

PSYCHOLOGY COMPONENT

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CHAPTER 1: INTRODUCTION TO PSYCHOLOGY

Overview

In this chapter, we shall cover

- **Concepts of Psychology and Educational Psychology**
 - *Definitions*
 - *Importance*
 - *Basic concepts : Instincts, Needs, Drives, Motivation*
- **Motivation**
 - *Types*
 - *Factors (Maslow's Theory)*
 - *Motivating pupils : environment, co-operative and collaborative learning*

Key Terms

- Psychology
- Educational Psychology
- Instincts
- Needs
- Drives
- Motivation
 - *Intrinsic*
 - *Extrinsic*
- Maslow 's Theory
 - Deficiency needs
 - Growth needs
- Cooperative learning
- Collaborative learning

Further Reading

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<http://chiron.valdosta.edu/whuitt/col/regsys/maslow..html>

Suggested Input

1. **Psychology**

The systematic study of animal and human behaviour (observable and mental processes) and cover all kinds of pursuits. The term “behaviour” includes all those aspects of human activity which we can observe.

2. Educational Psychology

The systematic study of learners, learning, and teaching. Educational psychology applies the findings of general, social and child psychology to assist in a better understanding of learning processes.

3. Instincts

The actions of humans, as well as those of animals, are the outcome of inborn instincts – innate, unlearned tendencies which are essential for all thought and action. It is an automatic, predetermined set of responses to a specific stimuli.

Instincts have survival value for both the individual and the race.

4. Drives

Drives are seen as the source of motivation resulting from homeostatic disequilibrium. The body is ‘driven’ into action to correct any imbalance between the internal and external environment.

5. Needs

Also motivated by homeostatic disequilibrium. Needs can be motivated by internal or external stimuli. There are two broad groups of needs – primary (physiological) and secondary (psychological).

6. Motivation

Motivation consists of internal processes which spur us on to satisfy some need. It is an internal process that activates, guides and maintain behaviour over time. Motivation is what gets you going, keeps you going and determines where you are going.

Intrinsic motivation

This is an internal drive – the ‘push’ from within, which is self-generated . Intrinsic motivation is from the content itself/ inherent interest

Extrinsic motivation

This is made up of incentives, - objects external to ourselves which act as a ‘pull’ from without ; the use of praise, grades, recognitions of progress is crucial and used to encourage learning.

7. Maslow’s Hierarchy of needs

In this theory, needs that are lower must be at least partially satisfied before a person will try to satisfy higher needs. For example, a hungry person will be less

concerned about maintaining a positive self-image than about obtaining food; but once that person is no longer hungry, self-esteem needs may become paramount.

Maslow identified two needs:

Deficiency needs

- physiological, safety, love and esteem – critical to physical and psychological well-being and must be satisfied but they diminish thereafter.

Growth needs

- the need to know and understand, to appreciate beauty, or to grow and develop an appreciation of others – can never be satisfied completely.

The more those needs are met the greater the motivation to learn more.

According to Maslow, people begin development with basic motives, but as they mature, and their lower needs are satisfied, their motivation progress upward through a hierarchy of needs.

The first four levels of the need hierarchy are :

a) Physiological needs – the lowest level – food, water, sleep and sex.

These needs are essential for human survival.

b) Safety needs – such as familiarity, peace, rules and regulations, the safety of an ordered society.

c) Love and belongingness – love and friendship.

d) Esteem needs – need for self-respect and the esteem of others.

e) Self-actualization – the need to fulfill his/her potential.

8. Cooperative learning

Is a teaching strategy involving children's participation in small group learning activities that promote positive integration. Here, students work together in small groups to help each other learn.

The class is organized into small groups after receiving instruction from the teacher. They then work through the assignment until all group members successfully understand and complete it.

9. Collaborative learning

Is a teaching strategy where teachers and students interact (using their collective knowledge and thinking) to accomplish meaningful learning and solve problems. The teacher acts as *facilitator, model, coach* and *mediator*.

The students are *active participants*.

CHAPTER 2: THE NATURE OF MAN

Overview

In this chapter, we shall cover

- The dual concepts of the nature of man and human potentials
- Human Needs - *concepts*
 - *types*
 - *related theories*
- Human potentials – *Multiple Intelligence (Gardner's Theory)*
 - *Emotional Quotient (Goldman's Theory)*

Key Terms

- Nature of man
- Human potentials
- Human needs (Maslow's Theory – refer Chapter 1)
- Multiple Intelligence (Gardner's Theory – refer to Chapter 16)
- Emotional Intelligence (Goldman's Theory)

Further Reading

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<http://www.ihhp.com/>

<http://www.fathom.com/fks/catalog/feature.jhtml?>

<http://www.nswagtc.org.au/info/identification/characteristics.html>

Suggested Input

1. Nature of man

It is the inborn characteristics of man, all that is good, - abilities, capabilities, plus hidden talents and potentials. Human nature is a gift from God, and man is born pure and unpolluted.

2. Human Potentials

Human potential is part of human nature. It normally includes all dormant talents, abilities and capabilities of man. Man's potentials – whether physical, intellectual, social or emotional – need to be identified, recognized and developed – to their maximum or optimum capacity.

3. Maslow's theory (refer to Chapter 1)

4. Multiple Intelligence (Gardner's theory – refer to Chapter 16)

5. Emotional Intelligence - EQ (Goldman's theory)

A set of skills involving the ability to understand our own feelings and the feelings of others and to use this information to guide one's thinking and actions.

The definition of EQ has not yet stabilized, but most psychologists agree that the following traits and abilities are included :

- Empathy
- Understanding one's feelings
- Expressing feelings
- Controlling one's temper
- Independence of thought
- Independence of action
- Persistence
- Friendliness
- Respect of others
- Adaptability
- Ability to get along with others
- Sensitivity to the feelings of other
- Optimistic and smiling demeanour
- Kindness
- Self-awareness and desire to improve
- Ability to understand other people's feelings.

CHAPTER 3: INDIVIDUAL DIFFERENCES

Overview

In this chapter, we shall cover

- **The meaning of Individual differences**
 - *physical*
 - *cognitive*
 - *emotional*
 - *social*
 - *spiritual*
- **Factors of Individual differences**
 - *genetic (nature)*
 - *environment (nurture)*

Key Terms

- Individual differences
- Genetic (nature)
- Environment (nurture)
- Nature-nurture controversy

Further Reading

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Suggested Input

1. Individual differences

All theorists agree that individual differences develop as heredity interacts with experience. We are all born with individual predispositions, and are influenced by different familial and cultural backgrounds.

2. Genetic (Nature)

Certain aspects of individual differences (especially **physical**) that are inherited from our parents, grandparents, and great-grandparents, e.g. the colour of one's hair, size and height.

3. Environment (Nurture)

Those aspects of individual differences usually influenced by the environment, (culture, the family, the media) are normally **social, spiritual and emotional** in nature. E.g. An individual who is more confident than another.

4. Nature-Nurture Controversy

There is the belief that *genes set limits* on development while *environments* determine what *actually develops*. Genes help to determine the actual level of development, but the environment either enhances or hinders the development of a particular characteristic or behaviour.

Just how much is due to genetic factors (nature) and how much is due to environmental factors (nurture) is still a matter of controversy.

CHAPTER 4: PERSONALITY AND SELF CONCEPT

Overview

In this chapter, we shall cover

- The definition of Personality
- Types of personality
 - *introvert*
 - *extrovert*
 - *ambivert*
- Coping with different personalities
- The meaning of Self-Concept
 - *negative*
 - *positive*
- Moulding positive self-concept
- Freud
 - *Id*
 - *Ego*
 - *Superego*
- Self-defence mechanisms

Key Terms

- Personality
 - *temperament*
 - *character*
- Introvert
- Extrovert
- Ambivert
- Self-Concept
- Positive Self-Concept
- Negative Self-Concept
- Freud
 - *Id*
 - *Ego*
 - *Superego*
- Self-defence mechanisms

Further Reading

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<http://www.suite101.com/article.cfm/8425/95144>

Suggested Input

1. Personality

The more or less stable and enduring organization of a person's **character**, **temperament**, intellect and physique which determines his unique adjustment to the environment. It refers to the distinctive patterns of behaviour (including thoughts and emotions) that characterize each individual's adaptation to the situations of his/her life.

2. Temperament

An inherent disposition, closely allied to emotional dispositions. It is inherited yet vary enormously in response to different environmental settings; e.g. an individual's excitability or placidity.

3. Character

An evaluative term referring to such traits as honesty, self-control, persistence and sense of justice. It relates to qualities which we can define as socially acceptable or objectionable and incorporates the development of attitudes, and values.

4. Extrovert

The extrovert is interested in the outer world of people and things. He/she is likely to be outgoing, talkative, friendly, relatively uninhibited, and fond of activities which bring him/her into contact with other people, crave excitement, aggressive, unreliable, easy going and optimistic.

5. Introvert

The introvert is interested in the internal world of one's own thoughts, feelings and experiences. He/she is more likely to be contemplative, aloof, reserved and focused on the self, fond of solitary pursuits, persistent, rigid, shy and has a pessimistic outlook of life.

6. Ambivert

Extroverts and Introverts are extreme cases. Most individuals are ambiverts in their behaviour, that is possessing both sets of qualities.

7. Self-concept

The self-concept denotes the person's conception of the kind of person he/she is. It reflects those characteristics that the person perceives as being part of himself or herself .

8. Negative self-concepts

Where the individual has difficulty in accepting themselves and often make poor personal and social adjustments.

9. Positive self-concepts

Where the individual is well adjusted, personally and socially .

10. Freud's Theory

According to Freud (1933) personality has a three part structure : id, ego and superego. Although the three parts interact, each has its own characteristics.

10.1 Id

The id functions entirely in the unconscious and is closely tied to instinctive biological urges that energize our behaviour.

Any increase in energy from internal or external stimulus produces tension and discomfort that the id cannot tolerate. The id seeks to reduce this tension through the *pleasure principle*, that is, seeking immediate satisfaction of these wishes and impulses regardless of reason or logic.

10.2 Ego

The ego is the decision-making component, whose function is governed by the *reality principle*, which requires it to test reality and to delay discharge of tension until the appropriate object and environment are found. The ego thus operates through realistic, logical thinking and planning appropriate.

10.3 Superego

The superego represents the morals and standards of society that has become the internal world of the individual. The superego is the conscience, the judge of right or wrong, of good and bad. It represents the ideal, whereas the id seeks pleasure, the superego seeks perfection.

11. Self-defence mechanisms

Freud defined an ego defence mechanism as a mental strategy used by the individual to defend against open expressions of id impulses and opposing superego pressures. The ego reacts to the threatened break-through of id impulses in two ways :

- a) blocking the impulse from expression in conscious behaviour
- b) distorting it to such a degree that the original intensity is markedly reduced or deflected.

It should be noted that people rarely rely upon a single defence mechanism. Instead people employ several defence mechanisms to resolve conflict and relieve tension and anxiety. (Examples of defence mechanisms : repression, projection, displacement, rationalization, regression and sublimation).

CHAPTER 5: THEORIES OF DEVELOPMENT

Overview

In this chapter, we shall cover

- Basic concepts of growth and development
- Principles of growth and development
- Stages of development based on related theories (Gesell, Havighurst, Piaget, Freud, Ausubel, Erikson)

Key Terms

- Growth
- Development
- Principles
- Gesell
- Havighurst
- Piaget
- Freud
- Erikson
- Kohlberg

Further Reading

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Suggested Input

1. Growth

refers to *quantitative* changes – increases in size and structure. Not only does the child become larger physically, but the size and the structure of the internal organs and the brain increases

2. Development

refers to *qualitative and quantitative* changes. It may be defined as a **progressive** series of **orderly , coherent** changes.

“**Progressive**” signifies that the changes are directional, that they lead forward than backward.

“**Orderly**” and “**coherent**” suggest that there is a definite relationship between the changes taking place and those that preceded or will follow them.

3. Stages of Growth and Development

3.1 Gesell

Developmentalists who propose maturational theories, like Gesell believe that development is directed from within, according to a biological timetable. Gesell believed that capabilities appeared when children reached the appropriate stage of maturity. No matter how many opportunities a child had to learn some skill, until muscles, nerves, brain and bones were ready, all attempts to teach the child would be futile. Some children walked, talked, and developed self-control early, and some were much slower, but each capability appeared when the child was ready to acquire it.

Gesell’s theory marks the development of children from birth to age 16

Birth to age 4 - smooth period of development

Age 5 to 6 - period of transition – need to adjust to school, peers, rules

Age 7 to 10 - smooth period of consolidation and adaptation to school life

Age 11 – 14 - period of transition, conflict – pubescence – adolescence

Age 15 to 16 - period of consolidation, getting ready to face new life as an Adult

3.2 Havighurst : The Developmental Tasks Model

Each stage of development ushers in new “tasks” – skills, attitudes, understandings, accomplishments – that must be met before a person can move on to a higher level of development. If the person does not accomplish the task at a certain level, then it is likely that he/she will encounter developmental problems in subsequent stages.

Havighurst divided the life span into six periods:

3.2.1 Infancy and early childhood (birth to 6 years)

3.2.2 Middle childhood (6 to 12 years)

3.2.3 Preadolescence and adolescence (12 to 18 years)

3.2.4 Early adulthood (18 to 35 years)

3.2.5 Middle age (35-60 years)

3.2.6 Later life (60 years +)

3.3 Piaget : Theory of Cognitive Development

Piaget identified 4 stages of cognitive development

3.3.1 Sensorimotor period (0 to 2 years) – involves adapting to reality through

sensing and movement.

3.3.2 Preoperational period (2 to 7 years) – involves processes related to conceptualization prior to using logic.

3.3.2 Concrete Operations period (7 to 11 years) – involves using applied reasoning.

3.3.2 Formal Operations period (11 to 15 years and up) – involves using systematic reasoning.

3.4 Freud

Freud believed that every person normally progresses through *five* psychosexual stages.

During the first 5 years of life, pleasure is successively focused on three zones of the body as the **oral**, **anal**, and **phallic** stages unfold.

Then comes a quiet **latency** period of about 5 or 6 years.

Finally, if progress through each stage has been successful, the person reaches the **mature** or **genital** stage after puberty.

3.4.1 The oral stage (birth to year 1)

Occurs during the first year of life, when the baby is completely dependent on others for the satisfaction of all needs. In this stage body pleasure is focused on the mouth and on the satisfaction of sucking, eating, and biting in the course of feeding.

3.4.2 The anal stage (age 2 years)

The second years of life is marked by a shift in body pleasure to the anus and by a concern with the retention and expulsion of feces.

3.4.3 The phallic stage (age 5 years)

This is the period in which the child observes the difference between the male and female and experiences what Freud called the *Oedipus complex*. This myth symbolizes every child's unconscious desire to possess the opposite-sexed parent and simultaneously dispose of the same-sexed parent. Freud thought that initially both boys and girls love their mother as the satisfier of their basic needs.

3.4.4 Latency (ages 6 & 7 and the onset of early teens)

The child passes through a period of comparative sexual quiescence. Now the child's *libido* (sexual instincts) is channeled into non-sexual activities. Latency can be viewed as a period of preparation for the important growth that will take place in the final stage.

3.4.5 The genital stage (adolescence until death)

With the onset of puberty comes an increased awareness of and interest in the opposite sex. The reproductive organs mature, and the endocrine system secretes hormones that result in secondary sex characteristics (e.g. beards in males, breast development in females).

3.5 Erikson : The Psychosocial Stages Model

- 4.6.1 Stage 1 : Trust versus Mistrust (Birth to 18 months)
- 4.6.2 Stage 2 : Autonomy versus Shame and Doubt (18 months to 3 years)
- 4.6.3 Stage 3 : Initiative versus Guilt (3 to 6 years)
- 4.6.4 Stage 4 : Industry versus Inferiority (6 to 12 years)
- 4.6.5 Stage 5 : Identity versus Identity Confusion (12 to 18 years)
- 4.6.6 Stage 6 : Intimacy versus Isolation (18 to 35 years)
- 4.6.7 Stage 7 : Generativity versus Self Absorption (35 years to Retirement)
- 4.6.8 Stage 8 : Integrity versus Despair (Retirement years).

4.6 Kohlberg’s Theory of Moral Development

Morals develop in three levels consisting of two stages each. These levels represent different perspectives individuals can take as they wrestle with moral dilemmas or problems

LEVEL AND STAGE	DESCRIPTION
Level I Preconventional Reasoning	The ethics of egocentricity (up to age 10) – does not understand the rules set down by others
Stage 1 : Punishment-Obedience	The consequences of the act determines if it is ‘good’ or ‘bad’
Stage 2 : Market Exchange	The ethics of “what’s in it for me?” Obeying rules and exchanging favours.
Level II Conventional Ethics	The ethics of others (10 to 20 years olds). – starts to conform to rules and conventions of society.
Stage 3 : Interpersonal Harmony	Likes to be called “Nice girl/good boy”. Decisions based on what pleases, or is approved by others.
Stage 4 : Law and Order	The ethics of order. Right is doing one’s duty, and obeying the law.

<p>Level III Postconventional Ethics</p> <p>Stage 5 : Social Contract</p> <p>Stage 6 : Universal Principles</p>	<p>The ethics of principle. Rarely reached before 20 years, and only by a few. Focuses on the principles underlying society's rules.</p> <p>Rules are based on principles of justice and common good and are mutually agreed upon by members of society.</p> <p>Rarely encountered in life. Ethics determined by individual's conscience guided by the abstract principles of justice and equality.</p>
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CHAPTER 6: ADOLESCENT DEVELOPMENT

Overview

In this chapter, we shall cover

- Stages of development (PIES)
- Implications on student behaviour

Key Terms

- Adolescence
 - *preadolescence / pubescence*
- Physical development
- Intellectual development
- Emotional development
- Spiritual development

Further Reading

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Suggested Input

1. Adolescence

Pubescence (Girls 10-12 years old; Boys 12-14 years old)

The prolonged stage during which reproductive functions mature, begins with an adolescent growth spurt and terminates with puberty, which marks the onset of full reproductive functions.

For boys, the physical changes includes an increase in height and weight, increased musculature in the upper body, the growth of facial and pubic hair and deepening voice.

Girls also experience an increase in height and weight, the growth of breasts and pubic hair and an increase in body fat, which results in a more rounded appearance.

2. Physical Development

(Refer to Pubescence above)

3. Intellectual Development

The most dramatic change is the transition from concrete to formal operational thinking. It is not a mere accumulation of knowledge, but a change in the way they think. They can now play with abstract ideas and deal with the hypothetical.

4. Emotional Development

Erickson(1968) describes this period as a tension between identity definition and identity confusion. Defining themselves is especially difficult because they are attempting to answer not only the question “Who am I?” but also “What will I become?”

5. Social Development

Peers assume an increasingly important role in the developing social life of adolescents. Peers strongly influence early adolescent misbehaviour, manners of dressing and grooming, but this influence decreases with age.

CHAPTER 7: BEHAVIOURAL PROBLEMS

Overview

In this chapter, we shall cover

- The meaning of behavioural problems
- Types of behavioural problems
 - *negative behavioural problems*
 - *positive behavioural problems*
- Coping with behavioural problems
- Identification of behavioural problems

Key Terms

- **Behavioural problems**
- **Negative behavioural problems**
 - destructive
 - disruptive
 - dependent
 - hyperactive
 - anxiety
 - depression
 - self-withdrawal
 - self-alienation
- **Positive behavioural problems**
 - learners with a high sense of curiosity
 - fast learners
 - giftedness
 - proactive learner
- **Identification of behavioural problems**
 - *tests*
 - *non formal tests*
 - *studies*

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Suggested Input

1. Behavioural Problems

Defined as abnormal behaviour, outside the social norms of society. They indicate the individual's inability to adapt or accommodate any changes to his/her environment.

2. Negative Behavioural Problems

2.1 Destructive

Destructive or antisocial behaviour is one of the most dangerous personality disorders. There is the disregard of the rights of others and the norms of society. Antisocial behaviours may range from vandalism, to harassment of others, to employing tactics to cheat people out of their money, to actual illegal acts such as stealing, physical aggression against others, stalking, rape and even homicide.

2.2 Disruptive

Disruptive behaviours are actions that interfere with the activities of an individual or group. In the classroom setting, disruptive behaviours include inappropriate talking, laughing, clapping, stamping, shouting, singing, whistling, and other behaviours that interrupt ongoing activities.

2.3 Dependent

Passive-dependent behaviours reflect a lack of self-confidence, an inability to make one's own decisions, or to be alone. Such individuals have such low self-esteem that they feel helpless without a dominant life mate, friends who protect them, or relatives who act as protective guardians. They are overly sensitive to criticism and go to great lengths to make themselves likable.

2.4 Hyperactive

Hyperactive behaviours include behaviours in which children act impulsively without thinking, and have difficulty focusing on a single task for more than a few minutes. In the classroom they leave their seats frequently and fidget restlessly. Thus they are usually inattentive, have learning problems and misbehave more than the other students in the class.

2.5 Anxiety

Anxiety may be defined as "apprehension without apparent cause". The overanxious child is one who experiences excessive or unrealistic anxiety. In

addition to appearing nervous or tense, the child may complain of physical discomfort such as headaches, stomachaches, dizziness, and nausea. Sleep problems are common.

2.6 Depression

Depression may be defined as “ a syndrome of abnormally dejected mood persistent over time that interferes with daily functioning”, Both children and adolescents experience depression. – low self-esteem, decreased energy level, apathy, loss of interest in their usual activities and routines, including schoolwork.

2.5 Self-withdrawal

Withdrawal is the act of emotionally leaving or escaping from a life situation that, in the perception of the individual, may cause personal conflict or discomfort. When confronted with a problem, a person may act aggressively or he may withdraw and refuse to attempt to cope with or to overcome the problem. Psychologically, withdrawing behaviour is much more serious than aggressive behaviour. Students who withdraw, tend to admit defeat Isolation, preoccupation, daydreaming, anxiety or depression are examples of withdrawal.

2.6 Self-alienation

These students feel estranged from society, cut off, alone, unwanted, unloved and unvalued. They have low self-esteem, low social interest, and high self-centrality. They are worried , moody, and depressed over studies, and feel they are misunderstood by parents, friends and teachers.

Positive Behavioural Problems

2.7 Learners with a high level of curiosity

These students are bright and eager to know, “How does this work?, What is this?, What happens when I pull/push this?”. Such students often ask so many questions, that they tend to disrupt lessons or dominate Question & Answer sessions.

2.8 Fast learners

Students with a high capacity to absorb what is being taught, with high reasoning, and analytical abilities. They can grasp concepts quickly and are able to see the relationships between variables/components as they are being explained.

2.9 Giftedness

Giftedness, has traditionally been defined in terms of the altitude of an IQ received as a result of performance on a standard test of intelligence. In the

studies of genius conducted by Terman and his associates (1925) individuals who had attained an IQ of 130 or above represented the gifted group. Gifted students represent a group who are intellectually able in academic and other kinds of learning.

2.10 Proactive learners

These students take the initiative to study topics before they are taught by the teacher, as well do extra work or help with routines in the classroom without being asked. As a result, they may sometimes disrupt a class by giving unsolicited answers or comments.

3. Identification of behavioural problems

3.1 Tests

3.1.1 Psychological

A psychological test is a measurement instrument that has three defining characteristics :

- a) A psychological test is a sample of behaviour.

- b) The sample is obtained under standardized conditions

- c) There are established rules for scoring or for obtaining quantitative information from the behaviour sample.

3.1.2 Diagnostic

A Diagnostic test helps a psychologist to make a clinical assessment of the examinee. No individual test provides a complete picture of the individual, but only a specific piece of information about that person.

3.2 Non formal tests

3.2.1 Observation

One way to learn about behaviour is to observe and record it as it occurs,. Such observations do not explain behaviour, but they are a rich source of information about what people do in their natural environments. However observation has its limitations.

- a) Observers are at the mercy of unpredictable events over which they have little or no control.

- b) There are the problems of observer bias and expectations influencing which aspects of the events are attended to and remembered.

- c) critics of this approach question the generalization of observations based on a few people or situations.

3.2.2 Interview

The interview is one of the oldest and most widely used method of

collecting information about people. In the interview, the interviewer obtains information from the person being evaluated by asking relevant questions and listening to answers. The interviewer and the respondent engage in a face-to-face dialogue for the purpose of achieving a specific goal.

Interview assessment, when used by a highly skilled interviewer, can produce extremely valuable information. However, the interpretation of such data is highly subjective and may reflect theoretical biases of the interviewer.

3.3 Studies

3.3.1 Case Study

It is an example of qualitative research, a study conducted under conditions that are not controlled. It is a systematic and extensive observation of a single individual, or a single group of individuals as a unit, over an extended period of time.

Most case studies involves only observation and description.

3.3.2 Longitudinal Study

Here the same child or children are observed or tested repeatedly at different points in their lives, and stability or change in their characteristics or behaviour is noted over time. This type of study is therefore the most obvious and direct way to 'see' actual growth or development. Although longitudinal studies are favoured for studying developmental characteristics, they are expensive to keep up over time.

3.3.3 Cross-sectional study

Here there is usually only one observation for each child, but developmental changes are identified by including children of different ages in the plan of the study. Development is charted, not by observing the change in individuals over time, as in the longitudinal method, but rather by noting the differences between children of different ages at the same point in calendar time.

CHAPTER 8: BEHAVIOUR MODIFICATION

Overview

In this chapter, we shall cover

- Meaning of behaviour modification
 - 3.3.4 *Internal/self adjustment (adaptation)*
 - 3.3.5 *external adjustment (modeling)*
- Techniques of behaviour modification
 - 3.3.6 Reinforcement
 - 3.3.7 Punishment
 - 3.3.8 Shaping
 - 3.3.9 Token economy
 - 3.3.10 Contract
 - 3.3.11 Time out
 - 3.3.12 Modelling
 - 3.3.13 Self-control
 - 3.3.14 Self-management

Key Terms

- Behaviour modification
- Reinforcement
 - 3.3.15 *Positive reinforcers*
 - 3.3.16 *Negative reinforcers*
- Punishment
- Shaping
- Token economy
- Contract
- Time out
- Modelling
- Self-control
- Self-management
 - *self-recording*
 - *self-instruction*
 - *self-reinforcement*
 - *self-punishment.*

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Suggested Input

1. Behaviour modification

Involves the systematic application of learning theories to bring about a desired change in patterns of behaviour.

2. Techniques

2.1 Reinforcement

2.1.1 Positive reinforcers

are intended to maintain or increase the observed behaviour e.g.
encouraging comments, rewards of various kinds.

2.1.2 Negative reinforcers are intended to reduce and even eliminate observed behaviour e.g. scolding, punishments.

2.2 Punishment

Punishment is an effective procedure for modifying behaviour that has been acquired through reinforcement. Punishment makes it clear *what* behaviour is not wanted, but it does not establish appropriate behaviour. Thus when punishment is used, it should be used in conjunction with reinforcement for appropriate behaviour. (In fact, punishment should be used as a last resort, after all other methods have failed).

2.3 Shaping

Shaping is used to teach new behaviours and skills – behaviours that are not already part of the child's repertoire.

The process of shaping :

2.3.1 Determine the terminal behaviour or behavioural goal

2.3.2 Determine the successive steps necessary to complete the terminal behaviour.

2.3.3 Identify a "starting point".

2.3.4 Reinforce each step until the terminal behaviour has been learned.

2.4 Token economy

It is the systematic use of a reinforcement schedule of tokens. Children receive tokens for specific appropriate behaviours, which they may exchange for objects or activities that have been identified as reinforcing. After the children have

learned to associate the tokens with the purchase of reinforcers, the tokens become valuable and desirable.

2.5 Contract

Contracting is placing the contingency for reinforcement into a written document. As with any contract, the classroom contract should be the product of reasonable negotiations between the teacher and the student. The exact wording will contain some form of the basic :

a) “ I will do _____ if you do _____ ”

b) “ If I do _____ then _____ ”

Time out

The removal of a child from an apparently reinforcing setting, to a presumably nonreinforcing setting for a specified and limited period of time. E.g. a child is withdrawn from a reinforcing situation by :

- a) placing him or her on the outer perimeter of the activity, where the child can see and hear the activity, but not participate.
- b) The child may also be totally excluded from the activity by placing a screen around him or put into an isolated room, called the ‘time-out room’.

2.6 Modelling

Refers to the observation and learning of new behaviours from others. This technique calls for the use of one person setting a pattern of behaviour which is copied by another. Children frequently try to imitate adults or the peer group. Parents, teachers, friends, famous people are all models.

2.7 Self control

A person is said to show ‘self control’ whenever he/she rises above the immediate pressures of the situation or avoids succumbing to an immediate impulse. Two related aspects of self control that begin to emerge in childhood is,

- a) the ability to resist temptation
- b) to delay gratification.

2.8 Self-management

All students, typical and handicapped, can be taught to monitor and alter their own behaviour. These students must be trained in procedures of self-management - **self-data recording, self-evaluation, self-reinforcement and self-punishment**. Students can also learn to manipulate their own behaviours through **self-instruction**.

2.8.1 Self-recording of data

Here, the student is taught to record the occurrence or nonoccurrence of the target behaviour, e.g. the student is asked to note each time she raises her hand before speaking in class or, conversely, each time she calls out without raising her hand.

2.9.2 Self-instruction

Most of us practise self-instruction by providing ourselves with verbal prompts. We talk to ourselves as we do complex or unfamiliar tasks. Many children use such self-instruction naturally.

2.9.3 Self-reinforcement or self-punishment

In the classrooms, teachers arrange contingencies. They specify what behaviours are expected and the consequences for performing those behaviours. Contingencies are stated in the form of “if.....then.....” statements: “If you complete your compositions, then you will earn one token”. Students may also be allowed to choose behaviours to be modified, so as to encourage them to manage their own behaviour.

CHAPTER 10: LEARNING

Overview

In this chapter, we shall cover

- The basic concept of learning
- The principles of learning
- Types of learning

Key Terms

- Learning
- Formal learning
- Informal learning
- Non-formal learning

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Suggested Input

1. Learning

- An experiential process resulting in a relatively permanent change in knowledge or behaviour that cannot be explained by temporary states, maturation, or innate response tendencies; the change may be deliberate or unintentional, for better or for worse;
- to qualify as learning, this change must also be brought about by experience – by the interaction of a person with his or her environment; changes caused by maturation, such as growing taller and temporary

changes resulting from illness, injury, fatigue, emotional distress or hunger are also excluded from a general definition of learning;

- the above definition of learning has three components:
 - (i) learning reflects a change in the *potentials* for a behaviour; it does not automatically lead to a change in behaviour; We must be sufficiently motivated to translate learning into behaviour, e.g. although you may know the location of the campus cafeteria, you will not be motivated to go unless you are hungry;
 - (ii) behaviour changes caused by learning are not *always* permanent. As a result of new experiences, previously learned behaviour is no longer exhibited, e.g. forgetting the story line of a movie is one instance of the transient aspect of learning;
 - (iii) changes in behaviour can be due to processes other than learning, e.g. our behaviour can change as the result of motivation rather than learning; you have learned to study to prevent failure, and your fear motivated studying behaviour. This behaviour change is temporary: when the motivational state changes again, the behaviour will also change. Therefore, you will quit studying when you no longer fear failing the examination. Stopping studying is another instance where a temporary state rather than learning leads to a change in behaviour.

2. Formal Learning

- refers to a system of education that has been gazetted and arranged systematically in accordance to the age of the school-growing child;
- all the students follow the same curriculum and syllabus whether academic or co-curriculum which is taught by trained individuals;
- aims to develop the cognitive, affective and psychomotor domains of the student; therefore, it encompasses education from the primary to the secondary level;
- evaluation is given emphasis whereby tests and examinations are administered monthly, at the end of the semester or year.

3. Informal Learning

- learning which is acquired through exposure with the environment e.g. the mass-media (radio, television, newspapers), educational visits or tours; interaction with peers etc.;

- informal learning takes place unconsciously and is not normally preplanned.

4. Non-formal Learning

- learning which is acquired through short courses, seminars, lectures, workshops and forums;
- non-formal learning is a planned and systematic educational activity and administered outside of the formal school system;
- evaluation in the form of tests and examination is not given emphasis.

CHAPTER 11: THE LEARNING PROCESS

Overview

In this chapter, we shall cover

- various aspects related with the teaching-learning process

Key Terms

- Readiness
- Motivation
 - *extrinsic motivation*
 - *social motivation*
 - *achievement motivation*
 - *intrinsic motivation*
- Pattern Recognition
 - *Template matching*
 - *Prototype*
 - *Feature Analysis*
- Perception
 - *Gestalt Principles of Perceptual Organisation*
- Memory
 - *Sensory Register*
 - *Short-term Memory*
 - *Long-term Memory*
- Forgetting
- Transfer of Learning
 - *positive versus negative transfer*
 - *specific versus general transfer*

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Suggested Input

1. Readiness

- a set of conditions within both an individual and his or her environment that make a task appropriate to master;
- readiness is a level of preparedness to learn more complex skills, e.g. hopping must be mastered before a child can play hop-scotch.

2. Motivation

- something that is acted on an individual to produce a certain kind of behaviour, which was maintained at a certain level of intensity, and which was directed at a definite goal. Thus motivation arouses, sustains, directs and integrates an individual's behaviour;
- behavioral theories tend to focus on extrinsic motivation (i.e. rewards) while cognitive theories deal with intrinsic motivation (i.e. goals);
- Intrinsically motivating activities provide learners with a broad range of challenge, concrete feedback, and clear-cut criteria for performance;

- there are four categories of motivation:
 - (i) *extrinsic motivation*
students learn because of the consequences: to obtain a reward, or avoid punishment for not doing it;
 - (ii) *social motivation*
students learn in order to please people who are important to them, e.g. their families;
 - (iii) *achievement motivation*
students learn in order to compete against other students: winning makes them feel good;
 - (iv) *intrinsic motivation*
students learn because they are interested in the task or activity itself, and performing it gives them pleasure.

3. **Pattern Recognition**

- a process whereby environmental stimuli are recognized as exemplars of concepts and principles already in memory;
- consists of simply matching the incoming information to the appropriate template in memory (*template matching*), comparing the incoming information with the prototype (*prototype*), and analyzing incoming information for the presence of distinctive features (*feature analysis*) e.g. variations of the letter **A**:

A a A ▲ a

In order for us to recognize all of those figures as representations of the letter A, we would have to have templates in memory to match each one; all of the letters are similar enough to the assumed prototype to be recognized as As; and all stimulus letters would be analysed for defining features and, if found, would be identified as As.

4. **Perception**

- the process of organising and giving meaning to the discrete, meaningless stimuli that initially aroused awareness through our sensory receptors;
- if the receptors do not receive stimulation from the environment or are unable to process the information they receive, no information is transmitted to the brain, and perception does not occur, e.g. people who

are colour blind cannot tell from their perception of colour when a traffic light is red or when it is green; because they cannot sense colour information, they depend on brightness and position cues to determine the colour of the signal;

- we do not perceive everything in our environment; our motives greatly influence our perceptions; similarly, certain stimuli are more likely than others to attract our attention

Gestalt Principles of perceptual organisation

- we organise our perceptual world by sorting stimuli into *figure and background (ground)*;
- for example, while driving have you ever stopped next to a large truck at a traffic light? Suddenly, you feel yourself moving backward. Your foot is on the brake, and you push harder; Nothing happens – the backward motion continues. Unconsciously, you perceived your car as the figure and the larger truck as the ground. Because figures normally move across a background, you perceived yourself, rather than the truck, as the moving object;
- we also organise our perceptions by *grouping* elements; think of how much trouble you would have if you had to deal with every perceptual element independently; the letters you are reading fall into groups we call words;
 - (i) *proximity* – perceptual elements that are close together are seen as a group, e.g. XXX XXX;
 - (ii) *similarity* - items that are alike are grouped together: XXXOOO, perceived as three X's and three O's;
 - (iii) *good continuation and direction* - we perceive continuous, flowing lines more easily than choppy or broken lines;
 - (iv) *inclusiveness* - a smaller figure's identity may be lost within a larger, more complex figure;
 - (v) *closure* – organizing perceptions into whole objects is easier than perceiving separate parts independently.

5. Memory

- learners' ability to 'save' things (mentally) that they have previously learned;
- the storage and retrieval of information. Three levels, based on period of retention, are postulated: ultra-short (*sensory register*), short (*working memory*), and long (*long term memory*);

Sensory Register

- provides temporary storage for incoming information;
- all sensory impressions or information are held and scanned (pre-coding) for a period lasting up to one second, depending on the strength of the stimulus;

Short-term Memory

- consists of whatever is in our immediate consciousness at any given time (*working memory*);
- what we are thinking about in short-term memory lasts about twenty seconds or so, after which it is either permanently lost or stored in long-term memory;
- the key to short-term memory function is *rehearsal*, which refers to data that is processed and then transformed into meaningful information so that it can be encoded into long-term memory;

Long-term Memory

- where we store everything we know – information of which we are not immediately conscious;
- can handle unlimited amounts of information and retain it indefinitely.

6. Forgetting

- does not refer to an abnormal loss of memory occasioned by aging, shock or brain injury; it refers to the idea that new information interferes with remembering old information;
- psychologists have several explanations for why people seem to “forget”:
 - (i) *failure to encode* means that the information sought during retrieval was never learned in the first place (e.g. learners with ineffective learning strategies);
 - (ii) *failure to retrieve* refers to the inability to access previously learned information that is stored in long-term memory; sometimes we stumble on the information at a later time and sometimes we never do retrieve the information at all (e.g. things learned at a rote level or because of insufficient retrieval cues);
 - (iii) *interference* which means that other events or information got in the way of effective retrieval; things were getting “mixed up”;
 - (iv) *decay* where information may weaken over time and perhaps disappear altogether, especially if it is not used on a regular basis;

- (v) *failure to store*: where the information never reached the long-term memory to begin with.

7. Transfer of Learning

- the ability to apply something learned in one situation to another setting; improved performance on one task as a result of something acquired on a previous task;
- how learning one topic influences later learning; may be *positive* (as when learning one topic helps an individual to learn another – knowing how to add and subtract helped him to master long division); or *negative* (as when learning one topic hinders the learning of another – knowing one word processing programme may interfere with the learning of a new, more powerful programme);
- when transfer occurs because the original learning task and the transfer task overlap in content, we have *specific transfer*; when learning in one situation affects learning and performance in a somewhat dissimilar situation, we have *general transfer*;
- behavioural theories discuss transfer in terms of stimulus/response generalisations or interference;
- cognitive theories discuss transfer in terms of restructuring of knowledge and the concepts of schema or mental models;
- social learning theories deal with transfer through modeling or imitation;
- education should foster transfer i.e. the things learned in schools are intended to prepare students for life outside the schools. However, this does not happen nearly as often as educators hope. This is because learning is situated, people have trouble applying the knowledge learned in one setting, and in one group, to another setting, or in another group;

CHAPTER 12: LEARNING STYLES

Overview

In this chapter, we shall cover

- Basic concepts of learning styles
- Types of learning styles
- Implications for teachers

Key Terms

- Learning Styles
 - *Activist*
 - *Reflective*
 - *Theorist*
 - *Pragmatist*

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Suggested Input

1. Learning Styles

- the different ways of learning, each valid for a particular student, to enable the teacher to explore various ways of teaching in order to accommodate the vast array of learner differences.

Activist

- the student takes an active part in the process of learning and thus will not have 'micro-sleeps' when attention wanders;
- the student takes a personal stake in learning and a sense of personal ownership of new knowledge;
- the student is usually a willing partner in the learning process and so the teacher does not have to drag reluctant students through education or training processes;
- active students will only work if the teacher organises a session so that each person can take part in the learning process and individual needs are taken into

account;

Reflective

- the student thinks and reviews new information and knowledge and observations to be fitted into existing knowledge; analyses and deliberates before answering;
- the reflective student is thus able to add more information to his long-term memory and may engage in a meaningless and possibly damaging, process of introspection in which no learning takes place at all.

Theorist

- the student searches for proof in order to make generalization in laws and theory (mathematics, physical sciences, fine arts, religion, philosophy and so on.);

Pragmatist

the student just wants to know if something works; he does not worry about proof.

CHAPTER 13: THEORIES OF LEARNING

Overview

In this chapter, we shall cover

- The various theories of learning

Key Terms

- Behaviourist Theory
 - *Conditioning*
 - *Classical Conditioning: neutral stimulus, unconditioned stimulus, unconditioned response, conditioned response, conditioned stimulus*
 - *Operant Conditioning*
reinforcers – primary, secondary, positive, negative, punishment, extinction
- Cognitive-Developmental Theory
- Constructivist Theory

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<http://tip.psychology.org./bruner.html>

Suggested Input

1. Behaviourist Theory

behaviourists emphasise the role of experience in governing behaviour; **the important processes governing behaviour are learned where both the drives that initiate behaviour and the specific behaviour motivated by those drives are learned through our interaction with the environment;** behaviourists also use the concept of conditioning to explain how learning occurs.

1.1 Conditioning

- the process by which an organism's behaviour becomes associated with some stimulus in the environment, so that when the stimulus is presented, the behaviour occurs;

- behaviourists proposes two kinds of conditioning to account for learning: classical conditioning and operant conditioning;

1.2 **Classical Conditioning (Pavlovian Conditioning)**

- Ivan Pavlov discovered the process of classical conditioning while carrying out his well-known studies of the salivation response of dogs;
- a form of learning that occurs when two stimuli – a neutral stimulus (reaction that is automatically produced when an unconditioned stimulus is presented) and an unconditioned stimulus (event that automatically produces a response without any previous training)– that are “paired” (presented together) become associated with each other;
- the response is either called the unconditioned response (reaction that is automatically produced when an unconditioned stimulus is presented) or the conditioned response (response elicited by a conditioned stimulus that has been paired with an unconditioned stimulus; is similar to the unconditioned response);
- in terms of Pavlov’s study, salivation (the unconditioned response) at first occurred in the presence of food (the unconditioned stimulus), but after the food was paired with the bell, salivation (now the conditioned response) occurred in the presence of the bell (**the conditioned stimulus** – neutral stimulus that acquires the ability to elicit a conditioned response after being paired with an unconditioned stimulus).

1.3 **Operant Conditioning (instrumental conditioning)**

- learning that occurs when the participant must make a response to produce a change in the environment;
- If you respond in a particular way to a particular stimulus and the consequences are pleasant, you are likely to respond the same way the next time you encounter the stimulus;

Reinforcers

- refers to stimuli that makes the behaviour it follows more likely to occur again;

(i) Primary reinforcer

Stimulus that has innate reinforcing properties; for a hungry person, food is a primary reinforcer;

(ii) Secondary reinforcer

Stimulus that acquires reinforcing properties by being associated with a primary reinforcer; money is a good example – by itself, money has no

intrinsic value; children learn that money can be exchanged for primary reinforcers such as toys;

(iii) **Positive reinforcers** is the presentation of a 'pleasant' stimulus (food, water, praise) that are presented after the target response occurs e.g. when a student spontaneously offers help to another student, a teacher may reinforce the student with a compliment;

(iv) **Negative reinforcers** refers to a method of increasing behaviour through the removal of an unpleasant stimulus following a response, e.g. a student with a speech difficulty may not speak in class because the speech difficulty causes other students to laugh. If the teacher explains the inhibiting effect of their laughter and persuades them to stop, the student may speak in class. The removal of the unpleasant stimulus will increase the frequency of the student's response;

Punishment

- the presentation of a stimulus that produces a decrease in responding; may take the form of presentation of a stimulus (*positive punisher*) or removal of a stimulus (*negative punisher*); if a student is scolded for playing in class, that behaviour is likely to occur less often (positive punisher), suspending a basketball player for violating training rules (negative punisher);

Extinction

- removing a pleasant stimulus that previously followed a response thus decreasing the frequency of the response, e.g. a teacher may have been inadvertently rewarding students for calling out by allowing them to speak in the class discussion. However, after realising this, the teacher may ignore calling out and recognise only students who raise their hand. As a result, the calling-out behaviour can be expected to decrease;
- Extinction and negative reinforcers involve removing stimuli to change behaviour. Positive reinforcers and punishment involve introducing stimuli to change behaviour.

2. Cognitive- Developmental Theory

- focuses on changes that occur in how people think as they progress from infancy through childhood and adolescence and ultimately into adulthood;
- Jean Piaget viewed children as active learners who behave like 'little scientists' who develop their own 'theories' about how the world works and set out to confirm these hunches. Such a view contrasts with the view of

- behaviourists, who see the child as a passive learner who merely react to environmental stimuli;
- Piaget's main concern was to discover how people acquire knowledge, which is often called the 'epistemological question';
 - Piaget proposes that throughout the lifespan, people go through a sequence of **four** qualitatively different stages of thinking:
 - (i) Infants acquire knowledge based on the sensory experiences of sight, hearing, touch, taste, and smell;
 - (ii) Preschoolers progress to the stage of acquiring knowledge of the world through their perceptions of their own experiences in the world;
 - (iii) Older children begin to apply the rules of logic to understand how the world works;
 - (iv) Adolescents and adults progress to the stage where they can apply logic to hypothetical as well as to real situations.
 - Piaget believed that people are constantly trying to make sense of the world by comparing their internal understanding of how the world works with external environment;
 - Learning occurs when people, even young students, periodically alter their internal understanding of the world as they encounter external evidence that conflicts with their previous understanding;
 - Given Piaget's theory, therefore, an important role of the teacher is to provide students with experiences that will help them develop a more accurate understanding of how the world works.

3. Constructivist Theory

- According to constructivists, people construct knowledge on the basis of their experiences; knowledge may be received, accumulated, and stored, but the strongest or deepest ways of knowing come from an individual's active construction of meaning through his or her interactions with physical and social environments;
- People need opportunities to explore and experiment, just as the child continually dropping the toy is actually experimenting with the predictability of gravity;
- Constructivist teachers want to enable their students to test new ideas, elaborate on information, solve the puzzles of daily life, create new responses to situations – in short, to construct the knowledge they need to function in their world;
- The goal of constructivist teachers are for learning to take place in rich and

meaningful contexts that promote thoughtfulness, reflection, and critical thinking, and incorporate authentic activities and assessments into instruction;

- To achieve this, these teachers choose particular kinds of classroom activities that help students learn to negotiate among themselves for meaning, e.g. a teacher may use projects of depth, complexity, and sustained duration to enhance motivation and critical thinking.

CHAPTER 14: IMPLICATIONS OF THE LEARNING PROCESS AND ITS THEORIES IN THE CLASSROOM*

In this chapter, we shall cover

- Classroom management
- Methods of teaching
- Lesson Planning

* Kindly refer to the PEDAGOGY COMPONENT

CHAPTER 15: THINKING SKILLS

Overview

In this chapter, we shall cover

- Basic concept of thinking skills
- Importance of thinking skills
- Left-brain and right-brain learning
- Types of intelligences
- Importance of mastering thinking skills

Key Terms

Thinking skills

- *cognitive resources*

- *cognitive strategies*

- Left-brain and right-brain learning
- Intelligence
 - *Gardner's Theory of Multiple Intelligence*
- Epistemology (Knowledge)

Types of knowledge

- *domain-specific knowledge*

- *general knowledge*

- *declarative knowledge*

- *procedural knowledge*

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Suggested Input

1. Thinking skills

- cognitive strategies that help individuals efficiently and accurately process information;
- focuses on **two** broad groups, namely, cognitive resources and cognitive strategies:

Cognitive resources

- include concepts, knowledge and 'tricks of the trade' as well as verbal tools necessary to name and understand the things we observe, experience and feel.

Cognitive strategies

- refer to higher-level general control processes concerned with the selection and co-ordination of specific cognitive resources for particular purposes;
- the explicit emphasis on teaching thinking is because students in general seem to fare poorly on achievement measure; hence thinking skills as a vehicle may help to reverse the pattern to a certain extent;

2. Left brain, Right brain Learning (hemispheric functioning)

- anatomically, the cerebral cortex is bilaterally symmetrical, i.e. one hemisphere appears to be physically the same as the other; control over the body's movement and sensation is divided evenly but in a crossed fashion between the two hemispheres; however the two hemispheres are not functionally symmetrical;

Left hemisphere (left brain)

- concerned with verbal, logical, analytical, rational and objective processes;

Right hemisphere (right brain)

- concerned with non-verbal, synthetic, intuitive and subjective processes.

3. Intelligence

- an assumption concerning the general ability of a person which can be seen as the quality of the person's thinking in terms of abstract thinking, learning and the ability to solve problems;
- the ability to excel at a variety of tasks, especially those related to academic success

3.1 Gardner's Theory of Multiple Intelligence

- In Gardner's theory of intelligence, a person possesses eight separate

abilities:

logical-mathematical, verbal, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, and naturalist;

- (i) *Logical-mathematical*: sensitivity to, and capacity to discern, logical or numerical patterns; ability to handle long chains of reasoning;
- (ii) *Linguistic*: sensitivity to the sounds, rhythms, and meanings of words; sensitivity to the different functions of language;
- (iii) *Musical*: abilities to produce and appreciate rhythm, pitch, and timbre; appreciation of the forms of musical expressiveness;
- (iv) *Spatial*: capacities to perceive the visual-spatial world accurately and to perform transformations on one's initial perceptions;
- (v) *Bodily-kinesthetic*: abilities to control one's body movements and to handle objects skillfully;
- (vi) *Interpersonal*: capacities to discern and respond appropriately to the moods, temperaments, motivators, and desires of other people;
- (vii) *Intrapersonal*: access to one's own feelings and the ability to discriminate among them and draw on them to guide behavior; knowledge of one's own strengths, weaknesses, desires and intelligence;
- (viii) *Naturalist*: abilities to recognize plants and animals, to make distinctions in the natural world, to understand systems and define categories.

5. Epistemology (Knowledge)

- the branch of philosophy concerned with the origin, nature, and limits of knowledge;

5.1 Types of knowledge

Cognitive psychologists have classified knowledge in a variety of ways:

- *domain-specific knowledge*, or knowledge of facts, concepts, and principles pertaining to a specific area or topic, e.g. how an engine works;
- *general knowledge*, which is knowledge useful for learning across a variety of school tasks, e.g. how to use a dictionary;
- *declarative knowledge* is another name for verbal information; the facts, concepts, principles, and theories that we learn from lectures, or studying textbooks, (where we store the "gist" of the message more frequently than we store the words themselves); knowledge that relates to the nature of how things are;

- procedural knowledge is know-how: we learn how to do things; knowledge of the action sequences involved in booting a floppy disk, tying your shoes, writing an outline, etc;

CHAPTER 16: THINKING PROCESS

Overview

In this chapter, we shall cover the

- Various steps of thinking

Key Terms

- Compare and contrast
 - Inference
 - Generalisations
 - Decision-making
 - Problem-solving
- **Well-defined problems**
- *Ill-defined problems*
Problem-solving stages

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<http://www.nwrel.org/scpd/sirs/6/cu11.html>

Suggested Input

1. Compare and contrast

- the ability to identify similarities and differences between two or more objects, events, organisms, ideas, systems or institutions;
- a prerequisite for more complex skills such as classifying, defining and making analogies;
- the teacher is encouraged to use graphic organisers which requires students to answer the following questions:
 - (i) what needs to be compared and contrasted?
 - (ii) what are their similarities ?
 - (iii) what are their differences?

- (iv) what are the patterns of similarities and differences?
- (v) what conclusions can you draw?

2. Inferences

- the act or process of deriving logical conclusions from premises known or assumed to be true;
- the act of reasoning from factual knowledge or evidence;
- an inference is literally that which is brought in; and hence, a deduction or induction from premises, - something which follows as certainly or probably true; a conclusion is stronger than an inference; it shuts us up to the result, and terminates inquiry. We infer what is particular or probable; we conclude what is certain;
- in a chain of reasoning, we have many inferences, which lead to the ultimate conclusion;

3. Generalisations

- exploring ways in which objects, events, problems and experiences can be inter-related considering whether:
 - (i) the problem-solving approach applies to other context;
 - (ii) there are any lessons that can be learned from the activities;
 - (iii) any rules and principles can be derived from the activity;
 - (iv) the rules and principles derived from the task can be applied to other problems/tasks ;
- making a general statement about a certain object, event , problem or experience based on evidence obtained from data collected;
- consideration should be given to the following aspects:
 - (i) what is the generalization to be made?
 - (ii) what sample is needed to support the generalization?
 - (iii) is the sample size big enough/
 - (iv) is the generalization supported by a good sample?
 - (v) if not, what additional sample is required

4. Decision making

- the use of thinking processes to choose one or several options after consideration of facts or ideas, possible alternatives and their advantages and disadvantages, probable consequences, and personal values;
- decision making may include six steps:
 - (i) define the goal or problem (e.g. What do you have to decide?);
 - (ii) identify alternatives (What things could you do?);
 - (iii) analyse the alternatives(What might happen if you decide to do this?);

- (v) rank the alternatives (Which of these choices do you think is the most desirable?, Why?, Next desirable?, Why?);
- (v) judge the highest-ranked alternatives (How good is the decision?) and
- (vi) choose the best alternative (Remembering all the things we have said, what do you think is the best choice? Why?)
- decision steps can be taught directly and practiced in class discussions, with questions being asked to guide students through the steps;
- students can be encouraged to use decision-making steps through informal as well as academic interactions;

5. Problem Solving

- an activity that brings both domain-specific knowledge and cognitive strategies to bear on a situation in which the goal is specified, but the means for getting there is not; problem-solving involves using all available resources to reach that goal;
- problem-solving skills can be learned with the help of explicit instruction in the form of 'coaching' as students work on problems, e.g. as students are working in small groups to solve problems, the teacher can ask questions such as, "What (exactly) are you doing?", "Why are you doing it?" "How does it help you?";
- virtually all problems can be considered to be either *well-defined* or *ill-defined* (or perhaps somewhere in between);

Well-defined problems

- one in which the goal is clearly stated, all information needed to solve the problem is present, and only one correct answer exists;

Ill-defined problems

- one in which the desired goal is unclear, information needed to solve the problem is missing, or several possible solutions to the problem exist.

5.1 Problem- Solving Stages

Polya (1957) outlined the following four steps:

- (i) Understanding the Problem
 - defining the problem in such a way that a solution is possible;
 - background or domain-specific knowledge is essential; if this knowledge is missing, the teacher must supply learning activities that provide it;
- (ii) Devising a Plan
 - once the problem is framed and understood, a plan needs to be prepared;

- some strategies to expand the search for a viable plan are as follows:
restate the problem; reason by analogy or find a related problem;
break into subparts; work backward from proposed solution;
- (iii) Implementing the Plan
 - involves selecting and executing the most promising idea;
 - students should be encouraged to gather data that will help them evaluate whether or not the plan was effective;
- (iv) Evaluating the Results
 - it encourages students to look back not only on the immediate results but also on the process in general;
 - teachers should ask questions such as, ' Did our plan achieve its intended goal?' ' Should we have altered any component?' ' What did we learn from the process?'

CHAPTER 17: TYPES OF THINKING

Overview

In this chapter, we shall cover the

- Various types of thinking

Key Terms

- **Convergent Thinking**
- **Divergent Thinking**
- **Reflective Thinking**
- **Lateral Thinking**
- **Vertical Thinking**
- **Critical Thinking**
 - **verbal reasoning**
 - **argument analysis**
 - **hypothesis testing**
 - **decision making**
- **Creative Thinking**

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Suggested Input

1. Convergent Thinking

- the ability to identify only one answer; narrowing possibilities to a single answer; finding the right answer to a well-defined problem;
- For example, consider this question, 'Why do people *commonly* read a newspaper?' This is a convergent question because there are only a few reasons people commonly read a newspaper – for news, ads, opinions, or entertainment. Thought converges on these few answers, ruling out alternatives;

2. Divergent Thinking

- the ability to propose many different ideas or alternative solutions to an open-ended problem, e.g. 'What are some *possible* uses of a newspaper, other than reading it?'; this question is open-ended because there are many possible uses – newspaper is used to pack material, catch drops, start fires, clean windows, wrap fish, insulate against the cold, and to generate cash as a recycleable, to mention just a few uses;

3. Reflective Thinking

- the ability to link ideas to previous/current and predicted experiences, question and self-question, assess self and the situation;
- mulling over experiences, deliberating over possible alternative actions and setting agendas in the light of expected events and actions;
- sometimes leads to creative thinking and vice versa; linked to critical thinking because questioning and assessing involves organizing, reasoning, hypothesizing and predicting;

4. Lateral Thinking

- the ability to generate divergent ideas from the various solutions of a problem;
- is likened to ploughing a piece of land horizontally to cover a wide area;
- trains the mind towards creative thinking as new ideas are generated.

5. Vertical Thinking

- the ability to generate one idea or solution to a problem;
- is likened to digging a hole vertically in order to attain depth;

6. Critical Thinking

- the ability to evaluate conclusions by logically and systematically examining the problem, the evidence, and the solution;
- examples of critical thinking skills include:
 - (i) defining and clarifying the problem
 - identify central issues;
 - compare similarities and differences;
 - determine which information is relevant;
 - formulate appropriate questions
 - (ii) judging information related to the problem
 - distinguish among fact, opinion, and reasoned judgement;
 - check consistency;
 - identify unstated assumptions;
 - recognize stereotypes and clichés;
 - recognize bias, emotional factors, propangada, and semantic slanting;
 - recognize different value systems and ideologists
 - (iii) solving problems/ drawing conclusions
 - recognize the adequacy of data
 - predict probable consequences.
- critical thinking may take a variety of forms, depending on the context:
 - (i) *verbal reasoning*: understanding and evaluating the persuasive techniques to be found in oral and written language;
 - (ii) *argument analysis*: discriminating between reasons that do and do not support a particular conclusion;
 - (iii) *hypothesis testing*: evaluating the value of data and research results in terms of the methods used to obtain them and their potential relevance to particular conclusions;
 - (iv) *decision making*: identifying several alternatives and selecting the best alternative.

7. ***Creative Thinking***

- an imaginative, original thinking or problem-solving;
- the ability to generate new ideas, find and consider alternatives, explore available options and challenge options