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# UNIT 16 BEHAVIOURISTIC LEARNING THEORIES AND THEIR INSTRUCTIONAL APPLICATIONS

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## 16.1 INTRODUCTION

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The primary responsibility of teachers as we know is to help children learn. How do teachers select educational goal or educational procedures, and how do they organize the classroom depends on how they conceptualize the teaching learning process.

All teachers have certain beliefs or a theory about learning. That is the fabric of their teaching strategy. If we carefully observe teachers conducting their classes we can infer their basic assumptions about the teaching learning process, although the teachers concerned may not be able to articulate their beliefs. For example, a teacher who directs and controls all students' activities operates under one set of beliefs. And a

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teacher who tries to create conditions for the students to be able to make their decision and learn on their own operates under an entirely different set of beliefs. Some teachers may believe that the best way to learn is to repeat the content time and again until it is well set in students' mind. So he/she gives to students exercises which involve revision or repetition of the content learned. But there are teachers who hold the view that repetition is not and cannot be the best way for attaining higher level learning objectives. Based on such beliefs about learning, psychologists have developed different theories of learning. These theories of learning are grouped under two major schools of thought: (i) behaviouristic theories; (ii) cognitive - field theories including information processing and humanistic theories. In this unit we shall deal with behaviouristic theories of learning.

Contemporary behaviourists (often called S - R psychologists) view environmental factors as stimuli, and the resultant behaviour, as responses. They attempt to demonstrate that *behaviour is controlled by environmental contingencies of external rewards or reinforcements which form links between behavioural responses and their effects (or stimuli)*. Teachers who accept the behavioural perspective assume that behaviour of students is a response to their past and present environment and thus all behaviour is learned.

For example, the classroom trouble makers "learn" to be disruptive, because of the attention (reinforcement) they get from peers; withdrawn students learn that their environment does not reinforce gregariousness and they become reserved and silent. Thus any behaviour can be analysed in terms of its reinforcement history. The teachers' responsibility, therefore, is to construct an environment in which the probability of reinforcing students for correct or proper behaviour is maximized.

In this unit we discuss the four major perspectives related to behaviourism. These perspectives are: classical conditioning, applied behavioural analysis, social learning theory, and cognitive behaviour modification.

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## 16.2 OBJECTIVES

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After going through this unit, you should be able to:

- explain the basic paradigm of classical conditioning;
- describe the procedures used in applied behavioural analysis for modifying behaviour;
- explain and use shaping of behaviour to develop complex behaviour;
- state behavioural principles and use them in designing a lesson;
- explain how Skinner's views of learning differ from other behaviourists;
- differentiate between classical and operant conditioning;
- state the difference between negative reinforcement and punishment;
- discuss the role of reinforcement in operant conditioning; and
- examine social learning theory with its application in learning of social behaviours.

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## 16.3 CLASSICAL CONDITIONING THEORIES

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Behaviourists conceived of a living organism as a self maintaining mechanism. They assumed that the essence of human machine is a system of receptors (sense organs), conductors (neurons), switching organs (brain and spinal cord) and effectors (muscles) attached to levers (bones) - plus, of course, fueling and controlling organs such as stomach and glands (Bigge and Hunt 1980). Having thus defined the human being on the pattern of a machine, the pure behaviourists have almost completely eliminated

any mentalistic concepts. With this concept of a human being the behaviourists, especially Watson, based psychology on the concepts of physics and chemistry. To them, mind and all kinds of mentalistic concepts were irrelevant to scientific inquiry and hence not appropriate for the real task of psychology. These psychologists saw learning as a process of building conditioned reflexes through the substitution of one stimulus for another.

The principles of behavioural psychology are used both in designing teaching-learning strategies and in behaviour therapy to treat numerous personal and social problems such as anxiety, aggression, and depression. Two theories of classical conditioning, proposed by Pavlov and Watson, are discussed here.

### 16.3.1 Classical Conditioning of Pavlov

Ivan Pavlov (1849-1936), a physiologist by profession, while working with dogs incidentally came across an interesting learning phenomenon, now called *Classical Conditioning*. Pavlov found that when a bell was sounded just before a hungry dog was presented with food, after several trials, the dog would salivate simply at the sound of the bell. Pavlov identified the food as unconditioned stimulus (an example of a stimulus that produces some observable response without prior learning). The bell which had no particular meaning for the dog became a conditioned stimulus because of its association or pairing with the food, which elicited a conditioned response - the salivation.

This kind of learning came to be called **Classical Conditioning** or **Stimulus Substitution**. A schematic representation of classical conditioning is given in Fig. 16.1.

#### **Before Conditioning**

CS (bell)	→	no response or irrelevant response
US	→	UR (Salivation)

#### **During Conditioning**

CS (bell)	→	UR (Salivation)
US (food)		

#### **After Conditioning**

CS (bell)	→	CR (Salivation)
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**Fig. 16.1: Classical conditioning**

Pavlov observed that when a dog was conditioned to salivate at the sound of a bell, it would also salivate at other similar sounds such as that of a siren, even though the new stimuli were never used in training. Once a particular stimulus was associated with a response, other similar stimuli were also able to elicit the response. He called this phenomenon *Stimulus Generalization*.

### 16.3.2 Watson's Behaviourism

John B. Watson (1878 - 1958) used for the first time the research findings of Pavlov in the United States of America. Watson started believing that learning was a process of conditioning reflexes (responses) through the substitution of one stimulus for another. According to him humans are born with a few reflexes and emotional reactions of fear, love, and rage. Rest of human behaviour is established by building new S-R-connections through conditioning.

In one of his most famous experiments, Watson conditioned an eleven month old child to fear a white rat, which was very friendly to him earlier. Watson made a loud noise

(unconditioned response or U R) whenever the rat was presented to the child. It resulted in fear response (unconditioned response or UR). When this exercise was repeated several times the child became fearful (conditioned response) just on the sight of the rat (conditioned stimulus, or C S).

Although Watson rejected some of Thorndike's ideas (see section 16.4.1), he saw great promise in one of his secondary laws of learning, namely, associative learning. According to this law a learner can make response associated with any situation to which he/she is sensitive. In other words any possible response can be linked to any stimulus. Watson demonstrated that such learned fear (conditioned response) can also be unlearned by the process called extinction. This is accomplished by repeating the CS without following it up with US, presenting the rat without making the loud noise. Many students' attitudes are learned through classical conditioning.

**Check Your Progress 1**

**Note:** Write your answers in the space given below.

- 1) Name different behavioural approaches to learning.  
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- 2) Define the basic paradigm of classical conditioning or stimulus substitution.  
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- 3) Explain with example the process of "extinction".  
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- 4) What is stimulus generalization?  
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## **16.4 APPLIED BEHAVIOUR ANALYSIS**

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In this section, we discuss Thorndike and connectionism, Skinner and operant conditioning, difference between classical and operant conditioning, relation of applied behaviour analysis to operant conditioning, discrimination learning instruction, consequent stimuli, primary and secondary reinforcement schedule of reinforcement, extinction and spontaneous recovery and shaping.

### **16.4.1 Thorndike and Connectionism**

E.L. Thorndike (1874 -1949), one of the well known American learning theorists propounded a theory called connectionism. Thorndike posited that learning was a process of "stamping in" or forming connections between a stimulus and a response.

He formulated connectionism and more specifically the "laws of learning" by studying the effect of "reward" on animals. In one of his well known experiment, Thorndike used cats which were placed in a "puzzle box" - a small cage with a door that would open if the hungry cat placed inside pulled a string hanging inside the cage. Food was placed outside the cage. The cat therefore, would strive to come out of the cage. Usually the cat walked around, clawing at the floor, jumping at the side of the cage, and many more movements until the cat pulled the string by chance which opened the door, and had the food. Thorndike repeated the experiment several times in similar situations. As the experiment was repeated, the cat took less and less time in pulling the string. A time came when the correct response was stamped in. In that situation as soon as Thorndike placed the hungry cat inside, the cat pulled the string without making any irrelevant movements and came out. After the cat hit upon the correct response it was immediately rewarded and thus gradually the connection between stimulus and response strengthened. Thorndike's research on animals gave him his most important law of learning - The Law of Effect (Thorndike 1931). It states:

*When a modifiable connection is made between a situation (stimulus) and a response, and is accompanied or followed by a satisfying state of affairs, the strength of that connection is increased. When an annoying state of affairs goes with or follows a connection, the strength of that connection is decreased (P. 71).*

However, in his later writings, Thorndike modified the law of effect, which is called by some writers as "truncated" law of effect. In the modified form Thorndike eliminated the negative or annoying part of the law of effect, because he found that punishment did not necessarily weaken the strength of the connection. You can very well see that when students are punished by teachers for bad behaviours, they do not necessarily avoid showing such unwanted behaviour. On the contrary, they are very likely to indulge in more and more unwanted behaviours as a result of being punished. This may happen because of 'reaction formation'.

Another law of learning given by Thorndike was the "law of exercise", also called "law of use and disuse". It stated that the more a stimulus response connection was practiced or used, the stronger it became; the less it was used, the weaker it would become. As Thorndike put it "Other things being equal, exercise strengthens the bond between a situation and a response". He modified this law also in his later writings because he found that practice without reward was ineffective. Connections are strengthened only by rewarded practice. Thus the law of effect led to the use of concrete rewards, and the law of exercise led to exercise, practice, and drill for all subjects but such practice need to be rewarded properly.

#### **16.4.2 Skinner and Operant Conditioning**

Like Thorndike, Skinner also considered reward or reinforcement as the most important element of learning process. We tend to learn a response if it is immediately followed by reinforcement. However, Skinner preferred the term reinforcement to reward because he made a difference between the two terms. Reward according to Skinner, is a subjective interpretation of behaviour associated with pleasurable event, whereas reinforcement is a neutral term. Reinforcement is simply defined as an effect that increases the probability of a response. It is, therefore, discussed in terms of observable or measurable event. We reward people, we reinforce behaviour (Skinner, 1968, p.106). Skinner called this approach *experimental analysis of behaviour*. He believed that the purpose of psychology is to predict and control behaviour. According to him all behaviour is learned, and therefore, principles of psychology can be applied in the classroom for bringing a change in pupils' behaviour.

Skinner identified two types of responses in the learning process: *respondents* and *operants*. Respondents are elicited by specific stimuli such as Pavlov's bell. In a respondent situation, an individual learns merely by being in the situation and responding

to it. But not all behaviour is of this type. In reality most human behaviour is operant behaviour which is emitted and not elicited.

### 16.4.3 Difference between Classical and Operant Conditioning

Skinner's conditioning is called operant conditioning whereas that of Pavlov's and Watson's conditioning are called classical conditioning. The process of operant conditioning is a learning situation in which a response is made more probable or frequent as a result of immediate reinforcement. Of all the possible responses that could be emitted in a given situation, only those responses become dominant or more probable which are reinforced.

In classical conditioning the consequences of a behaviour carry no weight in the learning of that behaviour. Reinforcement is unnecessary because the stimuli bring about the desired response.

Operant conditioning although closer to Thorndike's connectionism than to Pavlov's conditioning theory yet is different from Thorndike's explanation of learning. Thorndike felt that the reward strengthened the bond that existed between stimulus and response, whereas Skinner felt that what is strengthened is not the S-R bond but the probability that the same response will occur again.

### 16.4.4 Applied Behaviour Analysis and its Relation with Operant Conditioning

Initially Skinner developed his principles of operant conditioning by experimenting upon animals - pigeons, monkeys, cats, rats. Later he wrote about how these principles can be applied to complex human behaviour. In his well known novel *Walden Two* (which is about a utopian society based on operant principles) he explained the generalizability of these principles to humans. In another book authored by him 'Science and Behaviour' he explained how these principles can be applied to social institutions like government, law, religion, economics, and education.

In 1960s, the operant principles began to be applied for shaping human behaviour in applied settings. These principles worked well in hospitals, for therapeutic use, schools, prisons, and other institutions. The major shift in emphasis from basic laboratory research on animals to applied applications to human beings led to what is now called *applied behaviour analysis* which may be defined as the application of operant principles in clinically or socially significant behaviours to bring socially desirable change in human behaviour. Teaching a mentally retarded individual certain basic skills to enable him/her to live independently or teaching a delinquent child to live cooperatively with peers and other members of the society are examples of socially significant behaviours.

In the literature both the terms *behaviour modification* and *applied behaviour analysis* are used in describing behavioural interventions. However, psychologists prefer the term *applied behaviour analysis*, because it describes the change of behaviour by application of behavioural principles. The term behaviour modification may involve the use of many other procedures like hypnosis, psychoanalysis etc.

### 16.4.5 Role of Discrimination Training in Instruction: Discrimination Learning, Stimulus Control and Stimulus Generalization

To explain the process of operant conditioning we don't need a stimulus to initiate a response; whereas in classical conditioning the nature of the stimulus itself initiates a response. However, in operant conditioning we can talk about a response being brought under the control of a discriminative stimulus ( $S^D$ ). The discriminative stimulus is a signal that increases the probability of a response. This is best explained in Skinner's

research with rats placed in a box, called the Skinner box. This box is equipped with a lever, light, food tray and food-releasing mechanism. By providing a *reinforcing stimulus* ( $S^R$ ) food, the researcher can train a rat to push the lever only when the light ( $S^D$ ) is turned on. If the rat pushes the lever when the light is off, it receives no reinforcement. Light is a cue that makes the responses of lever pushing to occur more likely. Later, the rat can be taught to push the lever only when the light is off. Behaviour is said to be under stimulus control when the response varies depending on what stimulus is present. If the reinforcement is contingent only on the correct response, more learning transpires.

**Stimulus Generalization:** Sometimes behaviour learned in one situation will be performed in other situations even though the behaviour is not reinforced in the new situation. For example, stimulus generalization occurs when a child responds politely to a teacher in the same way as he/she responds to his/her parents.

#### 16.4.6 Consequent Stimuli: Negative Reinforcement and Punishment

In operant conditioning two kinds of reinforcements have been described - positive reinforcement and negative reinforcement. Positive reinforcement is the presentation of a stimulus that, when added to a situation, increases the probability of a response to occur. An individual, however, may also receive negative reinforcement, which is the termination of an unpleasant stimulus (aversive stimulus - such as inconvenient environment, isolation etc.) that, when taken away from a situation, also increases the probability of a response to occur. Punishment, on the other hand, is the presentation of an unpleasant stimulus (such as reprimand), that decreases the probability that a response will occur. Another form of punishment attempts to decrease behaviour by taking away a pleasant or reinforcing stimulus. This type of punishment is commonly used by teachers when they remove students from class activities or even the class until students are ready to demonstrate proper behaviour. This procedure is called *time-out*. Note that positive and negative reinforcements seek to increase the probability of a response, whereas punishment aims to suppress a response.

#### 16.4.7 Primary and Secondary Reinforcement

The reinforcing stimuli which work towards the satisfaction of physiological needs of an animal (such as food, water, sex etc.) are included in the category of primary reinforcements. But most reinforcements in educational environments are learned and thus secondary reinforcements. Money for example is not reinforcing to an infant, but in later life it becomes powerful in affecting behaviour.

Behaviourists group secondary reinforcers in three categories: social reinforcer (social acceptance), tokens (physical objects like money, grades, prizes etc), and activities (free play, listening to music, trips). The premise behind using activities is Premack's principle which states that given two associated activities, the more preferred may be used to increase the rate of engaging in the less preferred. In other words an interesting activity on which a person spends good deal of time can reinforce behaviours in an activity in which a person is less interested and spends less time. If a child likes to work on computer but does not like to read, it may help to tell the child that he/she can master computer operations only if he/she reads and studies relevant subjects.

Havinghurst points out (and it is a common observation as well) that different people react differently to various types of reinforcers. Some students are motivated by being praised verbally in front of their peers, others get motivated when they are given good prizes for their accomplishments. The expression "different strikes for different folks" best summarizes this point.

In selecting a reinforcer age should be considered a factor. It is a common experience that a small child can be motivated by simply giving him/her an eraser or a good pen, but for an adult it may not act as a reinforcer at all.

## 16.4.8 Schedule of Reinforcement

A schedule of reinforcement refers to a time plan of when and how often a response is reinforced. Through experiments with rats, pigeons and humans, Skinner identified some important relationship between the way in which reinforcement is administered and the rate of learning or extinction.

Reinforcement may be continuous or intermittent. The teacher may reinforce correct response each time or periodically. For administering intermittent reinforcements there are two choices: reinforcing a proportion of responses (a ratio schedule) or reinforcing responses following a lapse of time after the previous reinforcement (an interval schedule). Both ratio and interval schedule then are of two types: fixed and variable.

A fixed ratio schedule is based on presenting the subject with a reinforcer in a given ratio. In a 3:1 ratio, for example, he/she will be reinforced when he/she had made 3 correct responses. For example, students may be given free time for 15 minutes after they have correctly solved three sums in mathematics.

A variable ratio schedule is based on presenting the subject with a reinforcer after an average number of responses. The exact number of responses may vary, from one reinforcer after every three responses to one reinforcer after every 20 responses. In this schedule the subject never knows the exact number of responses required for reinforcement. Outside the realm of education, we find an example: Slot machines work on a variable ratio schedule of reinforcement. Another example, the farmer never knows when he will have good weather conditions to harvest a good crop.

**Fixed interval schedule** is based on the constant unit of time between reinforcement. Grading students after they have worked for two weeks is an example of fixed interval schedule.

A **variable interval schedule** provides reinforcement following the first correct response after a lapse of time. As in the variable ratio schedule, the subject never knows when the next reinforcer is due. The reinforcement schedule is based on variable interval. Sometimes the reinforcement may be after 10 minutes, sometimes 2 minutes after the appropriate behaviour.

Each of the different schedules produces its own pattern of responses. The continuous schedule is most effective in teaching new responses. In the case of fixed time interval the rate of responses is lowest, because the subject knows that it is only after a fixed interval that the response will be reinforced. So he/she sleeps over time and starts responding when the time interval is very near.

Here are some reinforcement rules which may be kept in mind.

- 1) In teaching a new task reinforce immediately rather than permit delay between response and reinforcement.
- 2) In the early stages of a task reinforce every correct response. As learning occurs, make it necessary to have more correct responses prior to reinforcement. Gradually shift to intermittent reinforcement.
- 3) Reinforce improvements or steps in the right direction. Don't insist on the perfect performance on the first try.
- 4) Don't reinforce undesirable behaviour.

## 16.4.9 Extinction and Spontaneous Recovery

The operant condition has effectively been used not only in strengthening desirable behaviour, but equally well it has worked in the removal of undesirable behaviour. Extinction is a process whereby a learned behaviour or response either becomes less and less frequent or disappears completely as a result of repetition while receiving no



further reinforcement. Whereas the passage of time after reinforcement has no effect upon loss of an act or habit, extinction is the effective way of removing an operant from the habit repertoire of an organism. Whereas mere forgetting is the loss of a habit through the passage of time, extinction requires that the response be emitted without reinforcement.

**Spontaneous Recovery:** The extinction process includes the interesting phenomenon of spontaneous recovery. Even after prolonged extinction an organism, at the beginning of another session of an activity in which it has been trained but it is no longer reinforced, will respond often at a higher rate for at least a few moments.

### 16.4.10 Shaping: A Method for Developing New Behaviours

By now we have learned that the key to learning is the immediate reinforcement of desired behaviour. But what happens if the desired behaviour is not a part of students behavioural repertoire? How can you reinforce students for performing complex behaviours if they never perform them. To solve this problem the behaviourists use a procedure called *shaping* or *successive approximation*. In such a procedure reinforcement is applied to responses that successively approximate (or become increasingly closer to) the desired behaviour. Students need help in responding appropriately at the lower or pre-requisite levels in shaping behaviour. This special help physical, visual or verbal is called prompting. However prompting should not be used for long otherwise the students will acquire a habit of being prompted and will not develop independent habit. Before asking students to identify verbs from a list of words, the teacher can give a prompt by first defining what a verb is.

#### Check Your Progress 2

**Note:** Write your answers in the space given below.

- 1) Define the laws of learning propounded by Thorndike.  
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- 2) What is the basic difference between classical conditioning of Pavlov and Watson, and connectionism of Thorndike.  
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- 3) Why did Skinner replace the word reward as used by Thorndike, with reinforcement? How do the two terms differ?  
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.....
- 4) What is the difference between emitted response (operant) and an elicited response (respondent)?  
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## 16.5 SOCIAL LEARNING THEORY

In this section you will learn about social learning, types of modelling, and social learning in the classroom.

Since the early 1940s, behavioural psychologists have been interested in understanding how children acquired social behaviours. These behaviours include cooperative, competitive, affiliate, assertive, aggressive, moral-ethical, and other social responses. Social responses are learned as a result of observing the behaviours of others. Such learning is referred to as modeling or observational learning.

Bandura and Walters (1963) first stated that an individual could model behaviour simply by observing the behaviour of another person. They departed from traditional operant conditioning explanation that the individual must perform and be reinforced for his/her responses for learning to occur. Later Bandura (1969, '77) proposed the most comprehensive and widely accepted theory of modelling. He named it as *social learning theory* (which also is known as *observational learning*). According to Bandura, children must learn social behaviour by observing the actions of significant people in their lives, their parents, sibling, teachers, peers, and television heroes.

Bandura (1977) rejected the unidirectional view of the effect of environments on the individual, the major thesis of the S-R-perspective. Instead, Bandura's central theme was *reciprocal determinism*, a process by which personal factors, environmental factors, and behaviour all operate as "interlocking determinants of each other". In social learning theory both behaviour and environment are changeable, and neither is the primary determinant of behavioural change. For example, aggressive children expect other children to react hostilely towards them. This expectation causes the aggressive child to act aggressively. As a consequence other children respond to child's aggressive behaviour more aggressively, thereby strengthening the child's initial expectation. Aggressive children thus create through their actions a hostile environment, while children who favour friendly mode of response generate an amicable social milieu (Bandura, 1977).

### 16.5.1 Types of Modelling

According to Bandura (1969) modelling behaviour can be grouped into three categories: the *inhibitory - disinhibitory effect*, the *eliciting effect*, and the *modelling effect*. The inhibitory -disinhibitory effect makes a response less frequent or allows it to occur by influencing the response consequences of a model. Generally, we become inhibited when we observe others experience unpleasant consequences for engaging in behaviour similar to ours. Bandura (1967) demonstrated how children disinhibit their fear of dogs. He had children watch a film in which a child who did not fear dogs was playing with a dog in party setting. He found that children lost their fear after viewing the film.

A model can also have an eliciting response on an observer by facilitating a response repertoire already present in the observer. Facilitation occurs when an unlikely response becomes more probable. Observing a friend donate time to collect for annual cancer drive in your community may motivate you to volunteer your services for various charitable activities.

The final category, modelling effects, is to develop new responses through the observation of a model. This category has important implications for education. Children learn many new behaviours by observing the behaviour of parents, siblings and peers. The small boy who watches his older brother move a kitchen chair to the cupboard to reach a cookie, will probably attempt the same behaviour later.

## 16.5.2 Social Learning in the Classroom

Children learn a great deal in the classroom by observing the behaviour of the teacher. Through such observations of teacher behaviour they learn new skills (e.g., maths problems, art projects, science experiments). They also learn logical thinking and problem solving behaviour by observing how teachers demonstrate these by thinking aloud as they solve problems on the black board, and by displaying intellectual curiosity, emotional control, respect for and interest in others, and good listening and communication habits. Teachers who display such characteristics tend to induce the same qualities in children. There is always a kind of *reciprocity* in how teachers behave with children. If a teacher shows a caring and rational behaviour towards his/her students, these behaviours will be modelled by the students and they are likely to display the same kind of behaviour towards teachers as well as with others in their interactions. However, the teachers who show negative behaviour also inculcate the same qualities in students (Good and Brophy, 1978).

### Check Your Progress 3

**Note:** Write your answers in the space given below.

- 1) How does social learning take place in children?  
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- 2) What is the basic difference between modeling and shaping of behaviour?  
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- 3) What is meant by the term '*reciprocal determinism*'?  
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- 4) Explain with examples the terms *inhibitory- disinhibitory effect, eliciting effect* and *modelling effect*.  
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- 5) Give examples of social learning in the class room.  
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## 16.6 COGNITIVE BEHAVIOUR MODIFICATION

The latest development in behavioural psychology is the incorporation of various cognitive processes (i.e., thoughts, perceptions, expectancies, self-statements) as base within the behavioural framework. The theoretical framework in which these approaches are grounded is that children and adolescents have *deficient cognitive processes* that guide and control their behaviour. If the cognitions that direct or control behaviour can be altered, behavioural change will occur. These approaches are called *cognitive behaviour modification*, cognitive behaviour therapy or self-control. Bandura (1977) in his social learning theory provided much of the theoretical support for the use of these approaches in the treatment of behavioural, emotional, and academic problems. A few of these cognitive behaviour techniques and therapies are briefly described in the following section.

### 16.6.1 Self-management

Quite a few of self-management or self-control therapies were developed during 1960s and 1970s. As we have studied earlier, in traditional approaches to applied behavioural analysis, the teacher uses positive reinforcement and other procedures (e.g. modelling) to improve student behaviour. Once the desired behavioural changes are attained, the external control of teacher is allowed to shift to the student (self-regulation). The procedure, adopted for shift of control from external to the internal (from the teacher to the self), involves *self-assessment*, *self-monitoring*, and *self-reinforcement*. In self-assessment the student himself/herself determines whether he/she has performed specific behaviours. In self-monitoring, the student monitors and records his/her performance of certain behaviours. After a period of time, the procedures permitting students to reinforce themselves for appropriate behaviours are gradually removed and control is shifted to reinforcers in the students' natural environment, like grades, social status, achievement feedback.

These self-control techniques can be made more and more cognitively oriented. One way individuals can be taught to control their own behaviour is through self-instruction. Luria (1966) observed that as children get older, they are able to inhibit behaviours not only by following adult instructions but also by responding to their own self directed instructions. Vygotsky (1962) described a progression from overt language to internalized talking and finally to silence. He pointed out that self-talk is important because it provides self-guidance.

### 16.6.2 Self-verbalization

The theory that supports self-verbalization training indicates that an individuals' inner speech influences his/her cognition (thinking) and guides behaviour. Meichelbaum and Goodman (1971) developed a cognitive modification programme called, *self-instructional training* to teach impulsive children to work more slowly and carefully. Each child observed a model performing a task and was asked to simultaneously verbalize the procedure used. The model then verbally instructed the child while the child performed the task. Then the child performed the task while whispering the instructions to himself or herself. Finally the child performed the task silently (using correct self-instructions).

Meichelbaum and Asarnow (1979) used self-verbalization training programme in an academic area (to increase reading comprehension). They were guided by the following questions: What should poor readers say to themselves before, during, and after reading a selection that would help to enhance their understanding? By the last training session the poor readers internal dialogue became something like the following.

Well I have learned three big things to keep in mind before I read a story and while I read it. One is to ask myself what the main idea of the story is. What is the story

about? A second is to learn important details of the story as I go along. A third is to know how the characters feel and why. So get the main idea and watch sequences.

The researchers reported improvement in reading skills of students who received training as compared to control group who did not receive self-verbalization training.

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## 16.7 LET US SUM UP

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In this unit, behavioural approaches to learning have been dealt in some detail. It has been shown that the principles of behavioural psychology of learning can effectively be used in instruction and in behavioural therapy. The main idea behind behaviouristic psychology of learning is that learning is a change in overt behaviour of the learner occurring as a result of reinforced practice. This learning change in behaviour is observable or testable. The unit centers around four perspectives: classical conditioning, applied behaviour analysis (operant condition and connectonism of Thorndike), social learning and cognitive behaviour modification. Early behavioural psychologists (Pavlov & Watson) viewed learning as forming connection between a stimulus and a response. Whereas Skinner believed that all behaviour is learned which occurs because of operant conditioning - a situation in which a response is made more probable as a result of reinforcement. Applied behaviour analysis is the extension of operant conditioning principles to change behaviour of humans in natural settings. While discussing operant conditioning it was made clear that behaviour is influenced by various types of reinforcements differently - fixed and variable ratio; fixed and variable interval. Further, shaping of behaviour was also discussed. Under social learning perspective it was argued that modelling procedures are important in developing new behaviours. In addition observational learning occurs and it occurs without immediate reinforcement. Reinforcement in social learning theory is viewed as an incentive rather than as a consequent condition of behaviour. Vicarious reinforcements and self-reinforcements can be effective alternatives to direct reinforcement. Under cognitive behaviour therapy it was discussed that cognitive processes can be incorporated in behaviour approaches to help individuals guide and control their behaviour.

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## 16.8 UNIT END EXERCISES

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- 1) According to Skinner "we are all products of operant conditioning. We learn appropriate and inappropriate behaviour according to the same principle". Discuss this statement and give your observations about your own behaviour.
- 2) What are primary and secondary reinforcers? Identify at least eight secondary reinforcers.
- 3) What is "shaping of behaviour"? How can you use shaping to change the behaviour of your students? Discuss.
- 4) Differentiate by citing examples, classical conditioning from operant conditioning.
- 5) Discuss stimulus discrimination and response generalization with their application in daily life.
- 6) Discuss different types of schedules of reinforcement citing example in each case.
- 7) What is "modelling"? How does it help learn socially desirable behaviour?
- 8) What is the difference between extinction and forgetting? Give examples.
- 9) Distinguish between a respondent and an operant.
- 10) What is reciprocity of behaviour? How does it operate between teachers and students?

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## 16.9 REFERENCES AND SUGGESTED READINGS

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