during a period of economic recession you will be happy. If the raise is quite a bit more than you expected you will be ecstatic. However, if it is less than you expected or believed that you deserved you will be disappointed if not angry. Similarly, if you learn that someone else got a larger raise for doing the same or less work as you, well, I don't have to tell you what emotional reaction will probably occur! In a school setting it is not uncommon for students to be assigned to a group project with each person in the group getting the same grade. As often happens, some people do almost all the work, while others do little or nothing. The ''workers'' will most certainly have negative feelings about the project.

Your feelings of satisfaction are influenced greatly by your subjective evaluation of an outcome based on your expectations and social comparisons. When the outcomes are not what you expected you will probably modify your attitudes or feelings regarding the situation and this will influence your future motivation for that task or activity. For example, if a trip to a water park is not as enjoyable as you expected, then you will probably lower the value you attach to that activity in the future. In contrast is a college freshman who takes a literature course only to satisfy a general education requirement but discovers that he loves the readings, discussions,

and reflective papers that are assigned. His expectations will have been exceeded and he might increase the value he attaches to this activity to the point where he majors in literature. In other words, adjusting expectations can directly influence satisfaction and continuing motivation. As the ''modern'' mother read in a bedtime story to her young daughter, ''So the prince and the princess lowered their expectations and lived reasonably contentedly ever after.''

There are several psychological theories that help explain one's cognitive (attitudinal) and emotional reactions to events. Three that are included here are cognitive dissonance theory, balance theory, and equity theory and all of them have direct application to the design of learning environments that are appealing and stimulate a desire to learn.

Cognitive Dissonance

Most of the time, people have internally consistent beliefs and behaviors. That is why people who believe in being honest do not steal or keep things that do not belong to them and when they find themselves in an incompatible position, as when they discover in the parking lot of a department store that they received too much change, they may be indecisive and uncomfortable about whether to keep the money or return it. This condition can be characterized as *cognitive dissonance*, a concept introduced by Festinger (1957), which occurs when there is an inconsistency among attitudes, or cognitions. He stated two basic hypotheses as a basis for his theory (p. 3). The first is that dissonance serves as a motivator in that it is a psychologically uncomfortable state and the person will try to reduce it to achieve congruity of attitudes and behavior, which he called consonance. The second one stated that people will ''actively avoid situations and information which would likely increase the dissonance'' (p. 3). This theory will not tell us what decision a person will choose, only that there will normally be an effort made to resolve the dissonance. Considering the example at the beginning of this paragraph, will the person return the money? It will probably depend on the strength of the person's belief in honesty and the amount of money. If this is a strongly held belief, the person will return the money to achieve consonance, especially if the amount is relatively large such as receiving a $10.00 bill instead of a one. But, if the amount is small, such as an extra dollar bill, the person might consider the response cost of having to take time to return it versus rationalizing that one dollar doesn't really make any difference, especially if there are competing conditions such as being late for an appointment, tired, or needed to hurry home to cook dinner. In this case, the person chooses to live with a small amount of discomfort due to the greater comfort of not having to retrace steps.

These assumptions were confirmed in an experiment that has become a classic in the history of social psychology (Festinger & Carlsmith, 1959). The experimenters had a group of male students from the

introductory psychology class fulfill two hours of their research participation requirement by spending the first hour on extremely dull and boring tasks (Table 7.1). Each participant was given a tray full of spools and told to empty the tray, put the spools back again, remove them, and repeat this process for 30 minutes. The experimenter, wearing a lab coat and holding a stop watch, observed and made notations on his tablet continuously. After thirty minutes, the subjects were then given a board containing 48 square pegs and told to turn the pegs one-quarter turn at a time. The experimenter continued to observe.

At the end of these tasks while the subject was presumably waiting to be interviewed, the experimenter told the subjects that there was another condition in the experiment and he would describe it for their interest. The experimenter said that in that condition a student who worked for him would pretend that he had just finished the experiment, meet the next subject outside the entrance and say what an enjoyable experiment it was, that it was fun, interesting, intriguing, etc. The subject was then asked to wait in the outer office for the interviewer (Table 7.1).

Table 7.1. A Three Phase Study of Attitudes and Affect in Relation to Dissonance (Based on Festinger & Carlsmith, 1959).

Phases	**Conditions**		
	One Dollar Condition ($7.60 in 2009 Dollars)	Twenty Dollar Condition ($152.00 in 2009 Dollars)	Control Condition
Preliminary Task (Boring, monotonous)	All subjects spent one-half hour placing spools on a tray, removing them, and then doing it again. Another half-hour was spent turning square pegs one-quarter turn at a time.		
Dissonance Inducing Activity	Subjects in both of these groups were induced to tell the next subject in private that the experimental task was fun.		
Interview and Rating of Task Interestingness	All subjects met with interviewer, one at a time, and discussed and rated their feelings in regard to four questions about the interestingness and usefulness of the experimental tasks done in the preliminary segment.		

After a few minutes the experimenter would call the subject back in and apologetically explain that the hired student didn't come to the lab. He then asked the subject to meet the next student to explain how interesting

the experiment is. One group of subjects was offered $1.00 ($7.60 in 2009 dollars) for their services and the other experimental group was offered $20.00 ($152.00 in 2009 dollars). If subjects hesitated the experimenter used a variety of persuasive comments to get them to comply. The $1.00 group was the high dissonance group. Festinger's theory was that higher levels of dissonance result when the pressure, or inducement, to say something contrary to their beliefs was minimal. When the inducement became large as in the $20.00 group, which is equivalent to $152 dollars in 2009, there should be less dissonance. He predicted that in the low dissonance group there would be little changes in attitude toward how boring the task was as indicated by their ratings in the final phase of the study. They would have low dissonance because they could simply rationalize their lies by the large amount of money they received and the rationalization that they weren't hurting anyone. In contrast, he predicted that subjects in the high dissonance group would resolve their conflict by deciding that the task was actually somewhat interesting.

In the final interview phase, subjects were asked four questions of which one was presumed to be directly related to the influence of the dissonance conditions. This question asked the participants if they thought the tasks were interesting and enjoyable. Both the Control group and the Twenty Dollar group rated the tasks as somewhat uninteresting which was consistent with the nature of the tasks. In contrast, the One Dollar group rated them as rather interesting, significantly more so than the other groups, which supported the dissonance reduction hypothesis. A second question which was expected to be indirectly affected by the dissonance treatments showed the same differences as the first question but not at a level that reached full significance. Participants were also asked whether the experiment gave them an opportunity to learn about their ability to perform such tasks and whether they thought the experiment was measuring anything important. No differences were expected on these questions which served as a check on the possibility of a generalized response to the situation rather than one that was specific to the dissonance effect. The three groups did not differ significantly in their ratings of these questions. Overall, the Twenty Dollar group responses were very similar to the control group which suggests that the large reward was considered a sufficient justification for telling the lie and there was no need to change their opinions about the boring nature of the task. The group that received only $1.00 modified their opinion to reduce dissonance resulting from willingly telling a lie. It is interesting to note that 11 of the 71 participants were dropped from the analysis because they refused to be hired or communicated the truth to the next participant!

There have been challenges to the concept of dissonance theory. For example, Wicklund and Brehm (1976) indicated that perceived personal responsibility based on self-concept underlies dissonance reactions. This would result from an internal psychological conflict resulting from the assumption that one is a good and intelligent person but who also has to

face with the reality of having done something that had undesirable characteristics or consequences. Thus, changing one's attitudes can be explained as an ego defense mechanism. Also, there are aspects of dissonance theory that can be related to older theories of the self that are rooted in ego-related cognitive processes (Allport, 1943; Hilgard, 1949; Rogers, 1954) which consider peoples' tendencies to maintain their psychological integrity using self-deception, selective attention, and other ego protecting devices. This research can be related to the contemporary distinctions between performance versus mastery orientation (Dweck, 1986) or ego versus task orientation (Nicholls, 1984) as discussed in Chapter 5, but dissonance theory still has distinctive characteristics that cannot be subsumed under these other concepts. Greenwald and Ronis (1978) review the status of dissonance theory 20 years after its inception and illustrate how certain predictions and relationships within the original conception of dissonance theory could not be entertained within the revised version of the theory. Aronson (1992) discusses cycles of high versus low interest in this theory and reviews it in relation to other theories that deal with aspects of cognition and motivation. He also points out the difficulties in doing the kind of research that provided a basis for many of the early social psychological theories that required deception and a degree of discomfort for the participants which were carried to an extreme in the Milgram (1965) studies of obedience to authority in which subjects were induced into believing that they were administering painful electric shocks to another person. But, even though it is more difficult to use deception as a paradigm for the study of dissonance, there are other ways to investigate this theory as illustrated by the following study.

Festinger's dissonance theory (Festinger, 1957) distinguished between the induction of dissonance which he characterized as something akin to a state of arousal or tension and its reduction as a result of actions taken to eliminate the psychological state of conflict. Elliot and Devine (1994) pointed out that the research on dissonance had tended to focus on its arousal properties as exemplified in the work of Brehm and Cohen (1962) and others (Croyle and Cooper, 1983), but there had not been direct empirical tests of the reduction of psychological discomfort following the implementation of a dissonance reduction strategy. They put undergraduate students into groups in which they wrote essays in favor of or against raising tuition by 10% the following semester. All of the students in the study had previously indicated in an unrelated context that they were against raising tuition, as might be expected! Students in the high dissonance group were strongly encouraged to write counter-attitudinal essays in which they would list reasons in support of the tuition hike because it would be helpful to the university to see what they had to say; however, despite the encouragement, this was considered to be a free choice on their part. Students in the low-dissonance group were told to write arguments against the increase. Students in one of the groups in the high dissonance condition were asked to respond to an affect measure followed by an attitude scale before writing their essays. Students in the other high dissonance group wrote their essays

first and then responded to an attitude scale followed by an affect scale. The sequence of the scales was important because the experimenters were testing to see whether attitude change would be followed by dissonance alleviation. Their hypothesis was confirmed and the researchers were thereby able to confirm the workings of both affective and cognitive processes in the dissonance induction and alleviation sequence.

It is important to keep in mind that Festinger was focusing on the psychological disturbance caused by dissonant perceptions and actions and the actions taken by people to reduce the discomfort, and this can help explain students' reactions to a learning event. For example, to have successfully completed a course does not automatically mean that a student will be satisfied with the outcomes of the course. This will be illustrated in some examples following an explanation of the remaining two theories to be described in this section.

Balance Theory

A different method of identifying and analyzing dissonance is provided by Heider's (1946, 1958) *balance theory* which was used to explain whether people will have positive feelings of satisfaction toward each other or not. Like cognitive dissonance theory, balance theory is based in part on the assumption that people strive for consistency among their attitudes, but it predates dissonance theory and is grounded in concepts related to person–environment interactions. For example, he proposed that we can understand the positive or negative relationship between two people by examining the attitudes between the primary person of interest (P), the other person (O), and their attitudes toward given entities (X) which can be situations, events, ideas, things, and so forth. The various relationships can be expressed in terms of to like, to value, to esteem, to love, and their opposites. He considered these relationships to be additive, not multiplicative as in other, expectancy-value, formulations of person–environment interactions. This led to his concept of balance theory.

Heider (1946) analyzes and predicts interpersonal liking in terms of cognitive fields containing the three elements of the person (***P***), another person (***O***), and an object (***X***), and these relationships can be depicted graphically using a technique introduced by Cartwright and Harary (1956). A balanced state exists when, for example, ***P*** likes ***O***, ***P*** likes *X*, and ***O*** also likes ***X***. For example, if Bob (P) likes June (O), and both Bob and June enjoy watching football (X), a balanced state exists which would contribute positively to Bob and June liking each other. But if June dislikes football as illustrated in Figure 7.2b, a state of imbalance exists and both Bob and Jane will be motivated to resolve the dissonance.

Heider (1946) describes a variety of actions that can result from imbalance. One option is to simply accept the discomfort resulting from the dissonance, but to achieve balance one of them could change their attitude

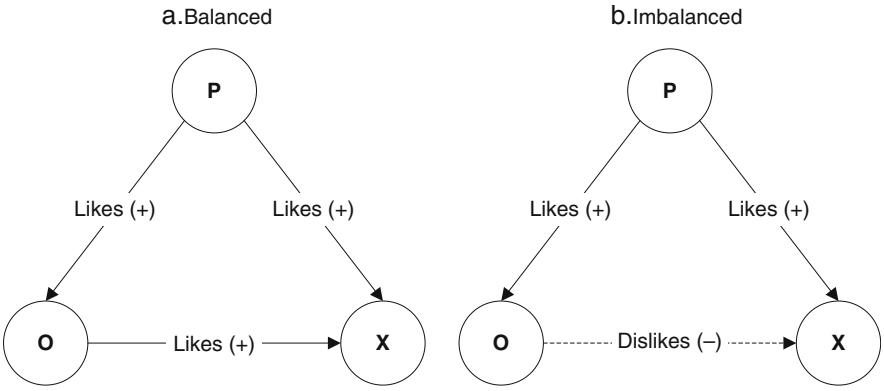

Figure 7.2. Balanced Versus Imbalanced States.

toward football, they could identify something else that they both enjoy doing so much that it overrides the football conflict, especially if Bob moderates his interest in football, or they could stop seeing each other.

Using triads illustrates the options clearly but over simplistically. There will be multiple objects (X) toward which Bob and June have attitudes of liking or disliking. Cartwright and Harary (1956) illustrate how these multiple-object relationships can be diagrammed, and in a more recent study, Hummon and Doreian (2003) developed a simulation program that can model complex sets of relationships. The use of balance theory has been useful in the study of small group behavior as well as in dyads and triads, but the advanced levels to testing and application of this model become quite complex. In the present context, the theory is useful because of the ways it can help motivational designers analyze factors that contribute to dissatisfaction with the outcomes of a learning event. Considering the high degree to which group-based and collaborative learning activities are now promoted and used in learning settings, the work begun by Heider and elaborated by others provides a rigorous foundation for research and design. Hummon and Doreian (2003) refer to numerous studies pertaining to this.

Equity Theory

The effective use of intrinsic factors and extrinsic rewards has a strong influence on satisfaction as do issues related to dissonance and imbalance, but there is one more area of influence to be included here. We have various types of interpersonal relationships and there are many exchanges that occur in them. These exchanges occur in many types of social situations such as work, parents and children, lovers, teammates, volunteer organizations, and even adversarial situations such as opponents in a game or hostile neighbors. Adams (1965) studied the elements of

exchanges in social situations the conditions under which they would be viewed as fair or unfair, and what people do as a consequence of equitable or inequitable exchanges. In his *equity theory*, Adams describes exchanges in terms of the ratio of input to output conditions that lead to perceived or actual inequity and the consequences that follow.

Inputs can be anything that an individual perceives to add value to an exchange, such as hours of labor, technical skill, longevity, level of education, experience, work ethic, age, leadership, ethnic identification, gender, influential others, and even things such as social status and physical appearance. However, Adams makes a distinction between the *recognition* versus *relevance* of these attributes. Both the employee and the employer might recognize the presence of these characteristics, but they might not agree on which ones are relevant in the given situation. A job interviewee might have a high opinion of his formal qualifications in terms of a prestigious academic degree but the employer might focus more exclusively on the applicant's experience, evidence of competence in the specific skills required on the job, and evidence of a positive work ethic. One of the challenges to a person who is seeking to build a positive exchange is to identify what the salient personal characteristics are, and this applies in personal relationships as well as the workplace. A man might try to impress a woman by doing things for her and showing her how he can solve problems for her. He considers these to be positive expressions of his interest in her, but she might regard his overtures as overbearing since she values a friendship based on listening and empathy.

Based on the individual's perceptions of the quantity and importance of the inputs that are relevant in a given situation, such as work, he expects a fair return from the employer in terms of pay, status, authority, respect, and advancement opportunities. These are considered to be the outcomes of the person's inputs. The most satisfying kinds of outcomes in a job setting include such things as status symbols, responsibility, meaningful work assignments, feedback, and respect. Outcomes also include the *absence* of undesirable characteristics such as monotony, isolation, surveillance (''micro management''), and lack of recognition of accomplishments. One of the challenges in management, parenting, or maintaining a relationship is to provide outputs that are perceived by the person to be appropriate. As with inputs, outputs can be evaluated in terms of recognition versus relevance. Many years ago when I joined a frequent flyer organization for a major airline, I received an attractive, framed certificate proclaiming my status as a member of that organization. A colleague had one of these on display in a prominent place in his office. I thought it was silly to do so; it was not an award in recognition of some achievement; it was more in the nature, in my mind, of a receipt acknowledging that I had paid money to become a member. I would have preferred free frequent flyer miles or a free tote bag, tablet binder, or something useful with the airline monogram on it. I recognized the airline's intentions and to me it was not a relevant outcome but

since the outcome I received was consistent with other new members I did not experience feelings of inequity.

Perceptions of equity versus inequity result from social comparisons of perceived outputs in relation to inputs. A state of perceived equity exists when the ratios are perceived to be equal (Figure 7.3). It is important to think it terms of ratios because a first-level manager will make less money than a midlevel manager, but he will perceive the situation to be equitable if he also perceives that the inputs required to be a midlevel manager are correspondingly greater.

Equity:

$$\frac{\text{Person's Outcomes}}{\text{Person's Inputs}} = \frac{\text{Other's Outcomes}}{\text{Other's Inputs}}$$

Negative Inequity (Fewer than perceived equitable outcomes)

$$\frac{\text{Person's Outcomes}}{\text{Person's Inputs}} < \frac{\text{Other's Outcomes}}{\text{Other's Inputs}}$$

Excessive Inequity (More than perceived equitable outcomes)

$$\frac{\text{Person's Outcomes}}{\text{Person's Inputs}} > \frac{\text{Other's Outcomes}}{\text{Other's Inputs}}$$

Figure 7.3. Illustrations of Perceived Equitable Versus Inequitable Relationships.

Inequity occurs when the relationship between inputs and outcomes for one person are discrepant from those of another, at least as perceived by the person. Also, inequity can be in a negative or positive direction, which means that a person receives less than he considers to be equitable relative to the input/outcome relationship, as in being underpaid, or that he receives more of an outcome relative to his inputs in comparison with others, as in being overpaid.

Inequity creates dissatisfaction which Adams compares to feelings of dissonance as in Festinger's cognitive dissonance theory and this results in efforts to reduce these negative feelings. There are several ways to do this. The first is to alter one's inputs. If a person feels that his outcomes are too low relative to his inputs, then he might be motivated to reduce his inputs. This is more likely to be observed with hourly work than with piece rate work. An hourly worker can reduce his level of effort without affecting his pay, but a reduction in productivity for the piece rate worker will have an immediate negative effect on his income. Theoretically a person who perceives that he is being overpaid might attempt to increase his productivity to justify the overpayment, but this is not as predictable as reducing one's inputs when being underpaid. Another possibility is to modify one's

outcomes to achieve equity, but this is more difficult to do because outcomes are usually under the control of someone else. A third approach is to simply change one's attitudes toward one's input–outcome ratio or toward the other person's ratio. This is called rationalization and requires cognitive reinterpretation of the ratios in order to modify one's perceptions to match the reality of the situation. Still another solution is simply to leave the situation, as in quitting, breaking off the relationship, or getting divorced.

One of the challenges with using this theory is that people differ in how they interpret a satisfactory set of ratios. That is, some people prefer their input/outcome ratio to be less than that of their partner. To explain differences in personal preferences, Huseman, Hatfield, and Miles (1987) introduced the concept of equity sensitivity. They identified three fundamental patterns:

Benevolents: This person prefers that his input/outcome ratio be less than his perception of the other person's input/outcome ratio. These are people who would typically be characterized as preferring to give than to receive and would be observed most often in helping relationship types of situations. Also, some religions stress a philosophy of giving and sacrifice without expecting material returns.

Equity Sensitives: This represents the traditional equity model in which people expect there to be parity between their ratio of inputs and outcomes compared to those received by other people.

Entitleds: This third group of people expect to have higher levels of outcomes relative to others for the same or fewer inputs. This would be characteristic of the colloquial meaning of "spoiled child" and others who feel that they deserve a higher return or a "better deal" on everything they do. Sometimes, people with low self-esteem have to feel that they got a special advantage in order to feel good about themselves. For example, some children will use devious methods to get larger portions of desirable foods or more toys in comparison with their siblings.

These various components of equity theory are highly relevant to learning environments in which personal and product evaluation occur on an almost continuous basis. Students make social comparisons with respect to the personal attention, grades, and privileges received by other students in the degree to which those rewards are deserved relative to what they are receiving. They also make comparisons of the equity of their outcomes relative to their own expectations. That is, students might believe that a course was well thought, had good assignments, and was interesting, but still have a very negative attitude toward the course because of a highly excessive workload which hurt their performance in other areas of their lives. Also, they might feel that an examination was inequitable because it was not consistent with what the instructor focused on or had indicated to be the important points of content in the course. Thus, to achieve student satisfaction in

a learning environment, many factors must be balanced relative to the quality of the teaching, the internal consistency of objectives, content, and examinations, and grading practices that are equitable across students.

Transition

There are numerous tactics that you can use to support satisfying feelings of accomplishment in the majority of your learners. These range from using exercises that are authentic with an optimal challenge level, by providing feedback on results, and by grading in a manner that is fair and consistent with a stated set of criteria.

Strategies to Promote Feelings of Satisfaction

To have a successful outcome of your efforts to learn and perform well in a class is pleasant, but it does not always result in feelings of satisfaction. For students to have an overall, positive feeling about their learning experience, several conditions have to be met, and these conditions are related to the expectations of the students. One of the most important elements of satisfaction is intrinsic motivation; that is, if learners believe that they achieved a desirable level of success while studying topics that were personally meaningful, or in other words, relevant, then their intrinsic satisfaction will be high. But, if part of their motivation is based on extrinsic factors, such as getting a good enough grade to be recommended for some special honor, and they do not get it, then their satisfaction will be depressed in spite of positive intrinsic satisfaction. Conversely, if they achieve well enough to obtain a desired extrinsic reward, but also believe that the learning experience was a waste of time, then their satisfaction will be less than optimal. Finally, another component of satisfaction is based on social comparisons and comparisons to expected outcomes. If learners feel that the results they obtained were not equitable based on the amount of work they had to do, or if some students feel that they were not treated fairly compared to other students, then their satisfaction will be lowered despite the actual intrinsic and extrinsic outcomes they obtained. These components of satisfaction (Table 7.2) are reflected in the concepts and tactics listed in the following table.

S.1. Intrinsic Satisfaction

> After they finished the final application exercise in a self-study course on electronic troubleshooting for the Series 300 Mini-Computer, Robert showed a videotape in which actual service representatives expressed the good feelings they experience after solving identical types of problems in the field.

Table 7.2. Subcategories, Process Questions, and Main Supporting Strategies for Satisfaction.

Concepts and Process Questions	**Main Supporting Strategies**
S1. Intrinsic Reinforcement How can I encourage and support their intrinsic enjoyment of the learning experience?	Provide feedback and other information that reinforces positive feelings for personal effort and accomplishment.
S2. Extrinsic Rewards What will provide rewarding consequences to the learners' successes?	Use verbal praise, real or symbolic rewards, and incentives, or let learners present the results of their efforts ("show and tell") to reward success.
S3. Equity What can I do to build learner perceptions of fair treatment?	Make performance requirements consistent with stated expectations, and use consistent measurement standards for all learners' tasks and accomplishments.

A primary goal of most educators is for their students to develop an intrinsic interest in learning and, if possible, to stimulate their interest in the teacher's subject matter. This is extremely difficult unless the students already had a high level of intrinsic motivation even before entering the teacher's classroom. This is because culture and family values have a strong influence on the value that a child places on school and learning. With these positively motivated students, the teacher's challenge is to sustain or increase their intrinsic motivation. Even with students who have this positive outlook, it can be difficult to sustain it because, in most situations, students are required to be in your classroom; they have not taken your course voluntarily by choice. Therefore, to sustain and build their intrinsic motivation, the tactics listed below can be helpful. These tactics focus on reinforcing students' pride of accomplishment together with affirming the value of what they have learned. This tactics will also help you with students who do not have a high level of intrinsic motivation. Every student and every teacher can think of at least one situation where the relevance of the content or the enthusiasm of the teacher sparked a degree of intrinsic interest. When that happens, the teacher must recognize it and reinforce it to nurture and sustain the student's interest. These tactics must be used jointly with the other tactics in this section to achieve high levels of satisfaction in the learners.

Positive Recognition

1. Give the student opportunities to use a newly acquired skill in a realistic setting as soon as possible.
2. Provide verbal reinforcement of the learner's intrinsic pride in accomplishing a difficult task.
3. Include positive, enthusiastic comments in the materials or in your feedback, which reflect positive feelings about goal accomplishment.
4. Provide opportunities for learners who have mastered a task to help others who have not yet done so.
5. Give acknowledgments of any actions or characteristics that were necessary for success.
6. Give acknowledgments of any risks or challenges that were met.

Continuing Motivation

7. Provide information about areas of related interest.
8. Ensure that the learners are asked or informed about how they might continue to pursue their interest in the topic.
9. Inform the learners about new areas of application.

S.2. Rewarding Outcomes

> During a two-day course on instructor skills, Karen writes "motivational messages" to learners praising them for specific skills they have shown in making presentations.

The most traditional concept of outcomes that make people feel satisfaction are extrinsic rewards, which refer to such things as money, grades, certificates, awards, symbolic objects (emblems, monogrammed school supplies, coffee cups, key chains, etc.), and tokens that can be exchanged for desired object such as candy or school supplies. In addition to these material objects, which are not often available to the classroom teacher, you can use activities that are enjoyable and fun as a reward to finishing learning tasks and assignments. For example, to motivate students to persist at tasks that can be routine and boring, such as memorizing a body of facts, you can use games such as a "homemade" version of *Jeopardy*, or a computer game as a means of review and practice. One challenge with extrinsic rewards is to use them sparingly and intermittently. If they become commonplace, they will lose their reinforcing value.

1. Include games with scoring systems to provide an extrinsic reward system for routine, boring tasks such as drill and practice.
2. Use extrinsic rewards to reinforce intrinsically interesting tasks in an unexpected, non-controlling, manner.
3. Include congratulatory comments for correct responses.
4. Give students personal attention while working to accomplish the task, or after successful task accomplishment.

5. Use reinforcements frequently when learners are trying to master a new skill.
6. Use reinforcements more intermittently as learners become more competent at a task.
7. Avoid threats and surveillance as means of obtaining task performance.
8. Use certificates or ''symbolic'' rewards to reward success in individual or intergroup competitions, or at the end of a course.

Pleasant Surprises

Following (Figure 7.4) are examples of the use of extrinsic rewards ranging from extra play time for children to a corporate coffee cup for adults. They can be very effective when used appropriately. Even a 39 cent bag of M&Ms can have a very positive impact when used as a fun reward in a competitive learning activity.

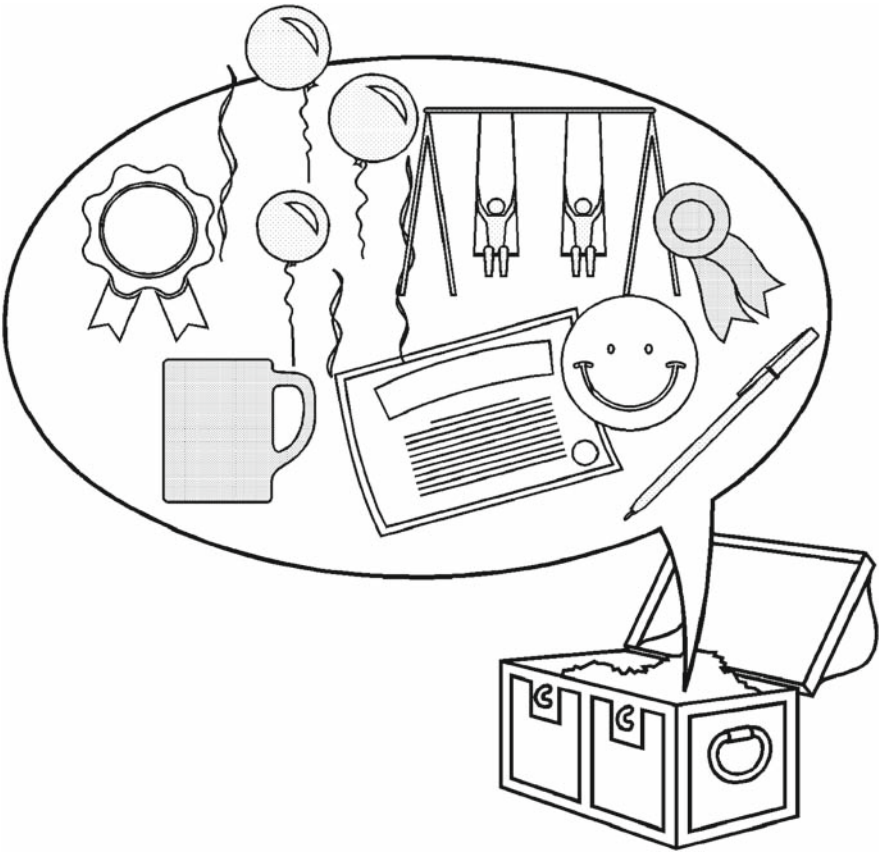

Figure 7.4. Examples of Inexpensive Extrinsic Rewards.

S.3. Fair Treatment

> At the end of a course on safe lifting procedures, Ken reviews learners' performances using a checklist based on the course objectives and gives each learner a copy of the completed checklist.

Have you ever received a positive reward which made you happy, only to realize later that someone else received a greater reward or higher level of recognition for doing the same thing or less? Suddenly your positive feelings become negative ones. This is because people make comparisons, either with other people or with their own expectations. If the recognition or reward you receive is not commensurate with the effort and success you achieved, then your level of satisfaction will be decreased even though the "absolute value" of your outcome is positive. Similarly, as in the opening example, if your perception is that someone else received a greater reward for the same or less accomplishment, then your satisfaction level will be adversely affected. There are cultural differences in regard to perceptions of equity. In some cultures, for example, students would not expect to be treated equally in the same way that students in another culture would expect. In some cultures, it would be embarrassing for a student to receive personal recognition that was excessive in relation to his or her status, or to give recognition in a way that isolates a student from the group. However, even though the specific manifestations of equity will differ, there will be an expectation of equity that influences satisfaction. Following are two tactics that refer to equity in the context of lesson planning and delivery. These tactics call attention to the importance of consistency as a form of equity. That is, are the exercises and tests "fair" given what was actually taught?

1. Ensure that the content and types of problems in the final exercises and posttests is consistent with the knowledge, skills, and practice exercises in the materials.
2. Ensure that the level of difficulty on final exercises and posttests is consistent with preceding exercises.

Summary

People tend to evaluate everything that happens to them. Even before they arrive at a classroom or open a web-based tutorial they will have attitudes about what they are going to learn, and they continue to have attitudes throughout the process unless they experience periods of time in which they are totally engrossed in the experience. The principles and strategies in this chapter are organized and designed to help you know how to assist students to become focused on a lesson, develop curiosity about the content, and feel good about their learning experience.