# Table of Contents

**Lesson 01**

## INTRODUCTION

Do teachers make a difference in student's learning? What characterizes good teaching? Only when you are aware of the challenges and possibilities of teaching and learning then you can appreciate the contributions of educational psychology. How can principles identified by educational psychologists benefit the teachers, therapists, parents, and others who are interested in teaching and learning? What exactly is the content of educational psychology, and where does this information come from? Educational psychology will probably answer all these questions.

**The Role of Educational Psychology:**

For as long as educational psychology has existed, about 90 years, there have been debates about what it really is? Some people believe educational psychology is simply knowledge gained from psychology and applied to the activities of the classroom. Others believe it involves applying the methods of psychology to study classroom and school life.

The view generally accepted today is that educational psychology is a distinct discipline with its own theories, research methods, problems and techniques, "educational psychology is distinct from other branches of psychology because it has the understanding and improvement of education as its primary goal". Both in the past and today, educational psychologists study learning and teaching and at the same time, strive to improve educational practice. But are the findings of educational psychologists really that helpful for teachers? After all most teaching is just common sense, isn't it? Lets take a few minutes to examine these questions.

**Is teaching just a Common Sense?**

In many cases, the principles set forth by educational psychologists, after spending much thought, time and money sound pathetically obvious. People are tempted to say, and usually do say, "Everyone knows that!" consider these examples:

**Taking turns:** What method should a teacher use in selecting students to participate in a primary grade reading class?

**Common sense answer:** Teachers should call on students randomly so that everyone should have to follow the lesson carefully. If a teacher were to use the same order every time, the students would know when there turn was coming up.

**Answer based on research:** Years ago, research by Odgan, Brophy, and Evertson (1977) found that the answer to this question is not so simple. In first-grade reading classes, for example, going around the circle in order and giving each child a chance to read led to better overall achievement than calling on students randomly. The critical factor in going around circle may be that each child gets a chance to participate. Without some system for calling on everyone, may students can be overlooked or skipped. Research suggests there are better alternatives for teaching reading than going around the circle, but teachers should make sure that everyone has the chance for practice and feedback whatever approach is used.

**Helping students:** When should teachers provide help for lower achieving students as they do class-work?

**Common sense answer:** Teachers should offer help often. After all, these lower achieving students may not know when they need help or may be too embarrassed to ask for help.

**Answer based on research:** Sandra Graham (1996) found that when teachers provide help before students ask, the students and others watching are more likely to conclude that the helped student does not have the ability to succeed. The student is more likely to attribute failures to lack of ability instead of lack of effort.

**Skipping grades:** Should a school encourage exceptionally bright students to skip grades or to enter college early?
**Common sense answer:** No! Very intelligent students who are a year or two younger than their classmates are likely to be social misfits. They are neither physically nor emotionally ready for dealing with older students and would be miserable in the social situations that are so important in school, especially in the later grades.
**Answer based on research:** Maybe. According to Samuel Kirk and his colleagues (1993), "from early admissions to school to early admissions to college, research studies invariably report that children who have been accelerated have adjusted as well as or better than have children of similar ability who have not been accelerated". Whether acceleration is the best solution for a student depends on many specific individual characteristics, including the intelligence and maturity of the students, and on the other available options. For some students, moving quickly through the material and working in advanced courses with older students is a very good idea.

So we have seen from the preceding examples that generally the things which seem correct and sensible are exactly the opposite from the common answers.

**What is Educational Psychology?**
Educational psychology is one of the many branches of psychology dealing mainly with the problems, processes and products of the education. It is an attempt to apply the knowledge of psychology in the field of education. It may be defined as that branch of psychology which studies the behavior of the learner his educational needs and his environment. Various psychologists and scholars have defined educational psychology.

Let us analyze a few important definitions.
According to **Skinner** (1958):
Educational psychology is that branch of psychology which deals with teaching and learning.
**Crow and Crow** (1973) defined educational psychology as:
Educational psychology describes and explains the learning experiences of an individual from birth through old age.
Another psychologist named **Peel** (1956) says:
Educational psychology is the science of education.
Education in its applied form is centered around the process of teaching and learning.

**Educational Psychology as a Science of Education:**
With the help of minimum input in terns of energy and time science helps us to drive maximum output in terms of the quality and quantity. The same educational psychology surely does. It helps in realizing the objectives of education in a better way. Educational psychology helps in planning the process of teaching and learning by adopting the scientific principle of minimum input for maximum output. As a result with the help of educational psychology a teacher can teach effectively but making minimum use of his energy in terms of time and labour; similarly the students can learn effectively by spending less of their time and effort.

Educational psychology produces the result of education. It equips the teacher by supplying the essential scientific skills, technological expertise and advice in molding and shaping the behavior of his students for the desirable development of their personality, in the same way as the persons connected with the actual construction of a bridge are helped by an engineer or mechanic equipped with the essential civil, mechanical or electrical technology. Educational psychology thus plays the same role as other sciences and technology in helping the teachers and other persons connected with the building of future of the youngsters in their charge. Thus it is justified that educational psychology is the science and technology of education.

**Nature of Educational Psychology:**

Educational psychology is an offshoot and a part and parcel of psychology, so its nature can not be different from the main subject. The following points further confirm the nature of educational psychology as scientific.

1. Educational psychology possesses a well-organized systematic body of facts which is supported by the psychological laws and principles.
2. It is constantly in the search of the truth, which is studying the behavior of the learner in relation to his educational environment. The results of any study in educational psychology can be challenged and are modified or altered in terms of the latest explanations and findings.
3. Educational psychology does not accept hearsay and does not take anything for granted. It emphasized that essentially there is some definite cause linked with a behavior. And the causes of this behavior are not related to super natural phenomenon.
4. Educational psychology is mostly concerned with the "what" and "why" of happenings in the present instead of caring for the past. Therefore, in its study it focuses attention on problems like the present behavior of the learner, the causes of such behavior, and the repercussion if it were to continue unchanged.
5. The generalizations arrived at conclusions reach through the study of educational psychology are sufficiently reliable and thus like the sciences these can be used for predictions of behavior in similar situations. R.B.Cattell the modern psychologist believed so much in the predictable quality of these studies that he persisted in defining personality as well attribute which permits the prediction of what a person will do in a given situation.

This discussion shows that educational psychology is sufficiently scientific in fact it is an applied behavioral science, which deals with the behavior of learner in the educational environment. Since the learner's behavior is dynamic and unpredictable and the methods of its study are also not absolute and objective, educational psychology can not claim the status of a developed positive science like other natural or applied sciences. Although we accept its nature as quiet scientific yet we can not term it as a developed positive science and have to satisfy ourselves with saying that it is a developing positive science of the learner's behavior.

**Scope of Educational Psychology:**

Educational psychology is a science of education which mainly deals with the problems of teaching and learning and helps the teacher in his task of modifying the learner's behavior and bringing about all-round development of his personality. Therefore, while in psychology the scope of study and the field of operation are extended to cover the behavior of all living organisms related to all their life activities, while in educational psychology the scope of such behavioral study has to be limited within the confines of the teaching-learning process, i.e. studying the behavior of the earners in relation to their educational environment, specifically for the satisfaction of their educational needs and the all-round development of their personality. Specifically, thus, the subject matter of educational psychology must be centered around the process of teaching and learning for enabling the teacher and learners to do their jobs as satisfactorily as possible.

The following questions should be answered by an educational psychologist today:

1. How are children's abilities, knowledge, and effective characteristics related to objectives of education?
2. How does knowledge of learning process and theories contribute to more efficient learning and teaching?
3. How do characteristics of the learner effect his readiness to learn and efficiency of learning?
4. How do characteristics of the teacher affect pupil learning?
5. How do the behaviors of the teacher and the student affect efficiency of learning?

New horizons in educational psychology, are thus inviting the attention of the educationists and psychologists.

Educational psychology contributes a lot to the area of teaching and learning as well as a behavioral science applied in the class-room situation. Its main contribution lies in the understanding of the pupils as well as developing systematic programs, according to the potentials and needs of the pupils and the community.
Psychology of education helps the teacher to probe into and develop skills for effective functioning. The teacher has to function as an evaluator for measuring the outcome of his teaching. Thus, the various roles and functions of a teacher are facilitated by his knowledge and application of educational psychology. In short, educational psychology provides a frame-work for looking at the learner, the learning process and the learning situation together. Teaching is thus based upon mastery of three areas:

a) knowledge and concept
b) teaching skills and
c) decision-making skills

the knowledge of educational psychology helps a teacher to be more aware of class room behavior, to interpret the significance of such behavior and to plan purposeful strategy for bringing the desired changes in the pupil's behavior.
Successful teachers hold realistic attitude towards students. Psychology of education orients a teacher to form the strategies as well as provides the skill to reach them.

**New Horizons in Educational Psychology:**
Recently the psychological approach to the class-room problems has been considered superior to other approaches. Particularly the behavioristic model has been recognized and recommended today. Today the experiments are being conducted in the area of group dynamics for explaining certain complex behavior patterns leading to indiscipline and unrest among students. Moreover, the social and emotional problems in the class-room are receiving attention of the psychologists.
The teacher is not only a giver of information, he is an explorer and experimenter applying his knowledge of psychology in practical field of learning and teaching.
New experimentations are being carried on educational technology as well. This includes the technology of teaching as well as programmed instruction.
It is a systematic application of scientific knowledge about teaching, learning and conditions of learning to improve the efficiency of teaching and training.
Emphasis is being laid on the role of teachers and analysis of teaching for making a realistic approach to education.
In the area of educational psychology an integrated approach is being attempted by synthesizing the teaching learning process in the perspective of teacher's function. This approach has gone a long way in making educational psychology more meaningful and relevant to a practicing teacher. Behavioristic and applied psychology is gaining more grounds, while simple pedagogy with its theories is losing ground.

**Applications of Educational Psychology**
Professional educational psychologists (EPs) draw upon theory and research from other disciplines in order to benefit individual children, their families, and educational institutions, particularly schools through the following activities.

An educational psychologist may be asked to advise a parent on how to deal with a pre0school child with major temper tantrums, to assess a young child with profound and multiple disabilities, to advise teachers on the nature of a 7-year-old's reading difficulties, to advise teachers and parents on an adolescent's problematic behavior, to undertake play therapy with an 8-year-old who has been sexually and physically abused, or to give an adolescent counseling or psychotherapy.

In each case there is an assessment to identify the nature of the problem, followed by an intervention appropriate to this analysis. The assessment may include the use of standardized tests of attainment (such as reading and spelling); interviews; observation of the child in class, or with parents or friends; including play and structured pictures and tasks where the child arranges the materials to represent their own views of family, or other social arrangements. The interventions (planned procedures) may be equally wide- ranging. In some cases the EP will try to help adults to understand the nature of the problem. In other cases, more direct advice may be given on how to handle disturbing aspects of a child's behavior. In other instances the EP advise or produce a specific programme of work, counseling, or behaviour change, which they might implement directly, or they may advise on and monitor the practices of teachers and parents.
Theories of counseling or psychotherapeutic intervention may help an adolescent with significant emotional problems. EPs normally work collaboratively with teachers and parents, and with medical and other colleagues. They play a major role in providing advice to local education authorities or school districts.
The Ep may provide a consultancy service to the teacher or school. In some cases this service may be sought direct, for example when a new principal wishes to review a previous assessment or the school's current behaviour policy. Research has indicated how schools can reduce bullying, improve pupil performance by rearranging classrooms, and improve the performance of children with special educational needs.

Educational psychology provides basis for the initial education of teachers, particularly in management of learning and behaviour, and also on curriculum design, with special attention given to the needs of individual children. Increasingly educational psychology is also contributing to the student teachers' understanding of the school as a system and the importance of this wider perspective for optimizing their performance; to their professional development by helping them analyses their own practice, belief and attitudes and once they begin the practice of teaching, to their continuing professional development based on experience in school particularly in areas such as special needs and disability. The impact of information technology and the increasing development of inclusive education provide particular challenges.

## Prominent Pioneers in Educational Psychology

### Joseph Mayer Rice

He is one of those who set the stage for Thorndike. He was the great muckraker and classroom observer. He is considered as the father of research on teaching.

### Edward Lee Thorndike

E.L.Thorndike, an American pioneer in comparative psychology, was born in Lowell, Massachusetts sin 1874 to the family of a Metyhodist minister. He became interested in the field of psychology after reading William James.
He was awarded the doctorate for his classic thesis "Animal Intelligence" which was an experimental study of the associative processes in animals. He became an instructor of psychology at Teachers College at Columbia University and there he studied human learning, education, and mental testing.
Thorndike's pioneer investigations in the fields of human and animal learning are among the most influential in the history of psychology. In 1912 he was recognized for his accomplishments and elected president of the American Psychological Association.
He introduced the concept of reinforcement. His work is often called connectionism because of the idea that bonds between stimulus and response take the form of neural connections. According to him learning involves the "stamping in" of connections, and forgetting involves "stamping out" connections.

He gave the "Law of Exercise" which means connections become strengthened with practice, and weaken when practice is discontinued. He said that intelligence is a function of the number of connections made.
He was also among the first to apply psychological principles in the area of teaching. Hull accepted Thorndike's view that connections were formed between stimuli and response rather than between reward and response.
Psychology enlarges and refines the aim of education. Psychology contributes to understanding of the means of education. First, because the intellects and characters of anyone's parents, teachers and friends are very important means of educating him. Secondly, because the influence of any other means, such as books, maps or apparatus can not be usefully studied apart from the human nature which they are to act upon.
Thorndike's views resulted in the major shift in psychology. His teaching experience in schools was not a happy one. Instead of practicing the practice in school, he tried to open an educational laboratory. It was different from Dewey's view, who saw the school as the laboratory. Thorndike wrote 50 books and 400 articles. He wrote Educational Psychology textbooks. He gave us the first standardized achievement test and developed intelligence tests and compiled dictionaries as well.
Thorndike believed that only empirical work should guide education. In his book "Introduction to Teaching" he wrote that psychological science is to teaching, as botany is to farming, mechanics is to architecture, and physiology and pathology are to the physician. Thorndike wrote that "Man is free only in a world whose every event he can understand and foresee… We are captains of our souls only in so far as… we can understand and foresee every response which we will make to every situation:.
According to him psychology does not need to go into the classroom, it can drive its laws from the laboratory and hand them down to the teachers. He promoted the belief that only science would save education. He believed that quantitative experiments should be preferred over qualitative, clinical or naturalistic observation.

**Criticism on Thorndike:**

Thorndike first failed to distinguish between the goals of and the methods used in the physical and the social sciences. To Thorndike people were as easy to study as stones and toads. Secondly, Thorndike did not pay enough attention to the social and historical contexts in which people lived and in which schools operated. Third, Thorndike had a blind faith that all of the achievements of science were desirable. He seemed to believe this even after Hiroshima and Nazi extermination camps, the event which causes many people to question their faith in science. Finally, Thorndike overlooked the aesthetic dimension of science. The art of educational psychology surfaces occasionally, as it does in every other branch of science.

**Lewis Madison Terman**

Lewis Terman was known for his research on intelligence, and in particular on the gifted. He translated the Binet test of intelligence into English, set new age norms and standardized the scores. His version came to be called the Stanford-Binet test.
Lewis Terman grew up in rural Indiana, where he was the 12th of 14 children, from a prosperous farming family. Terman received a BS from a local teachers' college, MA from Indiana University, and his Ph.D. from Clark University in Massachusetts. His dissertation was n comparing mental and physical abilities of children from different ability groups. Terman worked as a high school principal and then as a professor at teachers' college. In 1910, Stanford offered him a job in the Department of Education. Terman later transferred to the psychology department which he chaired for 20 years.

He wrote the book "The Measurement of Intelligence". Working with other psychologists during World War I, Terman was largely responsible for the first notable group intelligence tests, the Army Alpha and the Army Beta. Terman also published the Terman Group Test of Mental Ability in 1920, and he co-authored the Stanford Achievement Test, which was revised many times and continued to be widely used in the 1980's.

Terman defined intelligence as "the ability to carry on abstract thinking" and used the label IQ or Intelligence Quotient.
Terman's studies undoubtedly are still the most recognized and frequently quoted research on the gifted children. His last progress report on this continuing study was The Gifted Child Grows Up (1947).
Among Terman's most interesting findings from his study of the development of gifted children were that they tended to be healthier and more stable emotionally than the average children. He said that gifted children excelled in measures of academic achievement. He found that gifted children did not fit the existing stereotypes often associated with them: they were not weak and sickly social misfits, but in fact were generally taller, in better health, better developed physically, and better adapted socially than other children. He was the psychologist who developed some of the earliest and most successful measures of individual differences. Terman believed that mental abilities were primarily a product of heredity.
As a result of his research with the gifted, Terman devoted the latter part of his career to assessing non-intellectual personality traits. He also produced the first questionnaire to measure masculinity and faminity. The test reflected the gender norms of the 1930's. he emphasized to educate the girls and boys so that they would confirm to the existing gender norms. Terman's contributions to the development of testing and the study of the intellectually gifted ensure his position as one of the pioneers of American psychology. He believed that IQ was inherited and was the strongest predictor of one's ultimate success in life.

**Leona Tyler**
She was born on May 10, 1906 in Wisconsin. Tyler's mother's principles provided the basic foundation for Tyler's spirituality and moral principles. Tyler skipped several grades and graduated high school at the age of fifteen and college at the age of nineteen. She was most enthusiastic about chemistry, but she lacked the equipment for the advanced courses in chemistry, then she obtained her B.S. in English literature. After graduating she taught English and other subjects in junior high schools.
In 1947 she wrote The Psychology of Human Differences. She found that her teaching, writing and counseling all interacted to stimulate reevaluation and integration of ideas about human nature. Tyler conducted a longitudinal study of first graders that "stimulated ideas about theory and research related to interests and general development". She proposed that "individuality is based on the choices people make and the cognitive structures people use to organize their experiences". This changed the direction of the field from psychometrics to developmental and learning processes. One of her major contributions is that she wrote the primary textbook for graduate students in counseling psychology.

**John Dewey**
John Dewey was an American philosopher and educator whose writings and teachings have profound influences on education in the United States. He founded and directed a laboratory school at the University of Chicago. His first major work on education is The School and Society (1899). His interest in educational theory continued during his later work at Teachers College in Columbia. This lead to the publication of "How We Think", an application of his theory of knowledge to education, and Democracy and Education is perhaps his most important work in the field.
Dewey was also an educational reformer and a pioneer in the field of educational psychology. In education he stressed on learning by doing, as opposed to authoritarian teaching methods and rote learning. In 1886 he wrote the first American psychology textbook, titled Psychology.

**Hermann Ebbinghaus**
The German psychologist, Hermann Ebbinghaus developed techniques for the experimental study of memory and forgetting. Before Ebbinghaus, these higher mental processes had never been

scientifically studied, the importance of this work for the practical world of education was immediately recognized.

**Granville Stanley Hall**
He was an American psychologist and an educator. Hall was a child psychologist whose theories of child psychology strongly influenced the educational psychology. He was a pioneer in developing psychology in United States. His wide ranging and prolific writings reveal a central theme best characterized as genetic psychology or evolutionism. In 1878 under the guidance of his friend William James, he received from Harvard the first doctorate in psychology ever given in the United States.
From 1882 -1888 he taught psychology at Johns Hopkins University. There, Hall objected vehemently to the emphasis on teaching traditional subjects e.g. Latin, mathematics, science and history, in high school, arguing instead that high school should focus more on the education of adolescents than on preparing students for college.

He set about building up the first American laboratory for psychology. In 1887 he founded and edited the American Journal of Psychology, the first journal of its kind in the United States. In 1892 about fifteen psychologists drew up plan for the American Psychological Association. Hall was its first president. He wrote many articles and dozens of books. Among his important works are Adolescence (1904), and Founders of Modern Psychology (1912).

Hall was a significant figure in the early period of American psychology. He is remembered primarily as an organizer, teacher and editor and as the president of Clark University. He founded North America's first formally accepted university psychology laboratory.

He gave the psychological concept of adolescence. He pioneered the empirical study of individual religious experience by assembling data on the religious experiences of children, and in 1904 he founded The American Journal of Religious Psychology and Education. He helped to establish a scientific base for experimental psychology.

Darwin's theory of evolution was an influence on Hall. This promoted him to undertake a scientific examination of child development in order to learn about the inheritance of behavior.

Hall coined the phrase "Storm and Stress" with reference to adolescence, taken from the German Sturm and Drang-movement. Its three key aspects are: conflict with parents, mood disruptions, and risky behavior. Hall's major books were Adolescence, and Aspects of Child Life and Education.

**William James**
In the late 1890's William James of Harvard University examined the relationship between psychology and teaching.

**James McKeen Cattell**
The American psychologist and editor James Cattell was a pioneer in American psychology, who influenced the profession to use objective methods of study and to apply psychology to practical aspects of life. He was born in 1860 in Easton, Pennsylvania. He was educated by a private tutor in his home. Cattel's father was a professor of ancient languages, later he became the president of the college. Cattell joined college officially when he was 20 years old and got his undergraduate degree.
Cattell held the first professorship in psychology in 1888 at the University of Pennsylvania. He made his greatest contributions to the field of psychology when he was professor at Columbia University. Thorndike was his student at Columbia University.
He researched reading and perception, psychophysics, individual differences and individual's reaction times to various stimuli. Moreover, Cattell said that scientific findings should be utilized in practical

ways. He revolutionized some educational practices such as methods of teaching reading and spelling. He was also one of the founders of the American Psychological Association and of several other scientific societies. He launched and published several scientific journals including Psychological Review, Science, Scientific Monthly, School and Society and The American Naturalist. He also prepared and published the first editions of American Men of Science and Leaders in Education.

He studied reaction times of two subjects under different conditions (e.g. attention, practice, fatigue). Cattell also devised his own tests to measure mental abilities of his students. They include:

1. Pressure causing pain
2. Sensation areas (minimum distance between two points on the skin where the person senses two points)
3. Rate of movement
4. Least noticeable difference in weight
5. Reaction time for sound
6. Number of letters repeated on one hearing etc.

**Lesson 02**

## METHODS OF EDUCATIONAL PSYCHOLOGY

**Introduction**

Educational Psychology is the scientific study of the behavior of the learner in relation to his educational environment. Behavior in all its aspects can be studied scientifically through a single technique or approach known as observation. This leads us to the simple conclusion that observation may be regarded as the only method or technique for concluding studies of behavior. This single technique or approach however gives rise to several methods or approaches, depending upon the condition in which observations have to be recorded, the procedure adopted and tools used. We will discus this aspect now.

Observation or one's own behavior by looking within or looking inward may be adopted as one of the approaches. Such an approach is known as the method of introspection.

Sometimes behavioral events are observed and recorded under natural conditions by some person or persons. Such observational approach is termed as naturalistic observation.

**Introspection method**

This is the oldest known method for the study of behavior. In the early days of the evolution of Psychology, behavior was studied only through a kind of self-examination of inner observation called introspection.

The word 'introspection' is made up of two Latin words, intra meaning "within" or "inward", and spiere, meaning to "look", Hence, introspection means looking within or looking inward. In introspection then, one is required to get inside one's own mind. It is a sort of self-observation in which one perceives. Analyses and reports one's own feelings and, in fact, everything that takes place in one's mind during the course of a mental act. For example, when in a state of anxiety, fear or anger. one may be asked to determine by one's own observation what one sensed, thought or felt at the time of experiencing that emotion.

**Merits**

Introspection-the observation and reporting of one's own mental processes-is considered important on account of its unique nature. It is a simple and readily available method. One's mental processes are always present and can be introspected at any time. Introspection is, therefore, able to give us a direct and immediate insight into one's own mental processes without involving any extra expenditure of material or apparatus. Moreover, introspection provides adequate knowledge of the inner or covert experiences and thus the inner behavior of an individual in the form of thought or feeling can be revealed through introspection.

**Drawbacks and Limitations**

Introspection as a method of studying behavior, however, suffers from some serious drawbacks and limitations:

In introspection one needs to observe or examine one's mental processes carefully in the form of thoughts, feelings and sensations. The state of one's mental processes is continuously changing. Therefore, when one concentrates on introspecting a particular phase of one's mental activity that phase passes off. For example, when one gets angry at something and afterwards sits down to introspect calmly or to self-examine the state of anger is sure to have passed off and so what one tries to observe is not what is happening at that time with oneself but what had happened some time before.

Introspection as a method of serious study lacks in reliability, validity and objectivity for the following reasons:

(a) The results lack reliable communicability and repeatability because any one investigator can never be sure that what he feels or senses is the same as is experienced by other investigators. If we invite introspection reports on the nature of the sensation of green for example, these reports are bound to differ. Some will insist that green is a unitary sensation, whereas others may say that green is a mixed

sensation involving yellow and blue. We have no means for the objective observation of the introspection phenomenon. Moreover, in introspection one studies one's own behavior or mental process. It is not possible to verify self-observation as one's own mind cannot be studied by others in introspection.

(b) It is next to impossible to acquire validity and exactness in self observation or examination of one's own mental process. The mind in perceiving its own functions tries to divide itself into two halves-the subject and the object. The object of observation and the instrument of observation are of course one and the same. This automatically affects the validity and exactness of the observation process and the perceived results. A man who is angry or afraid cannot observe exactly what is going on in his mind and remain unchanged in his emotional state of anger or fear. The consciousness on his part is sure to affect his mental or emotional state which is the object of observation.

The scope of introspection as a method of studying behavior is rather limited. It can only be applied satisfactorily in the case of adult normal human beings. The behavior of children, abnormal human beings, animals etc., cannot be studied by this method.

**Conclusion**

Thus, if we try to evaluate the introspection method we find that it is based on self-speculation, lacks reliable communicability, replicability and reasonable exactness or precision. It is neither sufficiently scientific practicable nor simple enough to handle. It cannot therefore be taken as an adequate or sufficient single method for psychological studies. The conclusions arrived at by this method need to be supported by specific scientific findings through some other objective and reliable method.

**Observation method**

Observation as a method of studying behavior consists of the perception of an individual's behavior under natural conditions other individuals and the interpretation and analysis of this perceived behavior by them. It is thus essentially a way of 'perceiving the behavior as it is. By this method we can infer the mental processes of others through observation of their external behavior. In fact it is an indirect approach to the study of the mental process. If some one frowns, howls, grinds his teeth, closes his fists, by observing the external signs of his behavior we can say that he is angry. But to study this behavior concerning anger in natural conditions, one has to wait for the event to occur. Similarly, to study the behavior of students in a crowd or during a strike, and the behavior of a delinquent or problem child, the psychologist has to wait till the particular behavior occurs and then use all his resources to observe record, analyze and interpret the behavior from what he has perceived under natural conditions.

**Merits**

The observation method occupies a prominent place in the study of human behavior. It is natural, flexible and economical. Its results are reliable and can be verified. The natural observation method is particularly suitable for studying the developmental characteristics of individual children's habits, interests and other personality traits. For example, the effects of the absence of one or both parents on a child s development can be determined properly through observation of his development. Similarly, a clinical psychologist may be able to collect the required data about the abnormal behavior of an individual by observing him under natural conditions of his day to day life.

**Drawbacks and Limitations**

The observation method cannot be termed as sufficiently objective, reliable and valid for the following reasons:

It can prove useful only for collecting data on the observable behavior of an individual. It is impossible, to observe what is happening in the mind of others, and so reasoning can only be through external behavior. It is possible that a person may be expert at hiding his feelings and emotions and disguising his evil nature under the cover of artificial sobriety. In such cases the method of observation fails to judge the true nature of the individual concerned.

Subjectivity factors on the part of the investigator as well as in the process of observation also affect the results of observation. There may be distortions of observable factors depending upon the observer's degree of care in observation. His interests, values, and prejudices may also distort the

contents and results of the observation. He may lay extra emphasis on one part of one's behavior and may altogether neglect some other very important aspect. The interpretations of the recorded events may also be similarly colored. One may read one's own thoughts, feelings and tendencies into others' minds. The lacunae resulting from such subjectivity may, however, be corrected to a certain extent by having as many observers as possible for observing the same phenomenon and employing scientific instruments such as a tape recorder, or a video camera etc., for recording the events.

Another serious limitation of the observation method is that the behavior observed is dependent on the time and place and on the individual or group of people involved. It lacks replicability as each natural situation can occur only once.

Another important limitation of the observation method lies in its inability to establish a proper cause and effect relationship. If two phenomena, say poverty and delinquent behavior, invariably occur together, it cannot be established that poverty is the sufficient and necessary cause of delinquent behavior or vice versa.

**Experimental method**

The experimental method is considered the most scientific and objective method of studying behavior. It lays emphasis on performing experiments. The word 'experiment' comes from a Latin word experimentum meaning 'a trial' or 'test'. Therefore, in experimentation we try or put to the test the material or phenomenon whose characteristics or consequences which we wish to ascertain. In the sciences, while conducting such experiments in the laboratory or outside in a natural environment we may want to learn the effect of friction on motion, the effect of sunlight on growth of plants, etc. In educational psychology also, we perform such experiments in the psychological laboratory, class-rooms or outside the classrooms in physical or social settings to study the cause and effect relationship regarding the nature of human behavior, i.e. the effect of anxiety, drugs or stresses on human behavior, the effect of intelligence or participation in co-curricular activities, on the academic performance of students, etc. In performing all such experiments we try to establish certain cause and effect relationships through objective observations of the actions performed and the subsequent changes produced under pre-arranged or rigidly controlled conditions. From these observations certain conclusions are drawn and theories or principles are formulated. The essential features of the experimental method are:

Experiments performed in this method essentially require two persons, the experimenter and the subject or the person whose behavior is to be observed.

These experiments are always conducted on living organisms in contrast to experiments in the physical sciences which are generally conducted on inorganic or dead subjects.

The key factor in this method is the control of the conditions or variables. By this control we can eliminate irrelevant conditions or variables and isolate the relevant ones. We thus become able to observe the causal relationship between two phenomena, keeping all other conditions al most constant. For example, if we try to study the effect of intelligence on academic achievement by the experimental method, we will need to determine the causative relation between the two phenomena (variables)-intelligence, and academic achievement. One of these variables, the effect of which we want to study, will be called the independent variable and the other the dependent variable. Thus the independent variable stands for the cause, and the dependent variable is the effect of that cause. Other conditions like study habits, sex, socio-economic conditions, parental education home environment health, past learning, memory, etc., which exercise a good impact upon one's achievement. As already emphasized in the experimental method experiments can be performed in the psychological laboratory or in the class rooms or outside the class-rooms under rigidly controlled conditions. Let us discuss how these experiments arc performed.

**Experiments in the Laboratory Set-up**

Just like other physical or natural sciences, experiments can be performed In Psychology or Educational Psychology for studying the behavior in the actual laboratory set-up. Thorndike's experiments on cats, Pavlov's experiments on dogs, Skinner's experiments on rats and pigeons and

their experiments to study the behavior related to learning. transfer of learning, memory, attention, perception etc., arc all examples of 511 h laboratory experiments.

**Experiments Outside the Laboratory Set-up**

In Educational Psychology experiments can also be conducted without involving the usual psychological laboratory set up. However, for such studies, there is need of some special experimental designs for controlling the variables and measuring their effects. A few of such designs are:

1. The control test or single-group design. In these design it is not necessary to have two different individuals or group if subjects for the experiment. Here a single individual group or individual can work as the subject for the experiment. The subject whether an individual or a group of individuals, is first objectively observed under normal condition and then under different sets of changed conditions. As another illustration we may conduct an experiment to ascertain whether a group of students can do better in an intelligence test under the influence of a specific drug like benzedrine sulphate or caffeine.

For this investigation, we will take only one group of some students, preferably of the same age, sex and state of health. The procedure of the experiment will comprise the following steps:

(a) These students can be given sugar capsules after which they can be put through some intelligence test. This will provide the initial testing under normal conditions.

(b) Some time later, they can be given drug capsules and tested on the same intelligence test. This will make a test under changed conditions.

(c) The l.Q. scores under these two situations are noted down and the difference is calculated. 1f any significant difference is found, it will be attributed to the influence of the drug.

2. Control-group design. The control test or the single group design method has a serious drawback known as the positive practice effect. If an individual is subjected to a certain kind of fear stimulus, it will surely affect the responses on his further exposure to fear stimuli. If a group is subjected to a certain drug, then it will automatically carry its effect or influence at the time of the introduction of some other drugs at the later stage. Control group designs help in minimizing such a practice effect.

In the control group design two separate groups, known as the experimental
group, and the control group, participate in the experiment. They are equated or matched on various traits like age, sex, intelligence and other personality characteristics. There is a one-to-one correspondence in the two equated groups. Now the control group is given sugar capsules and tested on some intelligence test. At the same time, the experimental group is given the drug capsule and tested on the same intelligence test. The differences in the intelligence scores of the groups are then calculated. In case some significant differences are found, they are attributed to the effect of the drug.

3. Multiple-group design. Sometimes, we have to experiment with more than two groups for arriving at the appropriate conclusion. For example, if we want to study the effect of knowledge of English on the speed with which people subsequently learn French, we decide to teach English to a group of students and then see whether they learn French more easily. But more easily than whom? Certainly we will need another group, or groups for comparison. Group A, consisting of students who have learnt the English language is called the experimental group. Group B may function as a control group for comparison, since it did not learn English earlier. If group A learns French faster than Group B can we attribute the difference in speed to the earlier study of English? Certainly not. It may be that practice on account of learning any subject or language may have the same positive transfer effect. To rule out these possibilities it is essential to add some more control groups like C and D. Now if group A demonstrates a clear superiority over the other three groups, then and only then may we infer that learning English facilitates learning French. For illustration, the working of a multiple group design for data collection in the present case may be tabulated as shown.

Group
Subject for rest held in the month of August
Test held in the month of February
A B C D
English No rest

Any subject (say Mathematics) Russian
French French French French
4. Designs involving rotation. This experiment involves presenting two or more stimulating situations to the experimental subjects in as many sequences as necessary to control the serial effects of fatigue or practice. For example, if we want to determine the relative influence of two specified conditions A and B (say praise and blame) on a group of subjects, we will not measure all the subjects under condition A and then under condition B. Condition A might cause fatigue or so train the subjects that the measures under condition B would not be independent of the fatigue or training effects. Here two alternatives can be adopted:
(a) We may obtain half the measures for condition A, all the measures for condition B, and then the other half of the measures for condition A. This technique is sometimes called the A B B A order.
(b) Another alternative is to separate the subjects into two equated groups, one of which receives treatment A and then B, whereas the other group receives treatment B and then A. Both sets of A results and both sets of B results may then be combined and the difference between them calculated.

**Limitations of the Experimental Method**

The Experimental method advocates the study of behavior under completely controlled rigid conditions. These conditions demand the creation of artificial situations or environment and the behavior studied under these conditions may be or is usually different from the spontaneous or natural behavior. Therefore, the experimental method fails to study behavior in natural conditions as may be possible through natural observation.
The second limitation or difficulty lies 10 exercising actual control or handling of the independent variable and the intervening variables. It is very difficult to know and control all of the intervening variables. Similarly we cannot always control the independent variable. Therefore it is not always possible to create the desired conditions in the laboratory and consequently, in the absence of these controlled conditions the success of this method becomes quite uncertain.
3- In the experimental method we often make use of animals or birds as subjects for experimentation. It is also debatable whether experimental results obtained from such sources are applicable to human beings at all.
The scope of the experimental method is limited. All problems of psychology cannot by studied by this method as we cannot perform experiments for all the problems that may come up in the diverse subject matter of psychology.
The dynamic nature and unpredictability of human behavior does not always allow the independent variable to lead to change in the dependent variable. Human behavior is not a mechanical behavior. The anger or fear producing stimuli or variables mayor may not yield the required responses as desired under experiment and hence it is not possible to get uniform responses or changes 1n the dependent variables on account of the concomitant changes in the independent variable.
The experimental method is a costly and time consuming method.
Moreover, the conduct of experiments under this method requires specialized knowledge and skills. In the absence of such specialized abilities, it is not possible to use this method.

**Differential method**

The differential method is based on individual differences. Therefore, all the measures applied to the calculation of individual differences are included in this method- The differential method is also named as the normative survey method or the field survey method as the investigator has to go to the field to make his investigations. It is sometimes called the statistical method for the reason that statistical techniques become the major devices for the study of the individual differences. Now, the question that arises is, how do differential methods differ from experimental methods? It may be felt that the difference between the experimental and differential methods is only arbitrary and artificial, since the procedure of finding the effects on dependent variables by the application of the independent variables is the same. This however is not true as T.G. Andrews (1958) comments:
Differentiation between experiments and differential methods may appear quite artificial, and it is true that all psychologists will not agree to such an apparently artificial classification scheme.

Nevertheless it should always be made clear that the independent variables resulting from individual differences are never under the investigator's control to the same degree that experimental variables are.

Thus, differential methods differ from the experimental approach in that the investigator cannot intentionally manipulate the variables and each of these is studied as an independent variable. For instance, in studying the relationship of achievement with intelligence it is not possible to manipulate intelligence. Therefore, we have to take each individual and study his achievement in relation to his intelligence. After that, we can try to achieve at certain conclusions with the help of statistical techniques.

The key concept in using the differential methods is their technique of studying differences within the same individual or between individuals in different groups. Usually for this purpose four types of main approaches or designs are used.

**Clinical method**

The concept of a clinical method is included in the concept of clinical psychology which is the art and technology of dealing with the adjustment problems of the individual for purposes of his optimum 50cial adjustment and welfare. The analysis of this definition may help us to observe some of the characteristics of the nature and working of the clinical method:

The clinical method IS applicable [0 an individual.

The individual has some problems.

Methods or both diagnosis and treatment are involved in dealing with these problems.

The clinical method is inclined al seeking the maximum adjustment and welfare for the disturbed person.

The clinical method IS an art as well as in science and technology which means that everybody cannot treat every patient and it takes pleasure III making mankind healthier and better. Thus the basic elements in this method of psychological investigation are the diagnosis and treatment of the problem or mental illness of an individual.

**Method of Diagnosis**

Diagnosis by the clinical method requires a symptomatic account of the overall situation in order to ascertain the root cause of an illness or behavioral problem. For such diagnosis, one has to look into the past events or experiences of the individuals, their impact and reactions the present environment and adjustment problems, and the total personality make-up, etc. For ascertaining all about these aspects the following techniques are generally employed.

Adequate physical check-up the individual suffering from a behavioral problem must be made to go through a detailed physical check-up to ascertain whether the behaviour exhibited of a functional or of an organic nature. In case there are no physical causes for the behavior in question then and only then should it be diagnosed as a subject for psychological treatment.

**Making Out the Case History**.

For finding the clues or developing into the events from the earlier experiences of the individual which may be responsible for the present behavior, the psychologist then tries to use the case history technique.

In this technique information is collected from the memory of the individual, his parents, and the members of his family. His relatives, guardians, neighbor, friends, teachers, doctors and from the available records and reports concernH1g the individual's past for collecting the relevant information the following sources may be used:

(a) Identifying may contain the name of the individual, his father's name, his residential address, date of birth, caste, religion, nature of exceptional or abnormal behavior etc.

(b) Environmental background this may contain information about the members of the individual' family, his parents, their relationship with each other, and behavior the subject (individual) of the study, the educational and socioeconomic status of the family, the accidents and incidents which may have occurred In the family, the types of neighborhood, friends and socio-cultural environment, the type of school education and school or Job situation environment etc., he may have passed through

(c) Developing Story. This may con tam the history of the growth and developmental process of the individual In relation to the treatment behavior and environmental facilities availably from birth onwards, history of his mental and physical healthy education and occupation, social and emotional adjustment sex-life etc.
(d) History of exceptional. This may contain all the relevant information regarding: the development of the behavior in question up to the present stage.
3. The clinical interview. Additional but very important information may be obtained by the investigator by arranging a clinical Interview with the individual. For this purpose he may carefully plan appropriate questions and persuade the individual to give free and frank responses by establishing the necessary rapport. For understanding the inner working of the individual's mind, he may be given the opportunity to talk about himself in the interview session. From these responses, the investigator may draw conclusions for the diagnosis of the root cause of the behavior.
4. Direct observation of behavior. Direct observation of the behavior of the individual by the Investigator in the natural set-up, living and working conditions may prove quite useful in knowing the nature and causes of the behavior. In the case of children direct observation of the subject at may provide a useful means of understanding him, his behavior and his problem.
5. Using tests and measuring devices. Certain testing and measuring devices may also be used to ascertain the interests, abilities, attitudes, aptitudes and the total personality of the individual and relevant Information may thus be obtained for understanding the individual and his behavior.

**Method of Treatment**

In order to serve the welfare of the individual. diagnosis should be followed by treatment. Fur the treatment of a behavioral problem, efforts are to be made to bring about a change in the behavior of the individual by his adjustment with himself and With his environment and thus ultimately restore hi..; normal mental health. This can be usually accomplished in two modifying the environmental forces 2. Modifying the individual's attitude.
The physical and socio-cultural environment of the individual needs to be modified in such a way that he may not be subjected to further disharmony and maladjustment. Rather, he should be able to get a pleasant and encouraging environment characterized by wholesome and harmonious relationships with other social beings and he should get enough opportunity for the fulfillment of his basic needs. For this purpose the following measures may be adopted.
He may be physically removed from one situation and placed in another, like a boarding hOlise, foster home or with guardians and adopted parents,
The attitude of the parents, teachers and others toward him may be changed.
More adequate recreational facilities, better living conditions, work placement and working conditions may be provided or some suitable measures for the sublimation and catharsis of repressed desires and wishes may be taken.
A complete modification of the individual's philosophy of life is required for bringing about a change in his behavior. He must be made to harmonise his thinking feeling and doing. For this purpose, the following measures may be adopted:
Guidance and counseling
Psychoanalysis
Techniques like auto-suggestion hypnosis, psychodrama and role playing
4, Therapies like psychotherapy, group therapy, play therapy, occupation therapy attitude therapy etc.

**Conclusion**

The above discussion regarding the nature and working of the clinical methods may lead us to conclude that clinical methods in all their shapes and forms are always concerned with the diagnoses and treatment of adjustment problems or mental and psychological illness of the individual. lt is however, not necessary that clinical methods should always be used to study or treat the mental illness or abnormal behavior of an individual. The real purpose of clinical findings is to help in conducting an intensive and thorough study of the behavior of the individual. Therefore, it does not matter whether we carry out the study of a normal or abnormal behavior with the help of a clinical set-up. There is no bar to study the behavior of normal persons or even exceptional individuals like

high achievers, creative geniuses, saints, social workers and leaders by employing clinical methods of collecting relevant information through various means, whether an individual requires treatment or follow-up depends upon the case under clinical study. A clinical study thus does not necessarily require resort to methods of treatment. The treatment can be affected only when the individual under study needs it. Therefore, broadly speaking, clinical methods may be taken as the methods of studying the behavior of an individual in all possible detail relevant to the purpose of the study.

**Merits and Demerits of Clinical Methods**

The chief merit of the clinical methods is that they can be safely employed to study the particular or specific behavior of an individual. No two individuals are alike in their behavior patterns and a real study of human behavior can, therefore, only be made through a personal and individual study of every human being. Clinical methods provide an intensive study involving all possible details regarding individual behavior. Therefore, as far as true investigation of individual behavior is concerned nu method can match the efficiency and usefulness of the clinical methods. Their usefulness is further enhanced when they provide valuable information regarding the adjustment or behavioral problem of the individual and subsequent suggestions and measures, for the treatment and solution of these problems. Clinical methods thus render signal service to mankind.

Their main limitation or drawback is that their proper use demands a lot from the clinical researcher. He should be mature and technically proficient in handling such studies. He cannot involve his own self and personality make-up while diagnosing and treating the individual in his charge. The other limitation is related to the very restricted scope of such studies as the effort put into, and the findings of these studies cannot be generalized. These are meant only for individual cases and end with the diagnosis and treatment of the individual cases under study.

**Psychophysical methods**

The branch of psychology which is concerned with the study of the relationship between physical and psychological phenomenon is called psycho-physics. In this sense the term 'psycho-physical methods' may be used to refer to all those methods in which attempts are made to employ physical devices for the scientific measurement of some psychological experiences like the sensations of weight, brightness, loudness and other such dimensions. Other complicated psychological phenomena like sleep or span of memory etc. can also be studied by psychophysical methods.

Three classical psycho-physical methods devised by the German physiologist and physicist Gustav Fechner (1801-1887) the father of psycho-physics are still in vogue. They are:

The method of minimal changes or the method of limits.

The method of constant stimuli or the method of right and wrong responses.

The method of average or mean error.

These methods are primarily employed to measure the absolute threshold and the difference threshold. Both the absolute threshold and the difference threshold are statistical concepts and are measured in much the same way.

The absolute threshold may be defined as the minimum value of a physical stimulus that reliably produces sensation. Absolute threshold thus, separates the sounds we can hear from those we cannot, the odours we can smell from those we cannot, the brightness of the light we can see from that we cannot, and so on.

The difference threshold may be defined as the minimum difference in value between two stimuli which can be perceived by the subject. For example, when one experiences a particular weight put in one's hand how much minimum weight has to be added to it a that the total becomes Just distinguishable as different from the first. Let us now give a brief idea of the three psycho-physical method mentioned above.

The Method of Minimal Changes or the Methods of Limits

This method may be used for finding out the absolute threshold and difference threshold. The procedure may be outlined as below.

The subject is exposed to a particular sensation. For example, he may be asked to report whether he can see the object lying at a particular distance (say 80 em) or not.
He cannot see the distance is gradually decreased until the
subject reports that he i-. able to 'ee the object Supp05e at the distance of 77 cm he says no but at the distance of 7(1 em he says yes then both these values at which the subject's response changed from no to yes about the visibility of the object will be noted down by the experimenter.
In the next round, the object may be placed at a distance much nearer than the absolute threshold, say 70 em In the present case. This distance may then be gradually faced till the subject reports that he doe not see the object. The successive values at which the subject's response changes from yes to no is noted down. Let these values be 75 and 76 em in the present case.
All these values pertaining to minimal changes 10 the value of the absolute threshold or difference threshold in both descending and ascending series of trials arc then noted down The process is repeated many times. After the completion of seven ascending and descending series the experimenter may compute the average of all these minimal values. (The limits of the intensity of the sensory stimuli which produce a change from 0 to 100 per cent In terms of the feeling OJ' sensation). In the present example, we may compute the average of the values. 77.

- .1 76 ld' h I 77 - 76 + 75 76 . 76

4. A minimal value of the distance at which the subject may be able to see the experimental object
The absolute threshold Concening auditory Intensity may be similarly determined. In an ascending series of trial, the experimenter, while beginning with a clearly sub-threshold value may progressively raise the internity of the sound until the subject reports that he hears it. In the descending series of trials he may gradually decrease the intensity of sound till the subject reports that he does not hear the sound. The average of all these values, in the several ascending and descending series at which the subject's response changed about his hearing of the sound is then calculated to be designated as the absolute threshold.

**The Method of Constant Stimuli** (The Method of Right a nd Wrong Responses)
in thIs mdhod the value of the Intensity of the sensory stimulus is not gradually increased or decrca "ed as In the case of the method of limits but the sensory stimulus of varying intenslt) arc presented to the subject at random. The stimuli include at lea t one ample which IS well above the probable threshold value and another sample which IS well belm •• ' It. The subject IS then asked to indicate whether or not he detects each or these randomly presented stimuli. The responses of the subject in the form of yes or no are then noted down by the experimenter and ultimately the probability of the yes response is related to intensity of the stimuli. All the values related to the yes responses are then averaged out to give the required threshold.

**The Method of Average Error**
This method IS als0 called the method of mean error or the adjustment method. In performing experiments by this method the subject is presented with some st1mulus of standard intensity. He may then be asked to adjust a variable stimulus by making a number of attempts In doing 50 he Will probably miss the standard by a certain margin. This 1~ referred to as the error. The average of these errors IS noted down. It is subtracted or added to the standard value (depending upon the positive or negative sign of the value of the computed average error) for giving the subject's absolute threshold of sensitivity to the stimulus.

**Conclusion Regarding Methods**
Which of the foregoing methods IS the most useable in studying the problems of educational psychology is a difficult question to answer. All these methods have their own strengths and weaknesses and have some unique characteristics which make them highly specific in particular situations. However, a wise investigator must keep In mind the factor of objectivity, reliability and validity for the solution of the problem in hand. He should posses a keen light into the nature of his subject their problems.

**Lesson 03**

## SYSTEMS OR SCHOOLS OF PSYCHOLOGY AND THEIR BEARING ON EDUCATION

### Introduction

As we have already seen psychology owes its origin to philosophy. However, as time elapsed psychologists attempted to discard the approaches and methods based on speculation and provided a scientific base to the subject for the study of behavior. These efforts gave birth to a number of schools or systems of psychology such as structuralism, functionalism behaviorism, gestaltism, psychoanalysis, individual psychology analytical psychology, humanist psychology, transpersonal psychology and cognitive psychology etc. The emergence of these systems or schools of thought not only influenced the development of various trends and approaches for assessment of behavior but also affected the processes and products of education. In the present chapter we aim to briefly trace the history of evolution of the different systems of psychology to show their impact or bearing on education.

### Structuralism

Wilhelm Wundt (1832-1920), a German Professor, was mainly responsible for the evolution of this school of psychology. He opened the world's first psychological laboratory in Leipzig in 1879 with the sole purpose of the systematic study of the mind. For this he focused his experiments on conscious experience involving one's thoughts, feelings, sensations, perceptions and ideas. As he focused his attention on the analysis of the components of consciousness (the supposed structure of the mind), his approach to psychology is called as structuralism. Wundt and his students conducted experiments in the laboratory by using the art of introspection or self-observation. The subjects were usually asked to report exactly what they were experiencing at the moment when they were exposed to stimuli such as light, color, sound or the feel of an object The psychologists performing the experiments also acted as subjects for the observations and recording of their own perceptions and feelings and then presenting their analyses of the activities of the mind.

The Leipzig laboratory produced most of the leading psychologists. One of its well-known products was Edward Bradford Titchener (1867-1927), a British by birth, who became professor of psychology at Cornell University. According to him, psychology may be regarded as the science of consciousness or the study of experience. Consciousness or experience can be broken or analyzed into three basic elements: physical sensations, feelings and images such as memories and dreams. For example, when we report the perception experiences of a banana, we try to combine visual sensation (what we see) with feelings (our like or dislike for the banana) and with images (past experiences with other bananas). Through his studies Titchener concluded that the structure of the human mind was made up of more than 30,000 separate sensations, feelings, and images, and nothing else.

In this way, Wundt and his followers like Titchener, known as structuralists tried to provide a systematic study of the mind through the study of its structure (identifying the basic units of consciousness or experience along with the combinations in which they occur) by adopting introspection as the main technique.

### Criticism

Structuralism is criticized on the following grounds:

As a system of psychology, structuralism is regarded as a very limited system which is unable to cover all aspects of human behavior. The isolation of such important topics as motivation, individual differences and abnormal behavior etc., clearly reveals the limited scope of this system.

According to this system function involves structures, and structures of the mind can be explained through its parts, not its process. Such explanation involving the division of the human mind into individual elements, as Paplia and Olds (1987) have observed, may appear quite unnatural and untenable. For example, it is difficult for a structuralist to say "this is an apple" because (a) such a statement fails to analyze the apple into its various elements-that it is small, round, green Or red in

color, smooth-skinned, etc.; and (b) because referring to the object simply as an apple rather than in terms of the elements that an observer could see would be interpreting the object not describing it.
The introspection method used by the structuralists for studying behavior can neither be regarded as objective, reliable nor valid since each introspectionist may be found to describe his own sensory experiences in his own subjective way. This was the reason why Titchener, the structuralist, doubted if psychology could ever be a science of behavior and according to him biology alone could be a Science of behavior.

**Merits of Structuralism and Its Contribution to Education**

Structuralism helped in establishing psychology as an independent and organized discipline by separating it from philosophy and metaphysics.
It provided introspection as a method of studying behavior. Despite wide-spread criticism, introspection IS still regarded as one of the important methods for studying behavior. What goes on inside one's mind during the course of a mental act can be experienced or explained only by the individual himself, and introspection is the only suitable technique that can be employed in extracting such reports. Consequently, studies in Educational Psychology can benefit from the use of this method.
Structuralism is credited with having taken the initiative in establishing the first psychological laboratory and employing the technique of systematic observation of the activities of the mind. It has resulted in making psychology a subject of scientific study and experimentation. What we find today in the field of psychology and Educational Psychology in terms of laboratory as well as field experiments can then safely be claimed as a positive contribution of the school of structuralism.

**Functionalism**

William James (1842-1910) the father of psychology in USA, is regarded as one of the pioneers of the functional school of psychology. Strongly influenced by the Darwinian theory and his own interest in anatomy, physiology and medicine. He adopted a biological approach to the study of the mind and led the field away from structuralism. He declared that something was definitely wrong in Wundt's and Titchener's approach. He claimed that consciousness or experience cannot be broken up into elements, and there is no way to separate ideas, thoughts, sensations or perceptions. Structuralism does not reveal anything about what the mind really does or how it goes about doing it. Knowing the composition or structure of the mind is not as important as understanding its activities or functions. Therefore, William James through his doctrine of functionalism advocated the theory of mental life and behavior. He considered the mind to be a recent development in the evolutionary process, the function of which was to aid man's adjustment to his environment. The consciousness or mental life according to him is a continuous and flowing unity, a stream that carnes the organism in its adaptation to the environment. Our minds are constantly forging associations, revising experiences, starting, stopping, jumping back and forth in time for adding to our functional abilities to adapt to our environment. Elaborating his viewpoint, he further concluded that habits are nothing but functions of the nervous system. When we repeat an activity a number of times, our nervous systems are altered so that the next time we engage in it we do so automatically without much conscious thought.
During the subsequent years in the 19th and 20th century, ideas propagated by William James were consolidated on a more scientific footing by functionalists like John Dewey (1859-1952). James Rowland Angell (1869-1949), J.M. Cattell, Edward L. Thorndike (1874-1949) and R.S- Woodworth (J869-1962).

**Merits of Functionalism and its Contribution to Education**

Functionalism, regarded as a more scientific and more practical system of psychology than structuralism helped in making the system of education as practicable and useful as possible by the following contributions:
It laid emphasis on functionability of the contents of the curriculum by advocating that only those things should be taught to the children which they could apply in everyday life.

The methods and techniques of learning were made more functionable through the ideas propagated by this system. Functionalists like Dewey felt that the emphasis of education and teaching methods should not be on the subject matter but on the needs of the students. Such learner-centred approaches in the methods of teaching opened the way for the discovery of new methods and devices in the teaching learning process.

This system widened the scope of psychology and educational psychology by developing a variety of new methods beyond introspection for studying behavior mainly based on scientific enquiry, systematic data collection and objective interpretation and by including in its sphere the study of many useful topics not covered by structuralism.

The field of measurement and evaluation related to psychology and education has also been enriched by functionalism with the introduction of certain valuable techniques and devices like the questionnaire, inventory, mental tests, and various other means for the objective description of behavior.

Functionalism opened the way for the study of psychology 10 terms of the adjustment of the organism to its environment. The study and problems of the individual, normal as well as abnormal, were incorporated in the subject matter of psychology and educational psychology_

Functionalism paved the way for applied research in response to the application of psychology to the practical problems, particularly in the field of educational psychology. John Dewey, a strong advocate of functionalism, proved the relevance of the psychology of learning and motivation etc., by establishing his own school and integrating theory with practice. Such practical attempts combined with the theoretical ideas have been responsible for revolutionizing the modem system of education to a great extent.

**Behaviorism**

John B. Watson (1878-1950) put forward an entirely new doctrine named behaviorism which was quite contrary to structuralism and functionalism. He concluded that the whole idea of consciousness is absurd. Consciousness cannot be proved by any scientific test, for consciousness cannot be seen, touched, or exhibited in a test tube. Even if it exists it cannot be studied scientifically, because admittedly it is subjected only to private inspection. Therefore, if we intend to make psychology a science of behavior, we should concentrate only on the observable and measurable behavior. We have to discard altogether not only the concept of consciousness but also all mentalistic notions like soul, mind, mental life, images and ideas, etc.

Consequently behaviorism as a method of studying behavior focused its
attention totally on the overt or observable behavior. For this purpose, it tried to reduce all of man's activity, including his thinking, feeling and volition to the level of that behavior which could be observed and objectively recorded. Thus, a behaviorist is not interested in the feeling of fear (because it is not measurable) but pays attention to the changes in heart rate and blood pressure which are the effects of fear and can be objectively measured. The theory of behaviorism as propagated by Watson was in fact based on the findings of the Russian psychologist Ivan Pavlov (1849-1936), the propagator of the theory of classical conditioning.

In his classic experiment, Pavlov conditioned a dog to salivate at the sound
of a bell by substituting that sound for the sight and smell of meat and concluded that all behavior is a response to some stimulus in the environment. Watson tried to apply this approach in the field of human behavior. In the famous experiment with an ll month old baby named Albert, he conditioned the baby's behavior to fear a rat by substituting the rat with a sudden loud noise. He concluded that behavior is merely the response to some environmental stimulus. How we behave and why we behave in a particular way can be successfully demonstrated and explained through habit formation or conditioning. Thus conditioning through environmental influences and not hereditary endowments or innate differences is responsible for shaping the behavior of a child.

Behaviorism, thus, tried to project human beings as little more than rather complex machines which respond in a particular fashion to a particular kind of stimulus. The behavior of an individual may

thus, be supposed to be controlled by environmental forces, and not by hereditary endowments or innate differences.

His strong convictions about the stimulus response automatization and
environmental influences made Watson assert boldly in 1926:

Give me a dozen healthy infants well informed and my own specified world to bring them up in and 1 will guarantee to take anyone at random and train him to become any type of specialist 1 might select--doctor. lawyer artist, merchant chief and yes, even beggar-man and thief, regardless of his talents, penchanls tendencies, abilities, vocations and race of his ancestors.

The doctrine of behaviorism propounded by Watson and his disciples, thus, ushered a new era in the field of psychology by making it somewhat materialistic, mechanistic, deterministic and objective like most of the physical and natural sciences. However, it suffered from a number of drawback, limitations and shortcomings. For this reason it has been subjected to criticism and has been modified and refined in a number of ways by contemporary psychologists like Lashley, Tolman, Hull and Skinner. While Lashley devoted himself to neurophysiology and Tolman believed in purposive behaviorism, B.P. Skinner, a leading American behaviorist of the present age emphasized a system of learning known as operant conditioning, quite different from the type of conditioning advocated by Pavlov and Watson. The task of behavior modification he advocated and the teaching machines he popularized by using the principles of reward, wield significant influence in the field of psychology, education and medicine.

**Merits of Behaviorism and its Contribution to Education**

Behaviorists in the study of behavior rejected the notions of structuralists for figuring out what people were feeling or seeing or the functionalists' notion of how and why they were thinking. Instead, they focused on what was actually being done by the people and observed by the observer or investigator. In this way, they introduced the scientific method for studying behavior, which is essentially based on the objective observation of the behavior and the events. Behaviorism thus helped in replacing introspective measures with the scientific and objective measures.

Behaviorists, while giving second place to hereditary characteristics highlighted the role of environment in shaping and modifying the behavior of children. It helped in revolutionizing all the programmes and methods related to education training and rehabilitation by emphasizing a greater need to provide the best possible learning situations and environment for better growth and development of the child.

The approach to dealing with abnormal and mentally sick persons as well as delinquent, maladjusted, backward and problem children was also drastically changed on account of the experimental findings of the behaviorists. In particular the techniques of shaping behavior and the behavior modification programmes advocated by the behaviorists ushered a new era into this field.

Since behaviorists did not believe in entities like the 'mind' and the mind-body problem, the mental approach to human behavior was altogether discarded. As a result, all concepts related to the doctrine of mentalism like sensation, emotion perception were dropped from psychology and education texts giving way to new concepts like stimulus response, habits, learning, and conditioning.

Behaviorism helped in extending the scope of educational psychology to include the study of animals as a way to learn more about human nature.

Behaviorism advocated the use of reinforcement and rewards (in place of punishment and unpleasant experiences) as inducement for the acquisition of desirable behavior and for giving up the un-desirable.

Behaviorism highlighted the role of motivation and definition of the aims and purposes in learning and shaping of behavior.

Behaviorism gave rise to new ideas and innovations in the field of learning and instruction like programmed learning and individualized self instructional programmes involving teaching machine and computer-assisted instruction.

**Gestalt psychology**

The reaction against structuralism and functionalism was not confined to the USA. In Germany it gave birth to a new school called Gestalt psychology, quite distinct from behaviorism. The most prominent members of this school were Max Wertheimer (1880-1943), Kurt Koffka (1886-J94I), Wolfgang Kohler (1887-1967), and Kurt Lewin (1890-1947).

'Gestalt' IS a German word, the nearest English translation of which i!-. configuration or, more simply, an organized whole in contrast to a collection of parts. Therefore, Gestalt psychology is opposed to the atomistic and molecular approach to behavior. According to it, an individual perceives the thing as a whole and not as a mere collection of its constituents or elements. To a Gestalt psychologist, the meaning of sensation or perception is always related to the total situation, and perception always involves a problem of organization. A thing is perceived as a relationship within a field which includes that thing, the viewer, and a complete background incorporating the viewer's purpose and previous experiences. Gestaltists also rejected the mechanistic approach to behavior as advocated by the behaviorists through a simple stimulus-response connection. They asserted that a sort of organization definitely exists between the stimulus and response which holds in forming a new gestalt or an organized whole. For example, when one looks at a tree what one sees is a tree. Even though a tree consists of color, brightness and a form but when perceived by the mind all these components become a pattern, or a gestalt. The Gestaltists further claim that when the components of a thing are brought together by the mind, something new (even more valuable and comprehensive than the original components) may emerge, reinforcing the statement: "the whole is different from the sum of its parts". As a result, human behavior is characterized as an intelligent behavior rather than a simple stimulus-response mechanism. An individual perceives the situation as a whole and after seeing and evaluating the different relationships in relation to the available environment, takes the proper decision in an intelligent way although quite often he does so impulsively. Gestalt psychology used the term 'insight' to describe this type of human behavior and summarized the behavioral process as consisting of the following three steps:

1. Perception of the situation as a whole.
Seeing and judging the relationships between various factors involved in the situation.
Taking an immediate decision and behaving accordingly.

Gestalt psychology, in this way, stood in strong opposition to traditional psychology comprising structuralism, functionalism and behaviorism. Specifically, it deplored the brick and mortar concept of structuralism i.e. elements, or 'bricks' bound by association or 'mortar' and were equally dissatisfied with the stimulus-response conditioning or machine-like explanation of human behavior.

**Merits of Gestalt Psychology and its Contribution to Education**

Gestaltists maintained that the whole is always greater than its constituent or parts. This proposition influenced the field of education in many aspects as we now discuss.

(a) In the construction and organization of the curricula and syllabi, due consideration is being given to the Gestalt principle. The concerned subject matter of a particular subject is always organized as a whole and the curriculum comprising different subjects and activities is so framed as to reflect unity and cohesiveness among them.

(b) Stress is being laid on an inter-disciplinary approach in education.

(c) The Gestalt approach has been duly acknowledged in methodology and techniques of teaching and learning. This has resulted in presenting the learning material in a Gestalt form (as an organized whole) and then proceeding to the parts.

(e) Due stress on the Gestalt (organized and combined) efforts on the part of teachers, administrators, parents and other members of society is being laid in the education and welfare of children.

Gestaltists laid great emphasis on the role of motivation, and definite goals and purposes in any type of learning. This has resulted in providing a central role to motivation in any scheme of learning and education. The emphasis on setting clear-cut objectives, defining them in definite behavioral terms and linking education with the needs and motives of the learner may be said to be some of the great contributions of Gestalt psychology.

Gestaltism has a notable feature that it makes the task of perception, learning and problem solving an intelligent task rather than a piecemeal molecular function or a mere stimulus-response mechanical process. It has provided a scientific and progressive method of problem solving based on the cognitive abilities of the learners.
Gestaltism has necessitated research in the field of organizational climate, institutional planning, group dynamics etc., for organizing the factors in the environment of the learner into a meaningful whole so as to put in the best efforts for managing the affairs of education and welfare of the individuals.

**School of Psychoanalysis**
Psychoanalysis as a system or school of psychology was the brain-child of Sigmund Freud (1856-1939), a Viennese physician. This movement put forward views quite contrary to structuralism, functionalism, behaviorism or gestaltism for explaining human behavior. Freud, the father of this movement presented a new dimension in the field of psychology. The int1uence of psychoanalysis in terms of the totality of human behavior including the conscious sub-conscious and unconscious behavior, structure of the psyche, the concept of repression catharsis in the form of revealing the unconscious, the psycho-sexual development and giving sex its rightful place in the realm of human behavior will always remain praise-worthy and memorable.
In course of later developments in the psychoanalytical movement an association for the development of psychoanalysis was formed in 1902. The personalities associated with this school became famous either by virtue of their efforts in advocating Freud's point of view or because of the establishment of their own psychoanalytic systems based upon their own views. Two systems namely individual psychology established by Alfred Adler (l870-1937) and analytical psychology established by Carl Jung (1875-1961) are worthy of note. In these systems, an effort was made to provide some general urge as a substitute for sex which. in their opinion, was given excessive importance by Freud. Adler provided a substitute in the form of the self-assertion or the power-seeking motive and laid emphasis on the individuality of the subject by advocating the proposition of the life-style. Jung, on the other hand replaced the sex urge with the more comprehensive term 'libido' or the life urge'. We shall discuss these systems in detail later.
The other notable neo-Freudians or rather, neo-Adlerians of the modern age have been Freud's daughter Anna, Karen Horney, Harry Stack Sullivan, Erich Fromm, Erik Erickson and Heinz Hartmann, etc. The efforts of these researchers have led to modifications in the traditional psycho-analytical approach, particularly in terms of playing down of the role of sex and stressing the role of society.

**Synthesis of schools: The recent trend in Contemporary Psychology**
on the foregoing discussion, we have seen that there has been a practice or tradition among the adherents of different schools like structuralism, functionalism, behaviorism, Gestaltism, and psychoanalysis to focus on the weaknesses of other schools and spend a great deal of energy to prove a contrary point. Quite opposite to this trend the psychology of today witnesses an eclectic approach in dealing with human behavior by accepting the fact that the various Viewpoints or schools help in one way or the other in studying the complex human behavior by throwing light on its different aspects.
However, behaviorism and psychoanalysis are the two major forces at work in the field of contemporary psychology. The other major forces in the field may be further termed as humanist psychology, transpersonal psychology and cognitive psychology. We have already talked about the former two aspects; now let us discuss the remaining ones.

**Humanist Psychology**
This new school of psychology reflects the recent trends of humanism in psychology. Abraham Maslow, Carl Rogers, Rollo May, Arthur Comb, Gordon Allport and other eminent workers have

contributed to its growth. Humanist psychology gives more value to the human being by not considering him merely
as a sophisticated machine or a victim of the conflict between the ego and the id. It considers him a a purposeful being, capable of adapting himself to his environment and choosing his own course of action in order to achieve the goals which he has selected for himself. These goals may be as simple as the satisfaction of a common physical need or as lofty as the attainment of self-realization or personal fulfillment.
Humanist psychology emphasizes such distinctively human aspects of personality as the existence of free win and freedom of choice and man's search for unique goals and values to guide his behavior and to give a personal meaning to his existence.

### Transpersonal Psychology

Transpersonal psychology is one of the latest approaches prevalent in contemporary psychology. The work of Abraham Maslow in terms of self-actualization, by harnessing one's fllest potential may be said to be the cornerstone of this school of psychology. It focuses its attention on the study of personal experiences that seem to transcend ordinary existence. In other words, what we think and how we feel in our altered states of awareness is the subject area of transpersonal psychology. These states may be reached during states of severe stress and distress or in moments of great excitement and happiness. They may be aroused during periods of sleep or deep concentration. Experimentally, they may be induced with the help of some specific drugs, religious conversations, yoga and transcendental meditation, etc.

### Cognitive Psychology

This new school of contemporary psychology is the result of the wave of intellectualism demonstrating faith in man's higher cognitive abilities and capacity to adapt to his environment and struggle for perfection. The roots of this psychology may be discovered in the cognitive outlook of the gestaltists who advocated an overall mental functioning and insight in place of a molecular and mechanistic approach for the study of human behavior.
The main theme of this new school is cognitive revolution (sometimes referred to as the 'white-box' theory) which postulates that internal processes are the subject matter of psychology. This contrasts with behaviorism (sometimes called the 'black-box' theory). By referring to it as it as the black box theory, it is implied that behaviorists are concerned with the output or response (R) of the organism in a certain situation, and to some degree with the input or stimulus (S) but do not consider what transpires between the stimulus and the response. This unexplored element is represented by a 'black box' which intervenes between Sand R.
Cognitive psychology studies man’s thinking, memory language, development, perception, imagery and other mental processes in order to peep into the higher human mental functions like insight, creativity and problem solving. Cognitive psychologists are totally opposed to the stimulus-response approach of the behaviorists. They maintain that there is more to learning and behaving than just single responses to stimuli. The human mind does not accept information from its environment in exactly the form and style it is conveyed to him. The conveyed information is compared with the information already stored in the mind, it is then analyzed and often enlarged upon and given a quite new form. Finally, it is subjected to interpretation and then used or stored according to the need of the time.
Cognitive psychology thus presents the system's viewpoint to explain the
behavioral mechanism. In this system whatever is conveyed through stimuli in the environment is the 'input'. The cognitive functioning of the human mind is the 'process' and the result of the cognitive functioning is the 'output' or the ‘product’.
Cognitive psychology is gaining in popularity day by day. Edward Tolman, one of the founder cognitive psychologists has made notable contributions in the field of learning, thinking and creative functioning. While explaining the problem-solving behavior of the higher organisms, he stated that

the organism tries to set up mental hypotheses about the ways to solve problems and then sets out to test these hypotheses through purposeful behavior.

Jean Piaget, Swiss psychologist, who has been the most prominent among the contemporary cognitive psychologists, has shown keen interest in the study of development of cognitive abilities and operation of cognitive processes in children. He has outlined a definite pattern and stages of development of cognitive abilities depending upon the biological readiness of the children.

**Lesson 04**

# COGNITIVE DEVELOPMENT

## A Definition of Development

The term development in its most general psychological sense refers to certain changes that occur in human beings or animals between conception and death. The term is mostly applied to all changes, hut rather to those that appear in orderly ways and remain for a long period 0f time. A temporary change caused by d brief illness, Or example, is not considered a part of development. Psychologists also make a in determining changes qualify as deve1opment. The changes-at least those that occur early in life-a re generally assumed to be for the better and to result in behavior that is more adaptive, more organized, more effective, and more complex (Conger, & Kagan, 1 s)84).

Human development can be divided into a number of different aspects. Physical development, as you might guess, that with changes in the body. Personal development is the term generally applied for changes in an individual's personality. Social development refers to changes in the way an individual relates to others. And cognitive development refers to changes in thinking.

Many changes during development are simply matters of growth and maturation. Maturation refers to changes that occur naturally and spontaneously and that are, to a 1a rge extent, genetically programmed. Such changes emerge over time and are relatively unaffected by environment, example in cases of malnutrition or severe illness. Much of a person's physical development falls into this category. Other changes are thought about through learning, as individuals interact with their environment. Such changes make up a large part of a person's social development. But what about the development of thinking and personality? Most psychologists agree that in these areas, both maturation and interaction with the environment (or nature and nurture, as they arc sometimes called) are important, but they disagree about the amount of emphasis to place on.

### General Principles of Development

Although there is disagreement about both what is involved in development and the way it takes place, there arc a few general principles almost all theorists would support.

People develop a/ different rates. In your own classroom, you will have a whole range of examples of different developmental rates. Some students will be larger, better coordinated, or more mature in their thinking and social relationships. Others will be much slower to mature in these areas. Except in rare cases of very rapid or very low development, such differences are normal and should be expected in any large group of students.

Development is relatively' orderly. People develop abilities in a logical order. In infancy, they sit before the)' walk, babble before they talk, and see the world through their own eyes before they can begin to imagine how others see it. In school, they will master addition before algebra, Bambi before Shakespeare, and so on. Theorists may disagree on exactly what comes before what, but they all seem to find a relatively logical progression.

**Development takes place gradually.** Very rarely do changes appear overnight. A student who cannot manipulate a pencil or answer a hypothetical question may well develop this ability, but the change is likely to take time.

### The Brain and Cognitive Development

Recent brain research has established a foundation for many of the physical, cognitive, social, and emotional difficulties exhibited by children who experienced maltreatment in their early years. Maltreatment (child abuse or neglect) during infancy and early childhood has been shown to negatively affect early brain development and can have enduring repercussions into adolescence and adulthood.

The experiences of infancy and early childhood provide the organizing framework for the expression of children's intelligence, emotions, and personalities. When those experiences are primarily negative,

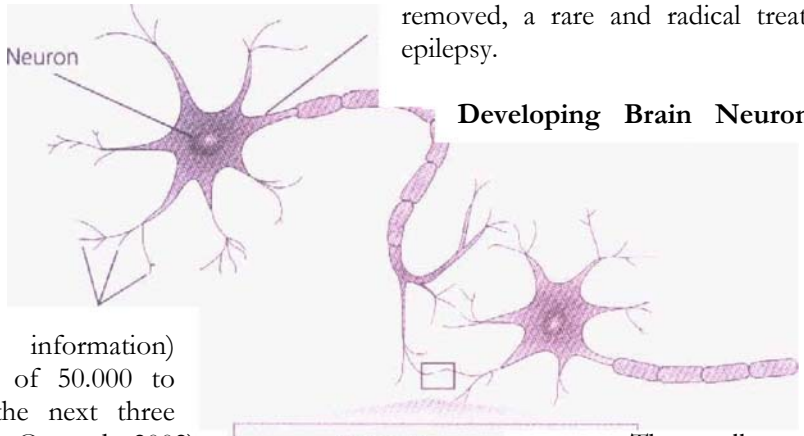
children may develop emotional, behavioral, and learning problems that persist throughout their lifetime, especially in the absence of targeted interventions.
The human brainstem is fashioned around the 7th week of gestation and matures in a caudal to rostral arc thereby forming the medulla, pons, and midbrain. The medulla mediates arousal, breathing, heart rate, and gross movement of the body and head, and medullary functions appear prior to those of the pons which precede those of the midbrain. Hence, by the 9th gestational week the fetus will display spontaneous movements, one week later takes its first breath, and by the 25th week demonstrates stimulus-induced heart rate accelerations. As the pons, which is later to mature, mediates arousal, body movements, and vestibular and vibroacoustic perception, from around the 20th to 27th weeks the fetus responds with arousal and body movements to vibroacoustic and loud sounds delivered to the maternal abdomen. The midbrain inferior-auditory followed by the superior-visual colliculi is the last to mature, and in conjunction with the lower brainstem makes fine auditory discriminations, and reacts to sound with fetal heart rate (FHR) accelerations, head turning, and eye movements--around the 36th week. When aroused the fetus also reacts with reflexive movements, head turning, FHR accelerations, and may fall asleep and display rapid eye movements. Thus fetal-cognitive motor activity, including auditory discrimination, orienting, the wake-sleep cycle, FHRs, and defensive reactions, appear to be under the reflexive control of the brainstem which also appears capable of learning-related activity.

**The Developing Brain: Cerebral Cortex**
The cerebral cortex develops from the most anterior part of the neural plate, a specialized part of the embryonic ectoderm. The neural plate folds and closes to form the neural tube. From the cavity inside the neural tube develops the ventricular system, and, from the epithelial cells of its walls, the neurons and glia of the nervous system. The most anterior (frontal) part of the neural tube, the telencephalon, gives rise to the cerebral hemispheres and cortex.
Cortical neurons are generated within the ventricular zone, next to the ventricles. At first, this zone contains "progenitor" cells, which divide to produce glial and neuronal cells [1]. The glial fibers produced in the first divisions of the progenitor cells are radially oriented, spanning the thickness of the cortex from the ventricular zone to the outer, pial surface, and provide scaffolding for the migration of neurons outwards from the ventricular zone. The first divisions of the progenitor cells are symmetric, which duplicates the total number of progenitor cells at each mitotic cycle. Then, some progenitor cells begin to divide asymmetrically, producing one postmitotic cell that migrates along the radial glial fibers, leaving the ventricular zone, and one progenitor cell, which continues to divide until the end of development, when it differentiates into a glial cell or an ependymal cell. The migrating daughter cells become the pyramidal neurons of the cerebral cortex.

**Specialization and Integration.** Cerebral cortex seems to have different functions. The cortex must work together (Byrnc & Fox, 1998). For example, many areas of the cortex are necessary used in processing language. To answer a question, you must first hear it. This involves the primary auditory cortex. Movements controlled by the motor cortex arc required to speak your response. Broca's area (near the area that controls the Ups, jaw. and tongue) has a role in setting up a grammatically correct way of prosessing an idea, and Wernicke's area (near the auditory cortex) is necessary for connecting meaning with particular words. A person with a functioning Broca's area but a damaged Wernicke area will say meaningless things in a grammatically correct structure. Damage limited to Broca's area, on the other hand, is associated with short, ungrammatical sentences, hut the words are appropriate (Anderson, 1995a).
Another aspect of brain functioning that has implications for cognitive development is lateralization, or the speLiali7ation of the two hemispheres of the brain. We knOw that each half of the brain controls the opposite side of the body. Damage to the right side of the brain will affect movement of the left side of the body and vice ver~c1. In addition, certain areas of the brain affect particular behaviors. For most of us, the left hemisphere of the brain is a major factor in language processing, and the right hemisphere handles much of the spatial-visual information and emotions (nonverbal

information). For some left-handed people, the relationship may be reversed, but for most left-handers there is left hemispheric specialization altogether (Rerk, 2002). In addition, females on average seem to show less hemispheric specializal10[n] than males to 'Boyle & Gill, L99R). Before lateralization, damage to one part of the cortex often can he overcome as other parts of the cortex take over the functional of the damaged area. But after lateralization, the brain is less able to compensate.

These differences in performance by the brain's hemispheres, however, are more relative than abs lute; one hemisphere is just more efficient than the other in performing certain functions. Nearly any task, particularly the complex skills and abilities that concern teachers, require participation of many different areas of the brain in constant communication with each other. for example, the right side of the brain is better at figuring Out the meaning of a story but the left side is where grammar and syntax arc understood, so both sides of the brain have to work together in reading. "The primary implication of these findings is that the practice of teaching to 'different sides of the brain' is not supported by the neuroscientific research" (Byrnes & Fox, 1998, p. 310). Thus, beware of educational approaches based on simplistic views of brain functioning-what Keith (1998) has called "the left-brain-right brain non that has inundated education through workshops, inservices, and the trade publication." (p. 420). Remember, no mental activity is exclusively the work of single part of the brain-so there is no such thing as a "right-brained student" unless that individual ha had the left hemisphere removed, a rare and radical treatment for some forms of epilepsy.




**The Developing Brain Neurons:** About one month after conception, brain development starts. In the tiny tube that is the very beginning of the human brain, neuron cells (nerve cells that store and transfer information) emerge at the amazing rate of 50.000 to 100,000 per second for the next three months or so (McDevitt & Ounrod. 2002). These cells send out axons and dendrite long arm and branch-like fibers to connect with other neuron cells and share information. Look at Figure 2.2; the dendrites on the left of the figure bring information in and the axon in the middle transmits information out through the axon terminals on the right of the figure. The neurons send messages to each other by releasing chemicals that jump across the tiny spaces, called synapses, between the dendrites of one neuron and the axons of other neurons.

By the time we are born, have the neurons we will ever have, about 100 to 200 billion, and each neuron has about 2,500 synapses. However, the fibers that reach out from the neurons and the synapses between the fiber ends increase during the first each neuron (nerve cell) includes dendrites that bring in messages and an axon that sends out messages. This is a single neuron, but each neuron is in a network with many others.

A Single Neuron

years of life, perhaps into adolescence. By age two to three, each neuron has around 15,000 synapses; children this age have many more synapses than they will have as adults (McDevitt & Ormrod, 2002). In fact, they are oversupplied with the neurons and synapses that they will need to adapt to their environments. However, only those that are used will survive, and unused neurons will be "pruned" (Diamond & Hohson, 1998).

Two kinds of overproduction and pruning processes take place. One is called experience-expectant because synapses are overproduced in certain parts of the brain during certain developmental periods, awaiting (expecting) stimulation. For example, during the first months of life, the brain expects visual and auditory stimulation. If a normal range of sights and sounds occurs, then the visual and auditory areas of the brain develop. But children who are born completely deaf receive no auditory stimulation and, as a result, the auditory processing area of their brains becomes devoted Lo processing visual information. Similarly, the visual processing area of the brain for children blind from birth becomes devoted to auditory processing (Siegler, 1998). Experience-expectant overproduction and pruning processes are responsible for general development in large areas of the brain.

The second kind of synaptic overproduction and pruning is called experience dependent. Here synaptic connections are formed based on the individual's experiences. New synapses are formed in response to neural activity in very localized areas of the brain when the individual is not successful in processing information. Again, more synapses are produced than will be kept after "pruning." Experience-dependent processes are involved in individual learning.

So stimulation is important in both development (experience-expectant processes) and Learning (experience-dependent processes). In tact, animal studies have

**Piaget's theory of Cognitive Development:**

**Influences on Development**

As you can see, cognitive development is much more than the addition of new fac1s and ideas to an existing store of information. According to Piaget, our thinking processes change radically, though slowly, from birth to maturity because we constantly strive to make sense of the world. How do we do this? Piaget identified four factors-biological maturation, activity, social experiences, and

equilibration--that interact to influence changes in thinking (Piaget 1970a). Let's brid1y examine the first three factors, we'll return to a discussion or equilibration in the next section,

One of the most important influences on the way we make sense of the world is I/1tltrJrtltiOlr, the unfolding of the biological changes that are genetically programmed. Parents and teachers have little impact on this aspect of cognitive development, except to be sure that child gets the nourishment and can: they need to be healthy.

Activity)' is another influence. With physical maturation comes the increasing ability} to act on the environment and learn from it. When a young build's coordination is reasonably developed, for example, the child may discover about balance by experimenting with a seesaw. Thus, as we act on the environment-a, we explore, test observe, and eventually organize information we are likely to alter our thinking processes at the same time,

As we develop we are also interacting with the people around us. According to

Piaget, our cognitive development is influenced by sociocultural or learning to others. Without social transmission we would need to reinvent as the knowledge already offered by our culture. The amount people can learn from social transmission varies according to their stage of cognitive development maturation, activity, and social transmission all work together to influence cognitive development. How do we respond to these influences?

**Basic Tendencies in Thinking**

As a result of his research in biology, Piaget concluded that all species inherit two basic tendencies, or "invariant t functions." The first of these tendencies is toward organization-the combining, arranging, recombining, and rearranging of behavior' and thoughts into coherent systems. The second tendency is toward adaptation, or adjusting to the environment.

**Organization.** People arc born with a tendency to organize their thinking roles and psychological structures. These psychological structures are our systems for understanding build interacting with the world. Simple structures are continually combined and coordinated to become more sophisticated and thus more effective. Young infants, for example, can either look at an object or grasp it when it comes intact with their hands. They cannot coordinate looking and grasping at the same time. As they develop, however, infants organize these two separate behavioral structures into a coordinated higher-level structure of looking at, reaching for and grasping the object. They can, of course, still use each structure separately (Gimburg & Upper 19H8; r-.liller, 2002).

Piaget gave a special name to these structures: schemes. In his theory, schemes .Ire the b.1sic building blocks or thinking. They are organized systems of actions or thought that allow us to mentally represent or "think about" the objects and events ill llt11" \\'mld. Schemes may be very small and specific, for example theme or the recognizing-a-rose scheme. Or they may be larger and more general the drinking schemas or the categorizing pilafs scheme. As a. person' thinking process become more organized and new schemes develop, behavior also becomes more sophisticated and better suited to the environment.

**Adaptation.** In addition to the tendency to organize their psychological structures, people also inherit the tendency to adapt to their environment. Two basic processes are involved in adaptation: assimilation and accommodation.

**Assimilation** takes place when people use their existing schemes to make sense

of events in their world. Assimilation involves trying to understand something new by fitting; it into what we already know. At times, we may have to distort the new information to make it fit. For example, the first time many children see a skunk, they call it a "kitty." They try to match the new experience with an existing scheme for identifying animals.

**Accommodation** occurs when a person must change existing schemes to respond to a new situation. If data cannot be made to fit any existing schemes, then more appropriate structures must be developed. We adjust our thinking to fit the new information, instead of adjusting the information

to fit our thinking. Children demonstrate accommodation when they add the scheme for recognizing skunks to their other systems for identifying animals.
People adapt to their increasingly complex environments by using existing schemes whenever these schemes work (assimilation) and by modifying and adding to their schemes when something new is needed (accommodation). In fact, both processes are required most of the time. Even using an established pattern such <is sucking through a straw may require some accommodation if the straw is of a different size or length than the type you are used to. If you have tried drinking juice from box packages, you know that you have to add a new skill to your sucking scheme don't squeeze the box or you will shoot juice through the straw, straight up into the air and into your lap. Whenever new experiences are assimilated into an existing scheme, the scheme is enlarged and changed somewhat, so assimilation involves some accommodation.
There are also times when neither assimilation nor accommodation is used. If people encounter something that is too unfamiliar, they may ignore it. Experience is filtered to fit the kind of thinking a person is doing at a given time. For example, if you overhear a conversation in a foreign language, you probably will not try to make sense of the exchange unless you have some knowledge of the language.
**Equilibration.** According to Piaget, organizing, assimilating, and accommodating can be viewed as a kind of complex balancing act. In his theory, the actual changes in thinking take place through the process of equilibration-the act of searching for a balance. Piaget assumed that people continually test the adequacy of their thinking processes in,order to achieve that balance.
Briefly, the process of equilibration works like this: If we apply a particular scheme to an event or situation and the scheme works, then equilibrium exists. If the scheme does not produce a satisfying result, then disequilibrium exists, and we become uncomfortable. This motivates us to keep searching for a solution through assimilation and accommodation, and thus our thinking changes and moves ahead.

### Four Stages of Cognitive Development

Now we turn to the actual differences that Piaget hypothesized for children as they grow. Piaget's four stages of cognitive development are called sensorimotor, preoperational, concrete operational and formal operational. Piaget believed that all people pass through the same four stages in exactly the same order. These stages are generally associated with specific ages, as shown in Table 2.1, but these are only general

Infancy: The Sensorimotor Stage: The first stage of Piaget's theory lasts from birth to approximately age two and is centered on the infant trying to make sense of the world. During the sensorimotor stage, an infant's knowledge of the world is limited to their sensory perceptions and motor activities. Behaviors are limited to simple motor responses caused by sensory stimuli. Children utilize skills and abilities they were born with, such as looking, sucking, grasping, and listening, to learn more about the environment.

**Early Childhood to the Early Elementary Years: The Preoperational Stage:**
The Preoperational stage is the second of four stages of cognitive development. By observing sequences of play, Piaget was able to demonstrate that towards the end of the second year a qualitatively new kind of psychological functioning occurs.
(Pre)Operatory Thought in Piagetian theory is any procedure for mentally acting on objects. The hallmark of the preoperational stage is sparse and logically inadequate mental operations. During this stage the child learns to use and to represent objects by images and words, in other words they learn to use symbolic thinking. Thinking is still egocentric: The child has difficulty taking the viewpoint of others.
The child can classify objects by a single feature: e.g. groups together all the red blocks regardless of shape or all the square blocks regardless of color. According to Piaget, the Pre-Operational stage of development follows the Sensorimotor stage and occurs between 2–7 years of age. In this stage,

children develop their language skills. They begin representing things with words and images. However, they still use intuitive rather than logical reasoning. At the beginning of this stage, they tend to be egocentric, that is, they are not aware that other people do not think, know and perceive the same as them. Children have highly imaginative minds at this time and actually assign emotions to inanimate objects. The theory of mind is also critical to this stage.
The Preoperational Stage can be further broken down into the Preconceptual Stage and the Intuitive Stage... The Preconceptual stage (2-4 years) is marked by egocentric thinking and animistic thought. A child who displays animistic thought tends to assign living attributes to inanimate objects, for example that a glass would feel pain if it were broken.
The Intuitive(4-7 years) stage is when children start employing mental activities to solve problems and obtain goals but they are unaware of how they came to their conclusions. For example a child is shown 7 dogs and 3 cats and asked if there are more dogs than cats. The child would respond positively. However when asked if there are more dogs than animals the child would once again respond positively. Such fundamental errors in logic show the transition between intuitiveness in solving problems and true logical reasoning acquired in later years when the child grows up.
Piaget considered that children primarily learn through imitation and play throughout these first two stages, as they build up symbolic images through internalized activity.

**Later Elementary to the Middle School Years: The Concrete-Operational Stage.**
The Concrete operational stage is the third of four stages of cognitive development in Piaget's theory. This stage, which follows the Preoperational stage, occurs between the ages of 7 and 11 years and is characterized by the appropriate use of logic. Important processes during this stage are:
Seriation—the ability to sort objects in an order according to size, shape, or any other characteristic. For example, if given different-shaded objects they may make a color gradient.
Classification—the ability to name and identify sets of objects according to appearance, size or other characteristic, including the idea that one set of objects can include another.
Decentering—where the child takes into account multiple aspects of a problem to solve it. For example, the child will no longer perceive an exceptionally wide but short cup to contain less than a normally-wide, taller cup.
Reversibility—where the child understands that numbers or objects can be changed, then returned to their original state. For this reason, a child will be able to rapidly determine that if 4+4 equals 8, 8−4 will equal 4, the original quantity.
Conservation—understanding that quantity, length or number of items is unrelated to the arrangement or appearance of the object or items.
Elimination of Egocentrism—the ability to view things from another's perspective (even if they think incorrectly). For instance, show a child a comic in which Jane puts a doll under a box, leaves the room, and then Melissa moves the doll to a drawer, and Jane comes back. A child in the concrete operations stage will say that Jane will still think it's under the box even though the child knows it is in the drawer. Children in this stage can, however, only solve problems that apply to actual (concrete) objects or events, and not abstract concepts or hypothetical tasks.

**Junior and Senior High: Formal Operations.**
The formal operational period is the fourth and final of the periods of cognitive development in Piaget's theory. This stage, which follows the Concrete Operational stage, commences at around 12 years of age (puberty) and continues into adulthood. It is characterized by acquisition of the ability to think abstractly, reason logically and draw conclusions from the information available. During this stage the young adult is able to understand such things as love, "shades of gray", logical proofs, and values. Lucidly, biological factors may be traced to this stage as it occurs during puberty (the time at which another period of neural pruning occurs), marking the entry to adulthood in Physiology, cognition, moral judgement (Kohlberg), Psychosexual development (Freud), and psychosocial development (Erikson).

Some students remain at the concrete operational stage throughout their school year even throughout life. However, new experietices, usually those that take place in school, eventually present most students with pMhkms that they cannot solve using Wile rete operations. What happens when a number of variables interact, as in a laboratory experiment? Then a mental system for controlling sets of variables and working through a set of possibilities is needed. These are the abilities Piaget called formal operations.

At the level of formal operations, all the earlier operations and abilities continue in force; that is, formal thinking is reversible, internal, and organized in a system of interdependent elements. The focus of thinking shifts, however, from what is to what might be. Situations do not have to be experienced to be imagined. Ask a young child how life would be different if people did not sleep, and the child might say, "People do sleep!" In contrast, the adolescent who has mastered formal operations can consider contrary-to-fact questions. In answering, the adolescent demonstrates the hallmark of formal operations-hypothetico-deductive reasoning. The formal thinker can consider a hypothetical situation (people do not sleep) and reason deductively (from the general assumption to specific implications, such as longer workdays, more muney spent on energy and lighting, or new entertainment industries). Formal operations also include inductive reasoning, or using specific observations to identify general principles. For example, the economist observes many specific changes in the stock market and attempts to identify general principles about economic cycles. Formal-operational thinkers can form hypotheses, set up mental experiments to test them, and isolate or control variables in order to complete a valid test of the hypotheses. This kind of reasoning is expected in the later grades (Bjorklund, 1989).

The organized scientific thinking of formal operations requires that students systematically generate different possibilities for a given situation. For example, if a child capable of formal operations is asked, "How many different shirt blacks jacket outfits can you make using three of each kind of clothing?" the child can systematically identify the 27 possible combinations (did you get it right?). A concrete thinker might name just a few combinations, using each piece of clothing only once. The underlying system of combinations is not yet available.

The ability to think hypothetically, consider alternatives, identify all possible combinations, and analyze one's own thinking has some interesting consequences for adolescents. Since they can think about worlds that do not exist, they often become interested in science fiction. Because they can reason from general principles to specific actions, they often are critical of people whose actions seem to contradict their principles. Adolescents can deduce the set of "best" possibilities and imagine ideal' worlds (or ideal parents and teachers, for that matter). This explains why many students at this age develop interests in utopias, political causes and social issues. They want to design better worlds, and their thinking allows them to do so. Adolescents can also imagine many possible futures for themselves and may try to decide which is best. Feelings about any of these ideals may be strong.

Another characteristic of this stage is adolescent egocentrism. Unlike egocentric young children, adolescents do not deny that other people may have different perceptions and beliefs; the adolescents just become very focused on their own ideas. They analyze their own beliefs and altitudes. This can lead to what Elkind (1981) calls the sense of an imaginary audience-the feeling that everyone is watching. Thus, adolescents believe that others are analyzing them: "Everyone noticed that I wore this shirt twice this week." "The whole class thought m}' answer was dumb!" "Everybody is going to love my new CD." You can see that social blunders or imperfections in appearance can be devastating if "everybody is watching." Luckily, this feeling of being "on stage" seems to peak in early adolescence by age 14 or 15.

**Do We All Reach the Fourth Stage?** As we have just seen, most psychologists agree that there is a level of thinking more sophisticated than concrete operations. But the question of how universal formal-operational thinking actually is, even among adults, is a matter of debate. According to Neimark (1975), the first three stages of Piaget's theory are forced on most people by physical realities. Objects really are permanent. The amount of water doesn't change when it is poured into another glass. Formal operations, however, are not so closely tied to the physical environment. They

may be the product of experience and of practice in solving hypothetical problems and using formal scientific reasoning. These abilities tend to be valued and taught in literal cultures, particularly in colleges and universities.

Piaget himself (1974) suggested that most adults may be able to use formal operational thought in only a few areas where they have the greatest experience or interest. 0 do not expect every student in your junior high or high school class to be able to think hypothetically about all the problems you present. Students who have not learned to go beyond the information given to them are likely to tall by the wayside. Sometimes students find shortcuts for dealing with problems that are beyond their grasp; they may memorize formulas or lists of steps. These systems may be helpful for passing tests, but real understanding will take place only if students are able to go beyond this superficial me of memorization--only, in other words, if they learn

### Helping students to use formal operations

- Use visual aids
- Give students the opportunity to explain hypothetical questions.
- Ask students to write about universe, write d description of Earth and humans.
- Give students opportunities to solve problems and reason scientifically.
- While discussing the Civil War, consider other issues that have divided the United state since then.
- Have group discussions in which students design experiments.
- Answer questions.
- Ask students to justify two different positions on animal rights, with logical arguments for each position.
- Whenever possible, teach broad concepts, not just facts, using materials and ideas relevant to the students' lives.

### Implications of Piaget's Theory for Teachers

Piaget did not make specific educational recommendations. He was more interested in understanding children's thinking. He did express some general ideas about education, however, He believed that the main goal of education should be to help children learn how to learn, and that education should "form not furnish" the minds of students (Piaget). Even though Piaget did not use programs of educational based discussions, many other people have for example, the National Association for the educational at Young Children has guidelines for developmentally appropriate rate Piaget's thinking. (Bredckamp & Copple, 1997). If we understand children's thinking, we will be better able to match teaching methods to children's abilities.

#### Understanding and Building on Students' Thinking

The students in IllY class will vary greatly in both their level of cognitive development and their academic knowledge. As a teacher, how can you determine whether students are having trouble because they lack the necessary thinking abilities or because they simply have not learned the basic facts? 1b do this, Case (1985b) suggests you observe your students carefully as they try to solve the problems you have presented. What kind of logic do they use? Do they focus on only one aspect of the situation? Are they fooled by appearances? 1)O they suggest solutions systematically or by guessing and forgetting what they have already tried? Ask your students how they tried to solve the problem. Listen to their strategies. \"/hat kind of thinking is behind repeated mistakes or problems? The students are the best sources of information about their own thinking abilities (Can frey, 1990a).

An important implication of Piaget's theory for teaching is what Hunt years ago (1961) called "the problem of the match." Students must be neither bored by work that is too simple nor left behind by teaching they cannot understand. According to Hunt, disequilibrium must be kept "just right" to encourage growth. Setting up situations that lead to errors can help create an appropriate level of disequilibrium. When students experience some conflict between what they think should happen (a piece of wood should sink because it is big) and what actually happens (it floats!), they may rethink the situation, and new knowledge may develop.

It is worth pointing out, too, that many materials and lessons can be understood at several levels and can be "just right" for a range of cognitive abilities. Classics such as Alice in Wonderland, myths, and fairy tales can be enjoyed at both Concrete and symbolic levels. It is also possible for students to be introduced to a topic together, then work individually on follow-up activities matched to their level. Tom Good and Jere Brophy (2003) describe activity cards for three or four ability levels. These cards provide different readings and assignments, but all are directed toward the overall class objectives. One of the cards should be a good <'match" for each student.

**Activity and Constructing Knowledge**

Piaget's fundamental insight was that individuals construct their own understanding; learning is a constructive process. At every level of cognitive development you will also want to see that students are actively engaged in the learning process. In his words:

Knowledge is not a copy of reality. To know an object, to know an event, is 110t simply to look at it and make a mental copy or image of it. To know an object is to act on it. To know is to modify, to transform the object. and to understand the process of this transformation, and as a consequence to understand the way the object is constructed. (Piaget, 1964, p. 8)

This active experience} even at the earliest school levels, should not be limited to the physical manipulation of objects. It should also include mental manipulation of ideas that arise out of class projects or experin1ents (Ginsburg & Opper, 1988). For example, after a social studies lesson on different jobs, a primary-grade teacher might show the students a picture of a woman and ask, "What could this person be?" After answers such as "teacher," "doctor:' "secretary," "lawyer," "saleswoman," and so on, the teacher could suggest, "How about a daughter?" Answers such as "sister," "mother}" "aunt," and "granddaughter" may follow. This should help the children switch dimensions in their classification and center on another aspect of the situation. Next, the teacher might suggest "American;' "jogger;' or "blonde." With older children, hierarchical classification might be involved: It is a picture of a Woman, who is a human being; a human being is a primate, which is a mammal, which is an animal, which is a life form.

All students need to interact with teachers and peers in order to test their thinking, to be challenged, to receive feedback, and to watch how others work out problems. Disequilibrium is often set in motion quite naturally when the teacher or another student suggests a new way of thinking about something. As a general rule, students should act, manipulate, observe, and then talk and/or write (to the teacher and each other.

**Some Limitations of Piaget's Theory**

Some psychologists have pointed to research on the brain to support Piaget's stage model. Epstein (1978, 1980) observed changes in rates of growth in brain weight and skull size and changes in the electrical activity of the brain between infancy and adolescence. These growth spurts occur at about the same time as transitions between the stages described by Piaget. Evidence from animal studies indicates that infant rhesus monkeys show dramatic increases in synaptic nerve connections throughout the brain cortex at the same time that they master the kinds of sensorimotor problem described by Piaget. This may be true in human infants as well. Transition to the higher cognitive states in humans has also been related to changes in the brain, such as production of additional synaptic connections (Byrnes & Fox, 1998). Thus, there is some neurological evidence for stages.

**Underestimating Children's Abilities**. It now appears that Piaget underestimated the cognitive abilities of children, particularly younger ones. The problems he gave young children may have been too difficult and the directions too confusing. His subject may have understood more than they could show on these problems. For example, work by Gelman and her colleagues (Carey & Gelman, 1991; Miller & Gelman, 1983) shows that preschool children know much more about the concet of number than Piaget thought, even if 'they sometimes make mistakes or get contused. As long as preschoolers work with only three or four objects at a time, they can tell that the number remains the same, even if the objects are spread far apart or clumped close together. In other words, we may be

born with a greater store of cognitive tools than Piaget suggested. Some basic understandings, such as the permanence of objects or the sense of number, may be part of our evolutionary equipment, ready for use in our cognitive development.
Piaget's theory does not explain how even young children can perform at an advanced level in certain areas where they have highly developed knowledge and expertise. An expert 9-year-old chess player may think abstractly about move, while a novice 20-year-old player may have to resort to more concrete strategies to plan and remember moves (Seigler, 1998). As John Flavell (1985) noted. "the expert [child] looks very, very smart-very 'cognitively mature'-when functioning in her area of expertise" (p. 83).

**Cognitive Development and Information Processing:** there are alternative explanations for why children have trouble with conservation and other Piagetian tasks. These explanations focus on the child's developing information processing skills such as attention, memory capacity, and learning strategies. Siegler (1998) proposes that as children grow older, they develop progressively better rules and strategies for solving problems and for thinking lcgical1y. Teachers can help students develop their capacities for formal thinking by putting the students in situations that challenge their thinking and reveal the shortcomings of their logic, Siegler's approach is called rule assessment because it focuses on understanding, challenging, and changing the rules that students use for thinking.
Some developmental psychologists have devised neo-Piagetian theories that retain Piaget's insights about children's construction of knowledge and the general trends in children's thinking, but add findings from information processing about the role of attention, memory, and strategies. For example, Robbie Case (1992, 1998) has devised an explanation of cognitive development suggesting that children develop in stages within specific domains such as numerical concepts, spatial concepts, social tasks, storytelling, reasoning about physical objects, and motor development. As children practice using the schemes in a particular domain (for example, using counting schemes in the number concept area), accomplishing the schemes takes less attention. The schemes become more automatic because the child does not have to "think so hard" about it. This frees up mental resources and memory to do more. The child now can combine simple schemes into more complex ones and invent new schemes when needed (assimilation and accommodation in action).
Within each domain such as numerical concepts or social skills, children move from grasping simple schemes during the early preschool years, to merging two schemes into a unit (between about ages 4 and 6), to coordinating these scheme units into larger combinations, and finally, by about ages 9 to 11, to forming complex relationships that can be applied to many problems (Berk, 2002; Case, 1992,1998). Children do progress through these qualitatively different stages within each domain, but Case argues that progress in one domain does not automatically affect movement in another. The child must have experience and involvement with the content and the ways of thinking within each domain in order to construct increasingly complex and useful schemes and coordinated conceptual understandings about the domain.

**Cognitive Development and Culture.** One final criticism of Piaget's theory is that it overlooks the important effects of the child's cultural and social group. Children in Western cultures may master scientific thinlcing and formal operations because this is the kind of thinking required in Western schools (Artman & Cahan, 1993; Berk, 2002; Geary, 1998). Even basic concrete operations such as classification may not be so basic to people of other cultures. For example, when individuals from the Kpelle people of Africa were asked to sort 20 objects, they created groups that made sense to them-a hoe with a potato, a knife with an orange. The experimenter could not get the Kpelle to change their categories; they said this is how a wise man would do it. Finally the experimenter asked in desperation, "Well how would a fool do it?" Then the subjects promptly created the four neat classification piles the experimenter had expected-food tools, and so on (Rogoff & Morelli, 1989).

**Vygotsky's Sociocultural Perspective**

Psychologists today recognize that the child's culture shapes cognitive development by determining what and how the child will learn about the world. For example, young Zinacanteco Indian girls of southern Mexico learn complicated ways of weaving cloth through informal teachings of adults in their communities. In Brazil, without going to school, children who sell candy on the streets learn sophisticated mathematics in order to buy from wholesalers, sell, barter, and make a profit. Cultures that prize cooperation and sharing teach these abilities early, whereas cultures that encourage competition nurture competitive skills in their children (Bakerman et al., 1990; Ceci & Roazzi, 1994). The stages observed by Piaget are not necessarily "natural" for all children because to some extent they reflect the expectations and activities of Western cultures (Rogoff & Chavajay, 1995).

A major spokesperson for thi~ sociocultural theory (abu cal1ed sociohistoric) was a Russian psychologist who died more than 50 years ago. Lev Vygotsky was only 38 when he died of tuberculosis, but during that time he produced over 100 boob and articles. Some of the translations now available are Vygotsky (] 978, 1986,1987,1993,1997). Vyotsky's work began when he was studying learning and development to improve his own teaching (Wink & Putney, 2002).

Vygotsky believed that humnan development take place in cultural settings and cannot be understood apart from these settings. One of his key ideas was that our specific mental structures processes can be traced to our interactions with others. These social interactions are more than simple induences on cognitive development. We will examine two theme in Vygotskv's writings that explain how social processes form learning and thinking the social sources of individual thinking and the role of tools in learning and development, especially the tool of language (Wertsch, Wertsch & Tulviste, 1992).

### The Social Sources of Individual Thinking

Vygotsky assumed that "every function in a child cultural development appears twice: first, on the social level and later on the individual level; first between people (interpsychological) and then inside the child intrapsychological. in other words, higher mental processes appear first between people as they are coconstructed during shared activities. Then the processes are internalized by the child and become part of that child's cognitive development. For example, children first use language in activities with others, to regulate the behavior of the others. Later, however, the child can regulate her own behavior using private speech ("don't spill"), social interaction was more than influence, it was the origin of higher mental processes such as problem solving. The social source is other students and the type of thinking Involved is reasoning.

Richard Anderson and his colleagues (200]) studied how 4th graders in small-group classroom discussions appropriate (take for themselves and use) argument strategies that occur

Anderson's research identified 13 forms of talk and argument that helped to manage the discussion, get everyone to participate, present and defend positions, and handle confusion. The researchers found that the use of these different forms of talking and thinking a useful argument was employed by one student, it spread to other students and the argument strategies form appeared more and more in the discussion. Open discussions-students asking and answering each other's questions were better than teacher-dominated discussion for the development of these argument forms. Over time, these ways at presenting, attacking, and defending positions could be internalized .1~ mental reasoning and decision making for the individual students.

Both Piaget and Vygotsky emphasized the importance of social interactions in cognitive development, but Piaget saw a different role for interaction. He believed that interaction encouraged development by creating disequilibrium-cognitive control -that motivated change. Thus, Piaget believed that the most helpful interactions were those between peers because peers are on an equal basis and can challenge each other's thinking. Vygotsky (1978, 1986, 1987, 1993), on the other hand, suggested that children's cognitive development is fostered by interactions with people who are more capable or advanced in their thinking-people such as parents and teachers (Moshman, 1997; PaJinscar, 1998). Of course, as we have seen above, students can learn from both adults and peers.

**Cultural Tools and Cognitive Development**

Vygotsky believed that cultural tools, including real tools (such as printing presses, rulers, abacus-today, we would add PDAs, computers, the Internet) and symbolic tools (such a numbers and mathematical systems, Braille and sign language, maps, work of art, signs and coded and language) play very important roles in cognitive development. For example, as long as the culture provides only Roman numerals for representing quantity, certain ways of thinking mathematically-from long division to Lalculus-are difficult or impossible. But if a number system has a zero, fractions, positive and negative values, and an infinite number of numbers, then much more is possible. The number system is a cultural tool that supports thinking, learning, and cognitive development. This symbol system is passed from adult to child through forma1 and informal interaction and teachings.

Vygotsky emphasized the tools that the culture provides to support thinking. He believed that all higher-order mental processes such as reasoning and problem solving are immediately (accomplished through and with the help of) psychological tools, such as language, sign, and symbols. Adults teach these tools to children during day to-day activities and the children internalize them. Then the psychological tools can help students advance their own development (Karpov & Haywood, 1998). The process is something like this: As children engage in activities with adults or more capable peers, they exchange ideas and ways of thinking about or representing concept -drawing maps, for example, as a way to represent spaces and places. These co-created ideas are internalized by children. Thus, children's knowledge, ideas, attitudes, and values develop through appropriating or "taking for themselves" the ways of acting and thinking provided by their culture and by the more capable members of their group (Kowlin & Pres. eisen, 1995).

**The Role of Language and Private Speech**

Language is critical for cognitive development. For expressing ideas and asking questions, the categories and concepts for thinking and thinking between the past and the future (Das, (\.)95). If we study language across cutlturc, we see different language tools.

Vygotsky's and Piaget's Views Compared. If you have spent much time around young children, you know that they often talk to themselves as they play. J.Piaget called children's self-directed talk "egocentric speech." He assumed that this egocentric speech is another indication that young children can't see the world through the eyes of others. They talk about what matter to them, without taking into account the needs or interests of their listeners. As they mature, and especially as they have disagreements with peers, Piaget believed, children develop socialized speech. They learn to listen and exchange ideas.

Vygotsky had very different ideas about young children's private speech. Rather
than being a sign of cognitive immaturity, Vygotsky suggested that these mutterings play an important role in cognitive development by moving children toward self regulation, the ability to p1an, monitor, and guide one's own thinking and problem solving.

Vygotsky believed that self-regulation developed in a series of stages. First the child's behavior is regulated by other, usually parents, using language and other signs such as gestures. For example the parent says, "No!" when the child reaches toward a candle flame. Next the child learns to regulate the behavior of others using the same language tools. The child says, "No!" to another child who is trying to take away a toy, often even imitating the parent's voice tone, Along with teaming to use external speech to regulate others. the child begins to use private speech to regulate her own behavior, saying "no" quietly to herself as she is tempted to touch the flame. Finally the child learns to regulate her own behavior by using silent inner speech (Karpov & Haywood, 1998). This series of steps is another example of how higher mental functions appear first between people a they communicate and regulate each others' behavior, and then emerge again within the individual as cognitive processes.

as children using private speech are communicating-they are communicating with themselves to guide their behavior and thinking. In any preschool room you might hear 4- or 5-year-olds saying, "No, it won't fit. Try it here. Turn. Turn. Maybe this one!" while they do puzzles. As these children

mature, their self-directed speech goes underground, changing from spoken to whispered speech and then to silent lip movements. Finally, the children just "think" the guiding words. The use of private speech peaks at around 5 to 7 years of age and has generally disappeared by 9 years of .age, Brighter children seem to make this transition earlier (Bee, 1992).

Vygotsky identified this transition from audible private speech to silent inner :.peech as a fundamental process in cognitive development. Through this process the child is using language to accomplish important cognitive activities such as directing attention, solving problems, planning, forming concepts, and gaining self-control. Research supports Vygotsky's ideas. Children tend to use more private speech when they are confused, having difficulties, or making mistakes. Inner speech not only helps us solve problems but also allows us to regulate our behavior. Have you ever thought to yourself something like, "Let's see, the first step is . , ." or "Where did] use my glasses last?" or "If I work to the end of this page, then I can.' . ."? You were using inner speech to remind, cue, encourage, or guide yourself. In a really tough situation, such as taking all important, you might even find that you return to muttering our loud. Table 2.2 contrasts Piaget's and Vygotsky's theories of private speech. We should note that Piaget accepted many of Vygotsky's arguments and came to agree that language could be u ed in both egocentric and problem solving ways (Piaget, 1962).

**Differences between Piaget's and Vygotsky's Theories of Egocentric or Private Speech:**

There are several important distinctions between Piaget's and Vygotsky's theories. The most important ones for educators concern the role of language and learning in development. Whereas Piaget believed that egocentric speech plays no useful function in young children's development, Vygotsky argued that egocentric speech is the means by which children organize and regulate their thoughts and actions. With regard to learning, Piaget claimed that development limits what children are capable of learning from social experiences. For Vygotsky, instruction by more knowledgeable peers or adults is at the heart of cognitive development.

Vygotsky's writings are beginning to have a major impact on education in the United States. Among the major educational contributions of Vygotsky's theory are the role of private speech in cognitive development, the importance of guided participation and scaffolding, and the role of peer interactions in cognitive development. Palincsar and Brown developed the reciprocal teaching procedure that incorporates several features of Vygotsky's theory. This procedure has been used successfully with elementary and secondary students.

**Self Talk and Learning.** Because private speech helps students to regulate their thinking, it makes sense to allow, and even encourage, student to use private speech in school. Insisting on total silence when young students are working on difficult problems may make the work even harder for them, you may notice when muttering increases-this could be a sign that students need help. One approach called cognitive self-instruction, teaches students to u e self-talk to guide learning. For example, students learn to give themselves reminders to go slowly and carefully.

**The Role of Adults and Peers**

Vygutsky believed that cognitive development occurs through the child' conversations and intcractions with more capable members of the culture-adults or more old peers. The child is not alone in the world "discovering" the cognitive operations of conservation Or classification. This discovery is discussed or mediated by family members, teachers and peers. Most of this is communicated through language, at least in Western cultures. In some cultures, observing a skilled performance, not talking about it, guide the child's learning. Jerome Bruner called this adult assistance scaffolding (Wood, Bruner, & Rms, 1976).

**Implications of Vygotsky's Theory for Teachers**

the cultural tools can be passed from one individual to another: Imitative learning (where one person tries to imitate the other), instructed learning (where kamel'S internalize the instructions of the teacher and use these

instructions to self-regulate), and collaborative learning (where a group of peers strives to understand each other and learning occurs in the process. Most concerned with instructed learning though direct teaching or through structuring experiences that support another's learning, but his theory supports the other arms of cultural learning as well. Thus, Vygotsky's ideas are relevant for educators who teach directly and also create learning environments (Das, 1995; Wink & Putney, 2002). One major aspect of Leaching in either situation is assisted learning.

**Assisted Learning**

Vygotsky's theory suggests that teachers need to do more than just arrange the environment so tl1at students can discover on their own. Children cannot and should not be expected La reinvent or rediscover knowledge already available in their cultures. Rather, they should be guided and assisted in their learning-so Vygotsky saw teachers, parents, and other adults as central to the child's learning and development (Karpov & Haywood, 1998).

Assisted learning, or guided participation in the classrool11, requires scaffolding giving information, prompts, reminders, and encouragement at the right lime and in the right amounts, and then gradually allowing the students to do more C1nd more on their own, as Tamara did with her class. Teachers can assist learning by adapting materials or problem' to students' current levels; demonstrating skills or thought processes; walking students through the steps of a listed problem; doing part of the problem (for example, in algebra, the students set up the equation and the teacher does the calculations or vice versa); giving detailed feedback and allowing revisions; or asking questions that refolds students' attention (Rosenshine & Meister, 1992). Cognitive self-instruction is an e:{ll111plc of assisted learning. Cognitive apprenticeships and instructional conversations (Chapter 9) are other examples. Look at Table 2.3 on page 52 for examples of strategies that can be used in any lesson.

How can you know what kind of help to give and when to give it? One answer has to do with the student's zone of proximal development.

**The Zone of Proximal Development**

According to Vygotsky, at any given point in development" there are certain problems that a child is on the verge of being able to solve. The child just needs some structure, clues, reminders, help with remembering details or steps, encouragement to keep trying, and so on. Some problems, of course, are beyond the child's capabilities, even if every step is explained clearly. The zone of proximal development is the area where the child cannot solve a problem alone, but can be successful under adult guidance or in collaboration with a more advanced peer (Wertsch, 1991). This is the area where instruction can succeed, because real learning is possible.

**Private Speech and the Zone.** We can see how Vygotsky's beliefs about the role of private speech in cognitive development fit with the notion of the zone of proximal development. Often, an adult helps a child to solve a problem or accomplish a task using verbal prompts. This scaffolding may be gradually reduced as the child takes over the guidance, perhaps first by giving the prompts as private speech and finally as inner speech. Let's move forward to a future day in the life of the girl in the example on page 45 who had lost her toy and listen to her thoughts when she realizes that a schoolbook is missing. They might sound something like this:

"Where's my math book? Used it in class. Thought I put it in my book bag after class. Dropped my bag on the bus. That dope Larry kicked my stuff, so maybe .. ,"

The girl can now systematically search for ideas about the lost book without help from anyone else.

Teaching students should be put in situations where they have to reach to understand, but where support from other students or from the teacher is also available. Sometimes the best teacher is another student who has just figured out the problem, because this student is probably operating in the learner's zone of proximal development. Students school be guided by explanations, demonstrations, and work with other students opportunities for cooperative learning. Having a student work with someone who is just a bit better at the activity would also be a good idea.

**Lesson 05**

## THE WORK OF ERIKSON

Like Piaget, Erik Erikson did not start out as a psychologist. In fact, Erikson never graduated from high school He-spent his early adult years studying art and traveling around Europe. A meeting with Sigmund Freud in' Vienna led to an invitation from Freud to study psychoanalysis.

In his influential *Childhood and Society* (1963), Erikson offered a basic framework for understanding the needs of young people in relation to the society in which they grow, learn, and later make their contributions. His later books *Youth, child Crisis* (1968) and *identity and the Life Cycle* (1980), expanded on his ideas. Erikson's psychosocial theory emphasized the emergence of the self, the search for identity, the individual's relationships with others, and the role of culture through out life.

Like Piaget, Erikson saw development as a passage through a series of stages, each with its particular goals, concerns, accomplishments, and dangers. At each stage, Erikson suggests that the individual faces a developmental crisis- a conflict between a positive alternative and a potentially unhealthy alternative. The way in which the individual resolves each crisis will have a lasting effect on that person's self-image and view of society.

### The Preschool Years: Trust, Autonomy, and Initiative

Erikson identifies *trust versus mistrust* as the basic conflict of intimacy. According to Erikson, the infant will develop a sense of trust if its needs for food and care are with comforting regularity and responsiveness from caregivers. In this first year, infants are in Piaget's sensorimotor stage and are just beginning to learn that they are separate from the world around them ... This realization is part of what makes trust so important: Infants must trust the aspects of their world that arc beyond their control.

Erikson's second stage, **autonomy versus shame and doubt,** marks the beginning of self-control and self-confidence. Young children begin to assume important responsibilities for self-care such as feeding, toileting, and dressing. During this period parents must tread a fine line; they must be protective but not overprotective. If parents do not maintain a reassuring, confident attitude and do not reinforce the child's efforts to master basic motor and cognitive skills, children may begin to feel shame; they may learn to doubt their abilities to manage the world on their own terms. Erikson believes that children who experience lOO much doubt at this stage will lack confidence in their own abilities throughout life.

For Erikson, the next stage of *"initiative* adds to autonomy the quality of undertaking, planning, and attacking a task for the sake of being active and on the move" (Erikson, 1963, p. 255). The challenge of this period is to maintain a zest for activity and at the same time understand that not every impulse can be acted on. Again, adults must tread a fine line, this time in providing supervision without interference. If children are not allowed to do things on their own, a sense of guilt may develop; they may come to believe that what they want to do is always "wrong."

### Elementary and Middle School Years: Industry versus Inferiority

In the early school years, students are developing what Erikson calls a sense of industry. They are beginning to see the relationship between perseverance and the pleasure of a job completed. The crisis at this stage is i*ndustry versus inferiority.* Par children in modern societies, the school and the neighborhood offer a new set of challenges that must be balanced with those at home. Interaction with peers becomes increasingly important as well. The child's ability to move between these worlds and to cope with academics, group activities, and friends will lead to a growing sense of competence. Difficulty with challenges can result in feelings of inferiority.

### Self-Concept and Self-Esteem

How strongly do you agree or disagree with these statements?

On the whole I am satisfied with myself.

At times I think that I am no *good* at

I feel that I have a number of good qualities.

Certainly feel useless at times.

I Wish I could have more respect for myself.

I take a positive attitude toward myself.

Interest in the self in psychology has grown steadily. In 1970, about in every 20 publications in psychology was related to the self. By 2000, the ratio was 1 in every 7. We focus on one aspect of self-self-concept, considered by many psychologists to be the foundation of both social and emotional development.

The term self-concept is part of our everyday conversation. In psychology, self-concept generally refers to the composite of ideas, feelings, and attitudes people have about themselves". We could consider self-concept to be our attempt to explain ourselves to ourselves, to build a scheme (in Piagct's terms) that organizes our impressions, feelings, and attitudes about ourselves. But this model or scheme is not permanent, united, or unchanging. Our self-perceptions vary from situation to situation and from one phase of our lives to another.

Self-concept and self-esteem are often used interchangeably, even though they have distinct meanings. Self-concept is a cognitive structure a belief about who you are, for example, a belief that you arc a good basketball player. Self-esteem is an affective reaction an judgment about who you arc, for example, feeling good about *your* basketball skills.

**The Structure of Self-Concept**

The hierarchical structure of self-concept is strongest for early adolescents. Older adolescents and adults seem to have separate, pacific self concepts, but these are not necessarily integrated into an overall self-concept. Adults arc not actively involved in *all* the academic domains (math, science, social studies) and can define themselves in terms of their interests and activities, so self-concept is more sitt1ation specific in adults.

One important way self-concept affects learning in school is through course selection. Think back to high school. When you had a chance to choose courses, did you pick your worst Subjects those where you felt least capable? Probably not.

**How Self-Concept Develops.** The self-concept evolves through constant self-evaluation in different situations. Children and adolescents arc continually asking themselves, in effect, "How am I doing?" They gauge the verbal and nonverbal reactions of significant people-parents and other family members in the early years and friends, schoolmates, and teachers later-to make judgments (Harter, 1998).

Young children lend to make self-concept appraisals based on their own improvement over time. A recent study followed 60 students in New Zealand from the time they started school until the middle of their third year. In the first 2 months of school, differences on reading self-concept began to develop, based on the case or difficulty students had learning to read. Students who entered school with good knowledge about sounds and letters learned to read more easily and developed more positive reading self-concepts. Over time, differences in the reading performance of students with high and low reading self concepts grew even greater. Thus, the early experiences with the important school task of reading had strong impact on self-concept.

As they move toward middle school, students compare their performance with their own standards-their performance in math to their performance **in** English and science, [or example, to form self-concepts in these areas. If math is their best subject, their math self-concept may be the most positive, even if their actual performance in math is poor. But social comparisons arc becoming more influential, too, at least **in** Western cultures. Students' self-concepts in math are shaped by how their performance compares to that of other students in their math classes (Marsh, 1994; Pintrich &

Schunk, 2002). Students who are strong in math in an average school feel better about their math skills than students of equal ability in high-achieving schools do.

### School Life and Self-Esteem

We turn now to self-esteem-the students' evaluations and feelings about themselves. For teachers, there are at least two questions to ask about self-esteem: (1) How does self esteem effect a student's behavior in school? (2) How does life in school affect a student's self-esteem?

In answer to the first question, it appears that students with higher self-esteem are somewhat more likely to be successful in school (Marsh, 1990), although the strength of the relationship varies greatly, depending on the characteristics of the students and the research methods used. In addition, higher self-esteem is related to more favorable attitudes toward school, more 'positive behavior in the classroom, and greater popularity with other students.

What about the second question of how school affects self-esteem: Is school important? A study that followed 322 6th-grade students for two years would say yes. Hoge, mit, and Hanson (1990) found-that students' satisfaction with school, their sense that classes were interesting and that teachers cared, and teacher feedback and evaluations influenced students' self-esteem. In physical education, teachers' opinions were especially powerful in shaping students' conceptions of their athletic abilities. Being placed in a low-ability group or being held back in school seems to have a negative impact on students' self-esteem, but learning in collaborative and cooperative settings seems to have a positive effect (Covington, [992; Deci & Ryan, 1985). interestingly, special programs such as "Student of the Month" or admission to advanced math classes had little effect on self-esteem. (Relate this to the" Big- Fish- Li1tle-Pond Effect.")

**Diversity and Self Esteem.** A recent study followed 761 middle-class, primarily European American students from Ist grade through high school. It is difficult to get longitudinal data, so this is a valuable study in 1st grade, girls and boys had comparable perceptions of their own abilities in language arts, but boys felt significantly more competent in math and sports. In language arts, buys' competence ratings fell more sharply than those of girls after Ist grade, but both levels during high schoo1. In sports, both boys and girls dropped, but boys remained significantly more confident in their competence in sports through out the entire 12 years. Other studies have also found that girls tend to see themselves as more able than *boys* in reading and c1osl' friendships; boy are more confident about their abilities in math and athletic. For most ethnic groups (except African Americans), males are more confident about their abilities in math and science. Differences between males and females generally are small but consistent across studies. Unfortunately, there are no long-term studies of other ethnic groups, so these patterns may be limited to European Americans.

### The Self and Others

Taking the Perspective of Others would influence the perceptions of themselves.

## Moral Development

Some of the earliest moral issues in classrooms involve dividing and sharing materials or distributive justice (Damon, 1994). For young children (ages 5 to 6), fair distribution is based on *equality;* thus, teachers often hear, "Keshawn got more than I did-that's not fair!" In the next few years, children come to recognize that some people should get more based on *merit-they* worked harder or performed better. Finally, around age 8, children are able to take need into account and reason based on *benevolence,* so they can understand that some students may get more time or resources from the teacher because those students have special needs.

Another area that involves moral development is an understanding of rules. If you have spent time with young children, you know that there is a period when you can say, "Eating in the living room is not allowed!" and get away with it. For young children, rules simply exist. Piaget (1965) called this the state of moral realism. At this stage, the child of 5 or 6 believes that rules about conduct or rules about how to play a game are absolute and can't be changed. If a rule is broken, the

child believes that the punishment should be determined by how much damage is done, not by the intention of the child or by other circumstances. So accidentally breaking three cups is worse than intentionally breaking one, and in the child's eyes, the punishment for the three cup offense should be greater.

As children interact with others, develop perspective-taking emotional abilities, and see that different people have different rules, there is a gradual shift to a morality of cooperation. Children come to understand that people make rules and people can change them. When rules are broken, both the damage done and the intention of the offender are taken into account. These developmental changes and others are reflected in Kohlberg's theory of moral development, based in part on Piaget's ideas.

**Kohlberg's Stages of Moral Development**

A man's wife is dying. There is one drug that could save her but it is *very* expensive and the druggist who invented it will not sell it at a price low enough for the man tf.? buy it. Finally, the man becomes desperate and considers stealing the drug for his wife. What should he do, and why?

Lawrence Kohlberg (1963, 1975, 1981) proposed a detailed sequence of stages of moral reasoning, or judgments about right and wrong. He divided moral development into three levels: (1) preconventional, where judgment is based solely on a person's own needs and perceptions; (2) conventional, where the expectations of society and law are taken into account; and (3) postconventional, where judgments are based on abstract, more personal principles that are not necessarily defined by society's laws.

Kohlberg has evaluated the moral reasoning of both children and adults by presenting them with moral dilemmas, or hypothetical situations in which people must make difficult decisions and give their reasons. At level 1 (preconventional), the

child's answer to the drug dilemma above might be, "he is wrong to steal because you might get caught." This answer reflects the child's basic egocentrism. The reasoning might be: "What would happen to me if I stole something? **I** might get caught and punished."

At level 2 (the conventional level), the subject is able to look beyond the immediate personal consequences and consider the views, and especially the approval, of others. Laws, religious or civil, are very .important and are regarded as absolute and unalterable. One answer stressing adherence to rules is, "It is wrong to steal because it is against the law:' Another answer, placing high value on loyalty to family and loved ones but still respecting the law, is, "It's right to steal because the man means we trying to help his wife. But he will still have to pay the druggist when he can or accept the penalty for breaking the law."

**Kohlberg's Theory of Moral Reasoning**

Level I. Preconventional Moral Reasoning judgment is based on personal need and others' rules.

Stage 1 Punishment-Obedience Orientation

Rules are obeyed to avoid punishment. A good or bad action is determined by its physical consequences.

Stage 2 Personal Reward Orientation

Personal needs determine right and wrong. "You scratch my back, I'll scratch yours."

Level 2. Conventional Moral Reasoning

Judgment is based on others' approval family expectations, traditional values the laws of society and loyalty to country.

Stage 3 Good Boy Nice Girl Orientation

Good means "nice: It is determined *by* what pleases, aids, and is approved by others.

Stage 4 Law and Order Orientation

Laws are absolute. Authority must be respected and the social under maintained.

Level 3. Postconventional Moral Reasoning

Stage 5 Social Contract Orientation

Good is determined by socially agreed upon standards of individual rights. This is a morality similar to that of the U.S. Constitution.
Stage 6* Universal Ethical Principle Orientation
Good and right are matters of individual conscience and involve abstract concepts of justice human dignity y and equality.

At level 3 (the postconventional level), an answer might be, "11 is not wrong to steal because human life must be preserved. The worth of a human life is greater than the worth of property." This response considers the underlying values that might be involved in the decision. Abstract concepts are no longer rigid and, as the name of this level implies, principles can be separated from conventional values. A person reasoning on this Ievel understands that what is considered right by the majority may not be considered right by all individual in a particular situation. Rational, personal choice is stressed.

Moral reasoning is related to both cognitive and emotional development. As we have seen, abstract thinking becomes increasingly important in the higher stages of moral development, as children love from decisions based on absolute rules to those based on abstract principles such as justice and mercy. The ability to see another's perspective, to judge intentions, al1d lo imagine alternative bases for laws and rules also enters into judgments at the higher stages.

**Alternatives to Kohlberg's Theory**

The stage theory has been criticized. First, in reality, the stages do not seem to be separate, sequenced, and consistent. People often give reasons for moral choices that recent several different stages simultaneously. Or a person's choices in one instance may fit one stage and his or her decisions in a different situation may another stage.

Second in everyday life, making moral choices involves more reasoning. Emotions, Compelling goals, relationships, and practical considerations all affect choices.

**Cultural Differences in Moral Reasoning**

Another criticism of Kohlberg's stage is that moral reasoning are biased in favor of Western, male values that emphasize individualism. In cultures that are more family-centered or group-oriented, the highest moral value might involve pulling the opinions of the group before decisions based on individual conscience. There has been much disagreement over the "highest" moral stage. Kohlberg himself questioned the applicability or stage 6. Few people other than trained philosophers reason naturally or easily at this level. Kohlberg (1984) suggested that for all practical purposes, stages 5 and 6 might be combined.

**Aggression.** There are several forms of aggression. The most common form *is* instrumental aggression, which is intended to gain an object or privilege, such as shoving to gel in line first or snatching a toy from another child. The intent is to get what you want, not to hurt the other child, but the hurt may happen anyway. A second kind is hostile aggression indicating intentional harm. Hostile aggression can be either the overt aggression of threats or physical attacks (as Ln, "I'm gonna beat you up!") or relational aggression, which involves threatening or damaging social relationships (as in, "I'm never going to speak to you again!"). *Boys* are more likely to use overt aggression and girls, like Alison in the opening case, are more likely to use relational aggression (Berk, 2002). Aggression should not be confused with assertiveness, which means affirming or maintaining a legitimate right. As Helen Bee (1981) explains, "A child who says, 'That my toy!' is showing assertiveness. 1£ he bashes his playmate over the head to reclaim it, he has shown aggression" (p. 350).

Modeling plays an important role in the expression of aggression (Bandura, Ross, & Ross, 1963). Children who grow up in homes filled with harsh punishment and family violence are more likely to use aggression to solve their own problems (Emery, 1989; llolden & Rilchie, 1991). One very real source of aggressive models is found in almost every home in America-television. In the United States, 82% of TV programs have al least some violence. The rale for children's programs is

especially high-an average or 32 violent acts per hour, with cart0011S being the worst. And in over 70% of the violent scenes, the violence goes unpunished (Mediascope, 1996; WalCH;, 1993). Most children spend more time watching television than they do in any other activity except sleep (Timmer, Eccles, & O'Brien, 1988).

You can reduce the negative effects of TV violence by stressing three points with your students: Most people do not behave in the aggressive ways shown on television; the violent a -ts on TV are not real, but are created by special effects and stunts; and there are better ways to resolve conflicts-these are the ways most real people use to solve their problems (Huessmann, Eron, Klein, Brice, & Fischer, 1983). Also, avoid using TV viewing as a reward or punishment because that makes television even more attractive to children (Slaby et al., 1995). But television is not the only some of violent models. Many popular films and video games are also filled with graphic depictions of violence, often performed by the "hero." Students growing up in the inner cities see gang violence. Newspapers, magazines, and the radio are filled with stories of murders, rapes, and robberies. In some preschools the children don't play "Mommy" and "Daddy; they pretend to sell "nickel bags" of heroin (really bags of ground-up chalk) to their playmates.

**Bullies.** Aggressive children tend to believe that violence will be rewarded, and they use aggression to get what they want. They are more likely to believe that violent retaliation is acceptable: "It's OK to shove people when you're mad" (Egan, Monson, & Perry, 1998). Seeing violent acts go unpunished probably affirms and encourages these beliefs. ln addition to being surrounded by violence and believing that violent "pay back" is appropriate when you are insulted or harmed, some children, particularly boys, have difficulty reading the intentions of others (Zelli, Dodge, Lochman, & Laird, 1999). As we saw earlier, they assume another child "did it on purpose" when their block tower is toppled, they are pushed on the bus, or some? their mistake is made. Retaliation follows and the cycle of aggression continues.

For example, one study in Finland found that teacher-rated aggression at age 8 predicted school adjustment problems in early adolescence and Long-term unemployment in adulthood (Kokko & Pulkkinen, 2000). Sandra Graham (1996) has successfully experimented with approaches that help aggressive, 5th- and 6th-grade African American boys become better judges of others' intentions. Strategies include engaging in role play, participating in group discussions of personal experiences, interpreting social cues from photographs, playing pantomime games, making videos, and writing endings to unfinished stories. The boys in the 12-session training group showed clear improvement in reading the intentions of others and responding with less aggression.

**Relational Aggression.** Insults, gossip, exclusion, taunt all these are forms of relational aggression. Sometimes called *social aggression* because the intent is to harm social connections. Both boys and girls take part in relational aggression, but after 2nd or 3rd grade, girls tend to engage in relational aggression more than boys. This may be because as girls become aware of gender stereotypes, they push their overt aggression underground into verbal, not physical, attacks. This type of aggression can be even more damaging than overt physical aggression-both to the victim and the aggressor. Victims, like Stephanie in the chapter opening, can be devastated. Relational aggressors can be viewed as even more problematic than physical aggressors by teachers and other students (Berger, 2003; Crick. Casas, & Mosher, 1997). As early as preschool, children need to learn how to negotiate social relations without resorting to aggression.

**Victims.** Some students tend to be bullies; other children are victims. Studies from Europe and the United States indicate that about 10% of children are chronic victims-the constant targets for physical or verbal attacks. These victims tend to have low elf-esteem and they feel anxious, lonely, Insecure, and unhappy. They often are prone to crying and withdrawal; when attacked, generally they won't defend themselves. Recent research suggests that victims may blame themselves for their situation. They believe that they are rejected because they have character flaws that they cannot change or control-no wonder they are depressed and helpless! The situation is worse for young adolescent victims whose peers seem to have little sym palsy for them. Children who have been

chronic victims through elementary and middle school are more

**When Aggression Leads to Violence:** One third of all injury related deaths are linked with personal violence and young people are often the victims. Teachers and student need to know that warning sign of potential dangers.

**Cheating.** Cheating seems to have more to do with the particular situation than with the general honesty or dishonesty of the individual.
Students focusing all performance goals (making good grades, looking smart) as opposed to learning goals, and students with a low sense of academic self-efficacy (a belief that they probably can't do well in school) arc likely to cheat. Students also are particularly likely to cheat when they arc behind or "cramming for tests" or when they believe that their teachers do not care about them. But the sad fact is that cheating by all groups has increased over the past 20 years.

### Dealing with Aggression and Encouraging Cooperation

- Present yourself as non aggressive model.
- Do not use threat!
- Ensure that your classroom ha enough pace and appropriate materials for eve student.
- Remove material that encourage personal aggression, such as toy gun.
- Make sure students do not profit from aggressive behaviors.
- Teach directly about positive social behaviors.
- Incorporate lessons on social ethics/morality through reading.
- Discus the ideas of antisocial actions such as stealing, hunting.
- Provide opportunities for learning tolerance and cooperation.

The implications for teachers are straightforward. To prevent cheating, try to avoid putting students in high-pressure situations. Make sure they are well prepared for tests, projects, and assignments so they call do reasonably well without cheating. Focus on teaming and not on grades. Make extra help available for those who need it. Be clear about your policies in regard to cheating, and enforce them consistently. Help students resist temptation *by* monitoring them carefully during testing. And separate the cheating behavior from your relationship with the student while you build authentic caring connections with your students.

**Lesson 06**

## INDIVIDUAL DIFFERENCES & HABIT FORMATION

### Socialization: Family, Peers, and Teachers

Socialization is the process by which the mature members of a society, such as parents, and teachers, inf1ucncc the belief and behaviors of children, enabling them to fully participate in and contribute to the society. In this section we will consider three of the most important influences on the development and socialization family peers, and teachers.

### American Families Today

Today in the United States., about 72% of the women with school-aged children are employed (US. Bureau of Labor Statistics, 2000). Given the number of children who live in single-parent homes (about 25%) and the number of homes where both parents work, your students are likely to be alone or unsupervised much of the time outside school. In fact the growing number of these latchkey children has prompted many schools to offer before- and after-school programs.

**Divorce.** The divorce rate in the United States is the highest in the world, Over third higher than the second-ranked nation, Great Britain (Berk, 2002). And as too · many of us know from experiences in our own families, Jaration a divorce is stressful events for all participants, even under the *best ci*rcumstances. The actual separation of the parents may have been preceded by years of conflict in the home Of may come as a shock to all, inducing friends and children. During the divorce itself, conflict may increase as property and custody rights are being decided.

After the divorce, more changes may disrupt the children's lives. The parent who has custody may have to more to a Less expensive h<inane, incline sources of income; go to work for the first time, or work longer hours. For the child, this can mean leaving behind important friendships in the old neighborhood or school, just when needed the most. It may mean having just one parent, who bas less tine ciliate ever to he with the children. About two-thirds of parents remarry and half of them divorce again, so there are mote adjustments ahead for the children (Furstenburg &; eherlin, 1991; Nelson, ]993). In some divorces there are few conflicts, ample resources, and the contributing support of friends and extended family. But divorce is never easy for anyone.

**Effects of Divorce.** The first two years after the divorce seem to be the most difficult period for both boys and girls. During this time children or just skip school, lose or gain an unusual amount of weight, develop difficulties sleeping, and so on. They may blame themselves for the breakup of their family *ot* hold unrealistic hopes for a reconciliation (Hetherington, 1999; Pfeffer, 1981). Longterm adjustment is also affected. Boys tend to show a higher rate of behavioral and interpersonal problems at home and in school than either girls in general or boys from intact families. Girls may have trouble in their dealings with males. They may become more sexually active or have difficulties trusting males. However, living with one fairly content, if harried, parent may be better than living in a conflict-filled situation with two unhappy parents. And adjustment to divorce is an individual matter; some children respond with increased responsibility, maturity, and coping skills. Over time, about 75% to 80% of children in divorced families adapt and become reasonably when adjusted (Hetherington & Kelly, 2002). See the *Guidelines* for ideas about how to help students in these situations.

### Peer Relationships and Peer Cultures

Friendships are central to students' lives. When there has been a falling-out or an argument, when one child is not invited to a sleep-over, when rumors are started and are made to ostracize someone {as with Alison and Stephanie at the beginning the chapter), the results can be devastating. Even when students begin to mature know intellectually that rifts will soon be healed, they may still be emotionally based by temporary trouble in the friendship. Beyond the immediate trauma of friendship failures, Peer relationships playa significant role in healthy personal and social development, There is strong evidence that who had dose friends as children have higher self-esteem are more capable of maintaining intimate relationships 1bnadults who had lonely childhoods. The characteristics friends and the quality of the friendships matter too, supportive relationships with

friends who are and mature enhances social development, during difficult times such as parents' divorce or monition to new schools (Hartup & Stevens, 1999). Adults who were rejected as children tend to have more problems, such as dropping out of school or committing crimes (CoiettaL, 1995; Coie & Dodge, 1998), parents divorce or position to new schools (Hartup & Stevens, 1999). Adults who were rejected as children tend to have more problems, such as dropping out of school or committing crimes (Coie 'ttaL, 1995; Coie & Dodge, 1998).

Who **Is Likely to Have Problems with Peers?** Students who are aggressive, withdrawn, and inattentive-hyperactive; Ire more likely to be rejected. But classroom context matters; 100, especially for aggressive or withdrawn students. In classrooms where the general level of aggression is high, being aggressive is less likely to lead to peer rejection. And in classrooms where solitary play and work are more common, being withdrawn is not as likely to lead to rejection. Thus, part of rejection is being too different from the norm. Also, prosocial behaviors such as sharing, cooperating, empathy, and friendly interactions are assonated with peer acceptance, no matter what the classroom context. Many aggressive al1dwithdrawn students these social skills; inattentive hyperactive students often misread social cues or have trouble controlling impulses, their social skills suffer too (Stormshak, Bierman, Bruschi, Dodge, & Coie, 1999). A teacher should be aware of how each student gets along with the group. Are there outcasts? Do some students play the bully role? Careful adult intervention an often correct such problems, especially at the middle elementary-school level.

Peer Cultures. Recently psychologists have studied the powerful role of peer culture in children's development. Peer cultures are groups of students who have a set of "rules"-how to dress, talk, style their hair. The group determines which activities, music, or other students are in or out of favor. For example, when Jessica, a popular high school student, was asked to explain the rules that her group lives by, she had no trouble:

OK. NO.1: do these you cannot wear jeans any day but Friday, and you cannot wear a ponytail or sneakers more than once a week. Monday is fancy day-like black pants or maybe you bust out with a skirt. You have to remind people how cute you are in case they forgot over the weekend. No.2: parties. Of course we sit down and discuss which ones we're going to because there is no point in getting all dressed up for a party that's going to be lame. (Taibot, 2002, p. 28)

These peer cultures encourage conformity to the group rules. When another girl in Jessica's group wore jeans on Monday, Jessica confronted her: "Why are you wearing jeans today? Did you forget it was Monday?" (Talbot, 2002, p. 28). Jessica explained that the group had to suspend this "rebel" several times, not allowing her to sit with the group at lunch.

To see the power of peers, we have to look at situations where the values and interests of parents dash with those of peers, and then see whose influence dominates. In these comparisons, peers usually win. For example, differences between black and white achievements vanish when you take peer culture into account (Tavris, 1998). But not all aspects of peer cultures are bad or cruel. The norms in some groups are positive and SUPPOTt achievement in school. Peer cultures are more powerful in defining issues of style and socializing. Parents and teachers still are influential in matters of morality, career choice, and religion (Harris, 1998).

*New Roles for Teachers*

When we consider the high rate of divorce and the power of peer relationships for children, we see that teachers today are dealing with issues that once stayed outside the walls of the school. The first and most important task of the teacher is to education but student learning suffers when there are problems with personal and social development.

Teachers are sometimes the best source of help for students' fundamental interpersonal problems. When students have chaotic and unpredictable home lives, 'they need a caring, firm structure in school. They need teachers who set clear limits, are consistent, enforce rules firmly but not punitively, respect students, and show genuine concern. As a teacher, you can be available to talk about personal problems without requiring that your students do so. One of my student teachers gave a boy in her class a journal entitled «Very Hard Thoughts" so that he could write about his parents' divorce. Sometimes he talked to her about the journal entries, but at other times he just recorded his feelings. The student teacher was very careful to respect the boy's privacy about his writings. In

Chapter 13 you will learn about strategies and programs for helping students develop socially and emotionally. For now, the *Guidelines* give some ideas.

## Psychology of Individual Differences

Meaning and definition of individual differences:
Individual difference psychology examines how people are similar and how they differ in their thinking, feeling and behavior.
For example, people can be classified according to intelligence and personality characteristics.
People are complex, however, and there are multiple theories and evidence as to what are the prevailing aspects of psychological differences.
The general structure for this course is to study intelligence for the first 5 weeks, then personality for 10 weeks.

**Introduction to Individual Differences**
Individual differences are a cornerstone subject area in modern psychology. In many ways, it is the "classic" psychology that the general public refers to - it refers the psychology of the person - the psychological differences between people and their similarities.
Plato stated more than 2000 years ago:
"No two persons are born exactly alike; but each differs from the other in natural endowments, one being suited for one occupation and the other for another."
Individual difference psychology examines how people are similar and how they differ in their thinking, feeling and behavior. No two people are alike, yet no two people are unlike. So, in the study of individual differences we strive to understand ways in which people are psychologically similar and particularly what psychological characteristics vary between people. In the Western psychology approach to individual differences, it is generally assumed that:
People vary on a range of psychological attributes
It is possible to measure and study these individual differences individual differences are useful for explaining and predicting behavior and performance
We can classify people psychologically, according to their intelligence and personality characteristics, for example, with moderate success, however people are complex and much is still left unexplained.
There are multiple and often conflicting theories and evidence about individual difference psychology.
Human beings have been aware of individual differences throughout history, e.g.
Gender differences -hunters=men, gatherers=women
Intelligence differences - caste, class, education, etc.
Personality differences - job specializations
Early study of individual differences
We have come a long way since Franz Gall invented phrenology in the early 1800s. Phrenology is the study of an individual's bumps on the skull, which supposedly reveal character traits and mental abilities.
Phrenology had such vogue that by 1832 there were 29 phrenological societies in Britain and many journals in both the UK and US devoted to the study of phrenology. It was seriously proposed to select Members of Parliament from their "bumps". Some phrenologists even molded children's heads to accentuate good qualities and minimize bad ones!
Despite the theory being incorrect one of its assumptions holds true: the idea that various brain regions have particular functions.
Darwin suggested that nature selects successful traits through the "survival of the fittest". His cousin, Sir Francis Galton (1822-1911) concluded that he could apply the principle scientifically. Why not measure human traits and then selectively breed superior people? He assumed human traits, everything from height and beauty to intelligence and ability, to personality traits such as even-temperedness, were inherited.

Modern psychology has formalized the study of individual differences over the last 100 years. Individual differences psychology is still a young science and a relatively recent development in modern psychology. There are still many debates and issues. Current knowledge will change and evolve. So, have an open-minded, but critical perspective as we go along!
Since there are multiple and controversial viewpoints, it is necessary to move beyond reliance on personally preferred viewpoints to also embrace alternative perspectives, particularly those which are utilized in psychological practice and which have solid research support.

The science of psychology studies people at three levels of focus captured by the well known quote: "Every man is in certain respects (a) like all other men, (b) like some other men, (c) like no other man" (Murray, H.A. & C. Kluckhohn, 1953).
**Individual differences psychology** focuses on this second level of study. It is also sometimes called Differential Psychology because researchers in this area study the ways in which individual people differ in their behavior. This is distinguished from other aspects of psychology in that although psychology is ostensibly a study of individuals, modern psychologists often study groups or biological underpinnings of cognition. For example, in evaluating the effectiveness of a new therapy, the mean performance of the therapy in one group might be compared to the mean effectiveness of a placebo (or a well-known therapy) in a second, control group. In this context, differences between individuals in their reaction to the experimental and control manipulations are actually treated as errors rather than as interesting phenomena to study. This is because psychological research depends upon statistical controls that are only defined upon groups of people. Individual difference psychologists usually express their interest in individuals while studying groups by seeking dimensions shared by all individuals but upon which individuals differ.

**Importance of Individual Differences**
The study of individual differences is essential because important variation between individuals can be masked by averaging. For example, a researcher is interested in resting metabolic rate in humans. The researcher gathers a sample of men, women, and children, measures their metabolic rate and gets a single average. The researcher then tells the whole population that they should be eating 1,900 calories a day. What's wrong with this study? The researcher has neglected individual differences in activity level, body size, sex, age, and other factors that influence metabolic rate. The average reported based on the results is masking multiple dimensions that should be used to determine daily caloric intake. Therefore, his or her conclusions are misleading if not outright false. This is an extreme example to make a point, but it illustrates the problems that can arise by averaging across groups.
Areas of study
Individual differences research typically includes personality, motivation, intelligence, ability, and IQ, interests, values, self-concept, self-efficacy, and self-esteem (to name just a few). There are few remaining "differential psychology" programs in the United States, although research in this area is very active. Current researchers are found in a variety of applied and experimental programs, including educational psychology, industrial psychology, personality psychology and social psychology programs.

Psychology often makes generalizations about people. Depending upon your point of view this can be seen as a great strength of psychology or a weakness or probably both.
It is important that we recognize that there are as many differences between people as there are similarities
There has been a tendency in psychology to ignore the experiences of people from different cultures. Two of the studies in this section attempt to explore the experiences of Black people within the Western world.
The first study by Gould (1982) is a review of the use of IQ testing. Gould demonstrates how psychological arguments have been used to support racist arguments of White superiority.

The study by Hraba and Grant (1970) investigates the identity of American Black children. Their study demonstrates that there has been a change in consciousness of Black children from 20 years previously.
A further issue that is often included in the section of individual differences is what psychologists refer to as abnormality. However the concept of abnormality is also a highly controversial issue.
The judgment that somebody is abnormal is relative and is based on factors such as culture, class, religion, sexuality and so on.
The study by Rosenhan (1973) challenges the ability of professionals to classify abnormality. The study by Thigpen and Cleckley (1954) also illustrates the controversy of diagnosing multiple personality.
Candidates should:

- be able to describe and evaluate the individual differences approach in psychology;
- demonstrate a knowledge of some cultural variations in behaviour and experience;
- be able to evaluate the psychometric approach;
- consider the issues in the construction and application of psychometric tests;
- consider the ethnocentric nature of Western psychology;
- understand the difficulties involved in defining abnormality and normality;
- consider the practical, theoretical and ethical consequences of applying definitions of abnormality:
- understand that explanations of mental disturbance have arisen from more than one perspective;
- be able to evaluate attempts to gather empirical evidence on cases of mental and behavioural disturbances;
- consider the implications of research in the psychology of individual differences.

**Types of Individual Differences**
Physical differences
Mental differences
Differences in motor ability
Differences in achievement
Emotional differences
Differences in interests and aptitudes
Differences in attitudes, beliefs and opinions
Learning differences
Differences in social and moral development

**Distribution of Individual Differences**
What is the range or limitations of differences? Do these differences follow some pattern? Distribution of almost all the things in nature follows the pattern of a normal curve. Height, weight, beauty, wealth, intelligence and similar other attributes of our personality are distributed in our population in a normal way. Majority of us posses average weight, height, health, beauty and intelligence etc. there are few who are very fatty or too thin. In this way it can be easily concluded that a majority among us consists of averages or normals in terms of posesion of all the attributes of our personality.

**Determinants of Individual Differences**
What it is that is responsible for the differences and variations among human beings? Educationalists, psychologists and sociologists have tried to study this through their researches. They have in turn concluded that both the hereditary as well as environmental factors jointly responsible for differences and variations among us.

**Provisions for Individual Differences in Schools**

To provide adequate schooling or learning experience for every learner according to his individuality is not an easy task. However following suggestions can be helpful for any teacher.

**a) Proper knowledge of the individual's potentialities**

The first step is to know the abilities, capacities, interests, aptitudes and other personality traits of individual pupils. For this purpose, frequent assessment in the form of intelligence tests, cumulative record card, interest inventories, attitude scales, aptitude tests and measures for assessing personality traits shall be carried out.

**b) Ability grouping**

In the light of results derived from various tests of knowing individual differences in various potentials, the students in a class can be divided into homogeneous groups.

**c) Adjusting the curriculum**

The curriculum should be as flexible as possible. It should have the provision for a number of diversified courses.

**d) Adjusting the methods of teaching**

Considering the varying individual differences adjustment with regard to the adaptation of methods of teaching is very effective.

## Habits and Habit Formation

We form habits for reducing stress and strain through practice. Any action which needs much effort and attention at the initial stage gradually becomes easier and less time consuming. They become automatic and spontaneous through repetition. Some of the characteristics of habits may be enumerated as follows:

- Habit is acquired through repetition in thinking and acting in the same way a number of times which makes the thought and action a part of the habit.
- Habit when acquired, does not require any effort and attention.
- It becomes automatic and almost mechanical.
- Habit facilitates any kind of action through frequent exercise.

Any habit once formed takes time to change. For example anyone who is used to eat rice and curry with finger and hands takes time to change.

The psychologists assume the role of nervous system when the current flows from one nerve centre to another. They refer to channel or path created between the two points as the result of stimulation.

One of the advantages of the formation of habits is the economy of physical energy. The performance of habitual action costs little or no effort. In short:

Habit reduces fatigue. For example on the first day of typing one needs more effort than on subsequent days.

Habit makes movements simpler

Habits make our movements more accurate

Habits ensure greater speed

In spite of advantages of habit formation, habit is not without its limitations. It is mechanical stereotyped and is not adaptable to new situations. It is the mechanizing tendency of habit which is hardly appreciated by many. It has been rightly said that the best habit is to have no habit.

### The Role of Habit in Life

Habit have definite role in life as they contribute to health, happiness and efficiency in course of experience. A man develops industriousness through habit, he may also become lazy as a result of his aversion to work. Similarly this honesty and sincerity, shyness or open mindedness depends upon his habit. Even the attitude and outlook depend upon how he spends his early days. Whatever we do, or think tends to become habitual.

In fact, every individual is a bundle of habits. Many believe that childhood is a formative period when good habits are to be formed.

Every home and school should, therefore, try to inculcate certain fundamental healthy habits during the formative period.

**Lesson 07**

## PSYCHOLOGY OF MOTIVATION

### What is motivation?

We see a girl getting bruises and cuts and quite often falling down while learning cycling, but she tries to improve her perform an e by continued practice. Similarly, an athlete may be seen to rise quite early in t e morning and regularly visit the track or field for continued practice irrespective of the odds of the seasons. A student may be seen to burn the midnight oil as the examination approaches.

What makes the above girl, the athlete and the student behave in a particular manner? The answer to such question on the why and ho behavior lies in the key word 'motivation'. They behave as they do because they are motivated to do so. *Motivation, thus, may be regarded as something which prompts, compels and energies an individual to act or behave in a particular manner at a particular time for attaining some specific goal or purpose.* But what exactly is responsible for the motivation of an individual? What are the real activating forces that push and pull an individual to move or act for achieving a *J* specific goal? Psychologists have tried to provide the answer by identifying these activating forces as needs, drives and motive.

### Needs

Needs are general wants or desires. Every human being has to strive for the satisfaction of his basic needs if he has to maintain or improve or fulfill himself
in the world.

Nothing can be said about the number of the individual needs. While some scholars hold that the number of individual n s is infinite, others have provided a definite number, e.g. Murray has given a list of 37 needs. In this text, for the sake of proper understanding and clarity, we would like to divide human needs into two broad categories, namely, biological needs as socio-psychological needs.

### Biological Needs

All our bodily or organic needs fall into this category. They may be further categorized as follows:

In the first category of biological needs, we have the need for oxygen, water and food. These needs are most fundamental for our survival and 138
existence. We cannot even imagine survival beyond a limited period if we are deprived of these.

In the chain of our survival and existence the other category of biological needs includes needs such as the need for (a) rest when tired, (b) action when rested, (c) regular elimination of waste products from the body, (d) having an even internal body temperature, (e) sleep after periods of wakefulness, (f) protection from threats of the physical environment like hazards of weather, natural calamities, wild animals etc.

In the third category of biological needs, we can place the need for satisfaction of the sex urge or desire to seek sex-experiences. Although the sex urge is not essential for the survival of an individual, it is the strongest human urge in the satisfaction of which lies his proper growth, development, adjustment and well-being. Moreover, the satisfaction of this need and normal sexual behavior is most essential for a happy domestic life and the continuity and survival of the human species.

In the last category of biological needs, are the needs associated with the demands of our senses. These sensory needs include the need for physical contact sensory stimulation and stimulus variability and manipulation. Although we may not die if deprived of these needs, they are considered to be essential for our general welfare and optimal growth.

### Socio-psychological Needs

Under this category we can list al1 those needs that are associated with the socio-cultural environment of an individual. They are acquired through social learning. Although such needs are not linked with the survival of the organism or the species, yet deprivation of these may lead to a psychological state thereby seriously affecting its survival and welfare. For the sake of clarity these needs may be classified in the following manner:

1. *The need for freedom or gaining independence.* Nature has created us as free and independent individuals and requires us to remain so. Therefore, all human beings have an urge to remain free and independent.
*2. The need for security.* Every one of us needs to feel secure not only from physical dangers but also from the socio-psychological angles; we need desirable emotional, social and economic security for our well-being.
*3, The need for love and affection.* Everyone of us, irrespective of age, caste, color and creed. has a strong desire to love and to be loved. Depending upon one's age and circumstances it may vary in intensity and nature, but a sort of emotional craving for the satisfaction of this need is exhibited universally by all living organisms.
*4. The need to achieve.* Every human being has a strong desire to achieve some or the other goals like money, fame, reputation, degree, positions of merit, medals, a good spouse, spiritual attainment, etc., not only to raise his status in the eyes of others but also for the satisfaction he would get from his own accomplishment.
*5. The need for recognition or social approval.* Each one of us has an inherent desire to gain recognition, appreciation and esteem in the eyes of others. An artist may thus desire to be known for his art, a young woman may desire to be appreciated for her beauty, good manners or housekeeping especially by their peers. A student may show this desire by excelling over other students of his class and thus gaining the required social status prestige or approval from his fellow students, teachers and parents.
*6. The need for company.* Man is called a social animal in the sense that he has a strong urge to be with his own kind and maintain social relations with them. The real impact of this need can be felt by those individuals who are faced with social rejection or solitary confinement.
*7. The need for self-assertion.* Everyone of us has an inherent desire to get an opportunity to rule Of dominate over others. It may vary in intensity from person to person but it is exhibited by an of us in one or the other situation irrespective of age, strength and status. Some may show it in dealing with their juniors servants life partner of children while others may exhibit it towards their pets and even inanimate things like dolls or pictures This need to assert oneself gives birth to an important motive called the power motive which works as a strong determinant of one's personality and behavior.
*8. The need for self-expression or self-actualization.* We all have an inherent craving for the expression of our self and actualization of our own potentialities. An individual may have a poet, musician or painter hidden within him and thus may have a strong desire to have his talent exhibited or nurtured. In this way we want to get adequate opportunities for the expression and development of our potentialities and so we strive to this end and are not happy until we get the opportunities for such self-expression and self-actualization.

**Drives**

A need gives rise to a drive which may be defined as an aroused awareness, tendency or a state of heightened tension that sets off reactions in an individual and sustains them for increasing his general activity level. The existence of a need moves or drives the individual from within and directs his activities to a goal that may bring about the satisfaction of that need. The strength .of a drive depends. ,upon the strength of the stimuli generated by the related need.
Drives of any nature are divided into two categories. In the first category are
the biological or primary drives such as hunger, thirst, escape 'from pain and the sex drive. In the second category are the socio-psychological or secondary drives such as fear or anxiety, desire for approval, struggle for achievement, aggression and dependence. These drives are not related to physiological needs and therefore do not arise from imbalances in the body's internal functioning. They arise from socio-psychological needs and are said to be 'acquired through social learning as a result of one's interaction with the socio-cultural environment. These drives move an individual to act for the satisfaction of his socio-psychological needs which in turn reinforce the behavior so that it may be maintained and continued. Contrary to the socio-psychological or secondary drives, primary or biological drives are basically unlearned in nature and rise from biological needs as a result of a biological mechanism called *homeostasis.*

The term 'homeostasis' was coined by W.B. Caimon, a prominent Harvard University physiologist. Cannon (1932) suggested that our body system constantly works toward an optimum level of functioning, maintaining a normal state of balance between input and output. For example, when the blood sugar level drops, the brain, glands stomach organs, and other body parts send out signals which activate a hunger drive and make one feel hungry. After food has been consumed by the individual's body it returns to a state of balance. This maintenance of an overall physiological balance is homeostasis. When there is an imbalance there is a need to restore the balance and a drive arises which in turn serves as an instigator of behavior.
The term 'homeostasis' used by Cannon with reference to body chemistry
now has been broadened to include any behavior that upsets the balance of an individual. The denial or failure in the satisfaction of any basic need may bring about an imbalanced psychological state, giving rise to a primary or secondary drive for initiating a particular kind of behavior.

**Drives and Incentives**
Drives are also influenced and guided by incentives. Praise, appreciation, rewards, bonus, fulfillment of one's need and achievement of the desired objectives are some examples of incentives.
An incentive works as a reinforcing agent as it adds more force to a drive.

A piece of toffee, chocolate, an ice cream or a toy may act as an incentive for a boy and as a result he may be further motivated to act or behave in a desirable way. Similarly a favorite food may provide an incentive for an individual to eat or a favorite movie may compel an individual to go and see it. Drives whether primary or secondary, are thus greatly affected and directed by incentives. These incentives work more forcefully in case the organism has been deprived of that particular incentive for a length of time.

**Motives**
In their search for the origin of a motivated behavior, psychologists start from the basic needs-biological or socio-psychological. A particular need gives rise to an activating force or a drive that moves an individual to act or behave in a particular fashion at a particular time. Drives thus work as the basic activating forces behind behavior. However in psychological as well as day-to-day language we usually come across statement like: What was the motive behind this crime? What may be the motive of an individual to criticize or blame us? These statements clearly indicate that a motive works as a basic activating force behind a particular behavior. It makes one wonder why the tenas drive and 'motive' which carry the same meaning are often employed interchangeably. However, psychologists while explaining the mechanism of behavior have now started to concentrate on the term motive instead of the old term drive. For clarity, they have tried to define it in the following ways.

According to *Fisher* (Labhsingh and Tiwari, 1971):
A motive is an inclination or impulsion to action plus some degree of orientation or direction.

*Rosen, Fox and Gregory (1972):*
A motive may be defined as a readiness or disposition to respond in some ways and not others to a variety of situations.

*Carroll (1969):*
A need gives rise one or more motives. A motive is a rather specific process which has been learned. It is directed towards a goal.

All these definitions lead us to generalize that:
Motive is an inner state of mind or an aroused feeling generated through basic needs or drives which compel an individual to respond by creating a kind of tension or urge to act. It is a preparation for

responding in some selective manner for the satisfaction of the related need and is a goal-directed activity pursued till the attainment of the goal.
A change in goal may bring about changes in the nature and strength of the motive, while attainment of the goal helps in the release of tension aroused by a specific motive.
Motive may be considered to be a learned response or tendency and also an innate disposition.
Motive may thus be considered to be an energetic force or tendency (learned or innate) working within the individual to compel, persuade or inspire him to act either for the satisfaction of his basic needs or the attainment of some specific purpose. There are a variety of motives based on the basic human needs. For understanding the nature and role of these motives, let us briefly discuss a few important ones.

**Hunger Motive**

Our body's need for food is the basis of this motive. The longer we are deprived of the food, the greater the intensity of this motive. More often, a growing stomach or hunger pangs caused by the contraction of the stomach are taken as hunger signals. This may be quite misleading because these symptoms may be produced by temporal conditioning caused by eating at a more or less fixed time every day. On the basis of laboratory findings, it has been now agreed that the physiological key to hunger lies in the chemical composition of the blood and a structure in the brain called the hypothalamus. The sugar, glucose which is present in OUT blood helps to provide energy to the body. It can be stored in the liver only in small quantities and for a short time. When the amount of glucose in the blood, the blood-sugar level drops below a certain point, a message is sent to the hypothalamus which in turn alerts the body to its need for food. After eating, when the blood-sugar level has risen, the hypothalamus works for inhibition of the hunger messages. Two areas of the hypothalamus that are involved in the hunger mechanism have been identified. The lateral hypothalamus controls the 'on' switch and thus sends out hunger signals, while the ventromedial hypothalamus performs the task of inhibition by controlling the 'off' switch.
The physical mechanism of hunger as explained above tries to throw light on the working of the hunger motive and the eating behavior. However, our eating behavior is too complex to depend only on blood sugar levels and the hypothalamus. Recent researches have suggested that number of other parts of the brain such as the limbic system and the temporal lobe may also playa major role in the human hunger drive. It has also now been experimentally proved that besides the chemical composition and brain mechanism, certain other personal, social, cultural and psychological factors like choice or preference for a specific food, one's biological predisposition, boredom, loneliness, nervousness, insecurity, anxiety, depression, socia-cultural demands acquired food habits and similar other factors also govern the eating behavior of human beings.

**Thirst Motive**

This drive or motive arises from the need for quenching thirst. It is found to be stronger than the food motive as we can exist longer without food than we can without water. In the case of this motive the apparent signals like hunger pangs in the hunger motive come from the sensation of dryness in the mouth and throat. However, as we have seen with hunger the thirst motive goes much deeper than that. The physiological key to the thirst motive, like the hunger motive, in the imbalance of fluid in the body tissues and the hypothalamus. Imbalance of fluid in the body has been linked to the level of salt (sodium chloride) in the blood stream as salt caused dehydration. A high level of salt in the blood upsets the fluid balance in the tissues which in turn calls for the supply of fluid to them. This message is conveyed to the lateral hypothalamus and the thirst drive is activated. After getting the supply of fluid in the form of a drink, the body's chemical balance is restored. This activates the thirst satiety centre situated in the hypothalamus which in turn switches off the thirst drive.
In this way, it may be seen that while the chemical imbalance of the body instigates the hunger or thirst motive, the centers for its control lie in the central nervous system particularly the hypothalamus. Similarly it may be seen that the human thirst behavior depends not only on one's biological predispositions and chemical imbalance of *the body tissues and is, to* a *large* extent, a function of *social* learning. Why we drink, what we drink, when we drink and how we drink somehow or the other, depends upon personal, social and cultural factors and environmental learning.

**Sex Motive**

The sex motive, *although not an essential* (or an individual's survival as food and water. constitutes a highly powerful psycho-physical motive. Apart from being the medium of survival of the species, its satisfaction results in feeling of immense happiness and well-being in an individual. Whereas the root of the sex motive is purely biological and innate in the non-human animals, it is not so simple in human beings whose sex drive is governed by both the physiological and psychological factors. Therefore, the human sex motive is termed as a complex blend of innate as well as acquired tendencies.

In most animals, sex hormones are undeniably essential in stimulating the sex drive. These hormones, the testosterone in the male and estrogens in the female, are secreted by the testes and the ovaries respectively. Experiments with the removal of testes and ovaries in the case of male and female animals or birds or injection of doses of the male or female sex hormones have clearly demonstrated the extent to which secretion of sex hormones actually determines sexual behavior in different species.

This dependence on hormones is seen to decrease as we move up the phylogenetic scale from lower animals and birds to monkeys and chimpanzees. Finally, in sexually experienced adult humans, we see still more freedom from hormonal controls. Castrated males and ovariectomized females sometimes experience little or no decline in the sex drive or its satisfaction. Females may also remain sexually active after the natural decline in ovarian function that occurs with age in the form of menopause.

In addition to the dependence on hormones, females of most species, excluding humans are sexually receptive only at certain times-when they are in heat or, in more technical language, during the estrus cycle. During this period, the ovaries secrete and release a greater quantity of estrogen into the blood stream as a result of which the female becomes receptive to the advances of the males. This period coincides with the occurrence of ovulation in the females and consequently may result in pregnancy.

In human beings, although pregnancy is possible only in the oestrus pedods the sex drive is not dependent upon their occurrence. In general, human females and males can be sexually motivated at any time quite independently of the period of fertility and hormone production. Much of their motivation in the form of sexual arousal and behavior is rooted in earlier experiences and social learning and controlled by lesions in the hypothalamus the subcortical structure in the brain.

On account of the involvement of the cortical areas of the brain the sources for the instigation of the sex drive and sexual arousal are highly varied in human beings. Sometimes this may be emotional feelings about the sex partner and at other times it may be a visual, auditory, or tactile sensation, a picture or a fantasy. In practice the sex game is more psychological than biological or organic. For example, a smell of one's choice or even a little moonlight can work wonders in stimulating the sex drive in humans. The other variables related to one's socio-cultural environment, sexual experience and learning also playa significant role in guiding and deciding the mode and nature of the sex drive and behavior in human beings independently of their fertility period and secretion of hormones.

**Maternal Motive**

The behavior involving the care and protection of offspring by the females of a species is called maternal behavior and the motive that energizes a female to engage in such behavior is called the maternal drive or motive. The maternal drive is stimulated both by biological as well as psychological factors interrelated with learning. Hormones also play an important role in activating the maternal drive. The hormone progesterone has been found to be important in maintaining pregnancy. Another hormone, prolactin, produced by the pituitary gland, directs the mammary glands to secrete milk for the newborn.

Maternal behavior in the later period is controlled and guided by the learning components of the natural maternal drive. The stimuli responsible for activating the maternal drive and behavior spring from a variety of sources: from one's physical environment, or socio-cultural background, from one's mother and grandmother, from observing the behavior of friends and neighbors, from books, movies and television etc. One's own physical and mental health may also contribute in this direction. However, much depends upon the impact of social learning and earlier experiences which leave an

indelible impression on the mind of the mother justifying the finding that being a good and loving mother depends considerably on one's having had a good and loving mother for oneself.

**Aggression Motive**

The aggression motive is related to those behaviors that are intended to inflict physical or psychological harm on others. Various views have been expressed about the origin and working of this motive. Those believing in the instinctive theory like Freud, Lorenz and Ardrey held that the aggression motive is linked with an innate independent instinctual tendency in human beings which expresses itself in destructive and violent activities. However, this innate drive concept now stands rejected due to the lack of substantial research.

According to another viewpoint, aggression is a result of frustration. However, later researches have proved that aggression is not always an essential reaction to frustration. Bandura (1973) suggests that frustration generates aggression only in those people who have previously developed aggressive attitudes and actions as a means to cope with their environment. An individual may be aggressive because he has been brought up in the environment where he frequently observed his parents, elders, teachers and peers, showing aggression towards him or towards others. A teacher, parent or a friend, who is rebuking or punishing someone aggressively, essentially provides a model of effective aggression to be imitated by the child. Imitation of aggression does not occur just with live models~ violence or aggression shown on television or the cinema screen and described in the pages of magazines and novels may impel an individual towards aggression. This provocation if reinforced, may lead him to adopt aggression as a mode of his usual behavior.

**Affiliation Motive**

The affiliation motive springs directly from the affiliation need, a need to be with other people. This need to be with other people has its origin in the herd instinct.

For most animals, the herd instinct is genetically programmed as a result of which they live together in packs, flocks or groups and so receive better care and protection for their welfare and survival. In human beings also the desire to be in a group may stem from the herd inst1nct for the fear and anxiety concerning welfare and survival. However, the arousal of the affiliation motive in their case 1S a somewhat complex phenomenon. It is very often stimulated by some other needs or motives like the social approval motive, the recognition motive, the power motive and the achievement motive. As these needs or motives are connected with the socio-psychological make-up of the individuals the affiliation motive must be cons1dered to be an offshoot of early experiences and social learning. Whether an individual adopts an isolated lifestyle or an affiliated lifestyle depends upon his experiences and interaction with his environment from earliest childhood. For example, children who are raised in dose-knit families, show a stronger affiliation motive than those coming from more loosely knit families. Neglected children at destitute, on the other hand may lack intensity of the affiliation motive. In this way patterns of affiliated behavior and strength of the affiliation motive may vary from individual to individual based on earlier experiences and social learning.

**Achievement Motive**

The need to achieve is the spring-board of the achievement motive. This desire is as basic and natural as the other biological or socio-psychological needs. However, in a competitive society or set-up the desire to excel over others or achieve a higher level than one's peers is intensified which in turn may lead to a stronger drive or motive to achieve something or everything that is essential to beat the others in the race and consequently experience a sense of pride and pleasure in the achievement. The type of motivation produced by such desire for achievement is called the achievement motivation and has been defined in various ways. Two such definitions are now given.

*Atkinson and Feather (1966):*

The achievement motive is conceived as a latest disposition which is manifested in overt striving only when the individual perceives performance as instrumental
L0 a sense of personal accompl1slunent.

*irvillg Sarnoff (Mallgal. 1989):*

Achievement motive is defined in terms of the way an individual orients himself towards objects or conditions that be does not possess. If he values those objects and conditions, and he feels that he ought to possess them he may be regarded as having an achievement motive.
Based on these definitions, we can say that the achievement motive moves or drives an individual to strive to gain mastery of difficult and challenging situations or performances in the pursuit of excellence. It comes into the picture when an individual knows that his performance will be evaluated, that the consequence of his actions will lead either to success or failure and that good performance will produce a feeling of pride in accomplishment. The achievement motive may thus be considered to be a disposition to approach success or the capacity to take pride in accomplishment when success is achieved in an activity.
As for the original and development of the achievement motive, it can be safely said that it is conditioned by one's early training, experiences and subsequent learning. In general, children usually acquire the achievement motive from their parent's lifestyle. Studies have shown that the children whose independent training starts at an early age and who get more autonomy within a cooperative encouraging and less authoritarian family environment usually develop an achievement-oriented attitude. Later on, the experiences and learning based on the circumstances and situations in his life may lead an individual to provide a level for the intensity of his achievement motive to struggle for attaining the standard of excellence desired by him.

**Theories of Motivation**
What motivates human behavior is not a simple question. Psychologists have tried to explain the process and mechanism of motivation in a number of ways. We shall now discuss some of the main viewpoints.

**McDougall's Theory of Instinct**
The oldest explanation for how and why we behave in a specific manner in a specific situation is given by the Theory of Instinct. Although it was William James who for the first time brought out the concept of instinct to explain behavior, the credit for developing it into a full fledged theory must be given to William McDougall. According to this theory, our instincts are the springboards of our behavior. These instincts are innate tendencies or inherited psychological dispositions or even the complex patterns of behavior that lead to some purposive actions and they don t have to be learned,

Emphasizing these views McDougall (1908) writes:
The human mind has certain innate or inherited tendencies which are the essential springs or motive power of all thoughts and actions, whether individual or collective and are the bases from which the character and will of individuals and of nations are gradually developed under the guidance of intellectual faculties.

The basis of some instinct or the other McDougall provided a list of 14 instincts and proposed that each instinct is accompanied by a specific emotional disposition (effective experience). The instinct of escape, for example, is accompanied by the emotion of fear, the instinct of combat (pugnacity) by anger, the instinct of repulsion by the emotion of disgust, and so on. He further claimed that all behavioral acts are essentially instinctive and this instinctive behavior is found to have the following three aspects: (a) cognition (knowing), (b) affection (feeling or experiencing an emotion), and (c) conation (doing or striving). For example, when a child sees a bull coming towards him, he practices an instinctive behavior by passing through the above-mentioned aspects or cycles. First, he sees the bull, second, he experiences an emotion of fear and third, he tries to run away. Thus according to McDougall, what we do and how we do it can all be explained through our instinctive behavior which is governed by our instincts accompanied by our emotional experience.
The theory of instinct proposed by McDougall has been a subject of great controversy and criticism by later psychologists on the following grounds:

Since the theory maintains that a behavioral act springs from an instinct, the psychologists believing in this theory began to compile a list of instincts for explaining the countless behavioral acts of human beings. Interestingly, psychological literature was flooded with more than 14 thousand instincts by the end of 1924. This created a lot of confusion and the failure to find a limited number of instincts to account for all human behavior became the subject of great controversy.

Moreover, it was established that as human behavior cannot be termed instinctive, as most human actions are learned and acquired through interaction with one's environment.

The researches by sociologists and anthropologists have emphasized that man is not purely instinctive and his basic nature is not an animal nature. Therefore, his behavior is not an instinctive behavior but is definitely shaped by the forces of his .social and cultural environment. Had it been operated wholly by instincts, which are common and universal, all of us would have behaved almost identically. The weakness of the instinctive theory thus is fully exposed by its inability to account for the existing individual differences.

Researches done in the field of cognitive ability have clearly revealed that behavior in which the higher intellectuals faculties are involved cannot be explained in terms of instinctive behavior. The thinking reasoning and problem solving behavior cannot be explained as the inert machine-like operation of innate instincts. Although a man interacts with his environment with the help of his innate potentialities for the solution of his problems and satisfaction of his needs, he is definitely helped in doing so by his cognitive abilities supported by the experiences he gains from his environment and, therefore, the how and why of man' behavior are definitely guided by factors other than the innate instincts and other tendencies he possesses.

In spite of all the criticisms leveled against it, the instinctive theory as a theory of motivation has not altogether lost ground. It is still regarded as an important theory to explain the how and the why of human behavior. The ethologists like Lorenz and Tibergen, have recently added a new dimension to this theory by evolving the concept of imprinting and species-specific behavior occurrence of a particular type of fixed action pattern distinct from chains of reflexes and the usual instinctive behavior quite independent of any previous experience, imitation or training. etc. The evidences of this species-specific behavior have been found in behavior like nesting and care of the young, courtship and sexl1al behavior food seeking, hiding and avoidance of danger, etc., among the different insect, bird. and animal species and races of human beings.

### Hull's Drive Reduction Theory

In 1943 Clark Leonard Hull a professor of psychology at Yale University, developed a theory of motivation named the Drive Reduction Theory. He stressed that biological drives such as hunger, thirst, sex and escape from pain are mainly responsible for initiating and maintaining the primary responses. These drives produce internal tension, an undesirable state that the organism wants to change. In other words, all of his energy is concentrated on his efforts to reduce the heightened tension (drive). Thus a hungry man activated by the need of reducing the tension created through the hunger drive may be compelled to engage in behavior that would help him to reduce the hunger drive.

The drive reduction theory was supported by other psychologists and its sphere was broadened by including the psychological drives in it. FaT explaining the mechanism of drive reduction as a source of motivation, the term *homeostasis* already explained in this chapter was also coined. However, the failure of this theory to explain human behavior especially at the higher cognitive level has reduced its importance as a major motivational theory.

### Freud's Psycho-analytic Theory of Motivation

Freud s psychoanalytic theory of motivation is centered around his concepts of instincts and the unconscious. Freud maintained that instincts are the root cause of all activities in a human being. He identified two basic instincts for this purpose. In hi book All *Outline of Psycho-analysis* (1953), he asserted that *eras* the life or erotic instinct and the death instinct or the desire to destroy even to the extent o destroying oneself are the ultimate sources of motivation. In fact, the life instinct the urge for self-preservation, dominates the earlier scenes of one's life. When the life instinct ceases to

operate, the death instinct takes over. For example, the person who hal1 failed in a love affair may think of committing suicide. However, what moves or energizes the activities of the life instinct is the need for sexual gratification-a mean' to provide intense pleasure, satisfaction and meaning 10 one s life. Freud maintained that from birth onwards human beings experience sex gratification and the sex motive, therefore, is quite an important motive that activates human behavior.

Besides the role played by one's life and death instincts and the sexual urge, the unconscious also is a great determinant and activating force for the cause and operation of one's behavior. The unconscious, which is 9/10th of one statal mental content according to Freud remains hidden and usually inaccessible. It consists of one's unfulfilled desires, wishes, ideas and feelings. It is like a great underworld with powerful unseen forces which is responsible, to a great extent, for all that we think, feel and do. Man, as Freud maintains is but a puppet in the hands of the mighty unconscious and thus he has to behave in the way and manner m which his unconscious dictates. Therefore, the key to the why and how of behavior lies in the choices made by one's unconscious which are usually the gratification of sex or the seeking of pleasure.

### Behaviorists Learning Theories of Motivation

According to the behaviorists' view, how and why we behave in a particular manner is fashioned by the experiences we receive through the acts of learning or training. Many times our behavior is guided through a simple stimulus-response mechanism as emphasized by Thorndike or operated through the mechanisms of classical or operant conditioning as advocated by Pavlov, Watson and *B.P.* Skinner. The role of reinforcement as a prime factor for the motivation of behavior was properly emphasized in Skinner's Theory of Operant Conditioning. He asserted that an organism behaves in the way and manner in which its behavior shaped through a particular reinforcement schedule.

Moving in the footprints of Skinner social learning theorists like Albert Bandura (1977) maintained that human motivation is mainly guided through social rewards like praise. Thus a girl often praised for her skill in the kitchen will turn into a very effective cook and a good housewife. According to him the imitation of other's behavior if it results in a reward provides a valuable motivational source for most of us and that is why the concept of modeling is more commonly employed in the world of industry and advertisement.

### Adler's Social Urges Theory

Disagreeing with the extreme views of Freud regarding sex as the basis of human motivation, Alfred Adler, a student of Freud advocated that human beings are motivated primarily by social urges. For maintaining one's social self one requires a margin of safety besides simple security in terms of protection from danger. This margin of safety is achieved through domination and superiority. In order not to feel inferior or small one strives or struggles for superiority. Therefore, the struggle for power, achievement and status or the will to dominate are really an outgrowth of the fundamental need for security. Thus the motivation of human behavior may be endorsed through a single basic drive known as the security drive or motive or in terms of a single need. the need for the security to maintain one's social sell.

### Goal-oriented Theory of Cognitivism

Unlike the mechanistic and instinctive approaches adopted by other psychologists, the cognitive school of psychology brings the role of cognitive factors in producing human motivation into the limelight. According to this view, human behavior is purposeful and has a certain end or goal in view. An individual who aspires to reach a goal is helped by his cognitive abilities to develop a desirable drive or motive i.e., tendency to move towards that goal. The achievement of the goal satisfies the individual which in turn reinforces the maintained behavior.

The cognitive view of motivation was first propounded by the philosopher psychologist William James (1842-1910) who emphasized that the concept of motivation was necessary to bring the

psychomotor gap between ideas and actions. This view was further elaborated by psychologists like George Miller who advocated the construction of plans for bridging the psychomotor gap to meet

**Cognitive Approaches to Motivation**

In many ways, cognitive theories of motivation also developed as a reaction to the behavioral views. Cognitive theorists believe that behavior is determined by our thinking, not simply by whether we have been rewarded or punished for the behavior the past. Behavior is initiated and regulated by plans, goals, schemas, expectations, and attributions (Weiner, 1992). One of the central assumptions in cognitive approaches is that people do not respond to extern~ events or physical conditions such as hunger, but rather to their interpretations of these events. In cognitive theories, people are seen as active and curious, searching for information to solve personally relevant problems. Thus, cognitive theorists emphasize intrinsic motivation. Bernard Weiner's attribution theory is a good example.

**Attribution Theory.** This cognitive explanation of motivation begins with the assumption that we try to make sense of our own behavior and the behavior of others by searching for explanations and causes. To understand our own successes and failures, particular1y unexpected ones, we all ask "Why?" Students ask themselves. Why did I flunk my midterm?" or "Why did I do so well this grading period?" They may attribute their successes and failures to ability, effort, mood, knowledge, luck help interest, clarity of instructions, the interference of others, unfair policies, and so on. To understand the success and failures of others, we also make attributions that the others are smart or lucky or work hard, for example. Attribution theories of motivation describe how the individual's explanations, justifications, and causes about self or others influence motivation.

Bernard Weiner is one of the main educational psychologists responsible for relating attribution theory to school learning (Weiner, 1979, 1986, 1992, 1994, 1994~ 2000; Weiner & Graham, 1989). According to Weiner, most of the attributed causes for successes or failures can be characterized in terms of three dimensions:

*Locus* (location of the cause internal or external to the person),
*Stability* (whether the cause stays the same or can change) and
*Controllability* (whether the person can control the cause).

Every cause for success or failure can be categorized on these three dimensions. For example, luck is external (locus), unstable (stability), and uncontrollable (controllability). Another cue for the involvement of cognitive factors in bringing motivation comes from the theory of cognitive dissonance advocated by American psychologist Leon Festinger. Cognitive dissonance denotes an imbalance between what we believe (cognition) and what we do (conation). It may result in psychological discomfort to us. As a solution, we are motivated to set the imbalance right either by changing in our beliefs or our behavior. For example, information linking smoking with cancer and heart diseases creates dissonance in chain smokers. They cannot resist the temptation to smoke, even though they are warned that cigarette smoking is injurious to their health. There is, in this situation, an imbalance or dissonance involving the beliefs (cognition) and behavior. The remedy lies in goal-directed behavior that is aimed at reducing the dissonance either by stopping the excessive smoking or by refusing to believe the information about the associated danger.

## Maslow's Self-actualization Theory

In 1954, Abraham Maslow proposed that a motivational behavior may satisfy many needs at the same time, thus implying that an act is multi-motivated. Human needs, according to Maslow arrange themselves in *hierarchies of prepoten.* In other words, the appearance of one need generally depends on the satisfaction of the others. They are closely related to each other and may be arranged from the lowest to the highest development of the personality. He proposed five sets of bask needs that can be arranged in a definite hierarchical order for understanding human motivation.

The physiological needs necessary for survival are at the bottom of the structure while distinctly psychological needs are at the top. Starting from the satisfaction of the physiological needs, every

individual strives for the satisfaction of the other needs of a higher order. This striving for one or the other level of needs provides the motivation for his behavior. A need that has been satisfied is no longer a need. It ceases to be a motivating force and, therefore, the satisfaction of one need leads an individual to try for the satisfaction of other needs. in this way the motivational behavior of a person is always dominated not by his satisfied needs but by his unsatisfied wants, desires and needs.

The motivational behavior of most of us fits into the hierarchical structure of needs devised by Ma low and the need of a higher order does not surface until a need of a lower order has been gratified. We can think of the other needs only when the need for food and the other basic physiological needs have been gratified. A hungry person cannot think of casting his vote, doing social service or attaining salvation through remembering God. Similarly, one who is insecure or unsafe may hardly be motivated for the gratification of the need for love or esteem.

But as it happens there is room for exceptions in Maslow's hierarchy of needs to explain human motivation. The history of mankind may point to countless heroes, saints and other great people who always stood up for their ideals, and religious or social values without caring for the satisfaction of biological or other lower needs.

It appears that the effects of the gratification of a need are more stimulating and important than the effects of deprivation. The gratification of needs of the lower order motivates an individual to strive for satisfaction of needs of the higher order. An individual as Maslow emphasized, can actualize his potentialities as a human being only after fulfilling the higher level needs like love and esteem. However, there may be exceptions to the hierarchical order. One may be more motivated for the satisfaction of one need at the cost of another and therefore a person can reach the top without caring for the satisfaction of needs of the lower order. It is very clear, however that the need of self-actualization dominates and rules all the other lower level needs. It seems to be the supreme aim of human life and thus works as a master motive for motivating human behavior. In the words of Maslow "A *musician must make music, an artist must paint, a poet must write poetry, if he is to be ultimately* Or *peace with himself What a man can be, he must be. He must be true to his own nature. This need we may call self actualization"* (1954). The fulfillment of self-actualization is thus a must for an individual as he will feel discontented and restless unless he strives for what he or she is fitted for.

**A Critical Estimate of the Theories of Motivation**

All the theories stated above try to explain in their own ways why and how we behave in a particular way in a particular situation. All have their strengths and limitations in doing so and no single individual can be said to be competent enough to account for the motivation for all types of behavior.

Theories like McDougall's instinctive theory, Hull's drive reduction theory *and Freud'5* psychoanalytic theory gives *importance* to the biological and organic factors in the *motivational process. By* considering human nature basically as animal nature, these theories in fact provide an *animal model* (the way animals and lower organisms behave) for explaining human behavior.

The learning theories of the behaviorists including B.E Skinner and social learning psychologists like Bandura, while completely ignoring the organic and biological factors relied heavily on the functionabi1ity of learning experiences and environmental factors to explain the motivation and shaping of human behavior.

The behaviorists are often criticized for adopting a mechanistic approach and providing a *machine model* in support of their beliefs.

Other psychologists like Adler and Maslow struck a balance by highlighting the importance of both biological factors in the form of needs and urges and learning experiences in the motivational process. However as we can understand, man is far from being an animal or a machine. Therefore in this connection, the efforts of cognitive psychologists and humanists like Maslow are worth appreciating. Both these categories of psychologists gave due consideration to the abilities of human beings to strive intelligently for realizing their goals and higher motives. In one's behavior one is guided through one's cognitive abilities and does not simply act as a puppet in the hands of one's biological functioning or environment.

One cannot, on the other hand reason or think in a vacuum. One thinks and behaves as required by one's biological make-up and environmental surroundings. Therefore, we cannot isolate the role and influence of anyone of the three main constituents namely biological needs, learning experiences, and cognitive factors in motivating and shaping the behavior of an individual. Actually, all of them interact and work jointly in the motivation of most of our behavior. Motivation behavior regarding eating, for example, is decided by one's biological or organic factors, namely. the bodily need for eating, the learning experience the choice or preference -for a particular - food and The cognitive factors knowledge about the nutritional value of the food and its suitability to one's body and circumstances, etc. Therefore in deciding the how and why of one's behavior we have to seek an eclectic view of all the theories of motivation and consider motivation as an integrated and cumulative product of the interaction among the biological, learned and cognitive components of one's personality.

**Measurement of Motives**

The methods employed for the measurement of motives may be classified as direct, indirect and experimental, depending upon the nature of the adopted measures or techniques.

**Direct Methods**

In this category we may include all those methods and techniques that permit the subject to express his motives through verbal or other overt behavior. Here the required information about the' motives and the natural behavior of individual is gathered directly from the primary source, the subject by asking him to account for his behavior or through naturalistic objective observation of his behavior. The major techniques or methods included in this category are questionnaire, inventories, motivation scale, checklist, naturalistic observation, interview, autobiography and other self-description measures.

**Indirect Methods**

In situations where the subject is either unaware of his motives or is determined not to reveal them, the use of indirect methods is recommended. The material to which the subject is exposed in the indirect measures of studying motives consists of fairly ambiguous or unstructured stimulus situations. Based on the mechanism of projection, the subject is expected to provide clues for his hidden or true motives by responding to these unstructured stimuli. The interpretation of these clues by the experimenter then may help in the assessment of the subject's true motives.

All the projective techniques like the Rorschach ink blot test, thematic apperception test (TAT), child apperception test, (CAT), the Blacky pictures, drawing completion test, sentence completion technique, word association technique, role-playing and socio-drama, etc., fall in the category of indirect methods of measuring motives.

These projective techniques provide full opportunity to the subject to project his motives and intentions in a structured form through responses in the form of writing stories about the pictures shown or completing a sentence, sketching or drawing, associating a word or playing a role. The interpretation of these structured responses would depend upon the reason for administering the test. For example, if the experimenter is interested in measuring the affiliation or achievement motive the subject's responses are evaluated in terms of how much affiliation orientation or achievement orientation they display.

**Experimental Methods**

Experimental methods of measuring motives consist of measures involving objective observations under controlled conditions. For ascertaining the real motives,_ the experimenter first makes some tentative hypotheses and tests them in the laboratory or laboratory-like conditions to arrive at some objective, reliable and valid conclusions. In addition to the investigation of the origin and causes of a behavior involving motivation, experimental methods also help in testing the various empirical predictions based on particular motivational hypotheses. For example, one may hypothesize that

persons having a strong achievement motive must differ in a number of *predictable ways from* persons with a weak achievement motive. In experimental testing of this hypothesis, the experimenter may collect scores related to the achievement motive by introducing a projective test like TAT or Rorschach ink blot and subsequently try to demonstrate that subjects who score high in terms of achievement motive are also faster at solving mathematical problems, memorizing poems and performing some typical complex skills.

**Attention**

We use the word 'attention' frequently in our day-to-day conversation. During lecture in the classroom, a teacher calls for your attention to what he is saying or what he writes on the blackboard. At a railway station or other public places, announcements start with your attention please" before informing the passengers or other people about the schedules of the trains or some other matter of public interest. Thus attention is taken as a power, capacity or faculty of our mind which can be turned on or off at will or something in kind or form that can be lent or give, to this or that situation. However, this notion as we shall find out, is misconceived. Attention can never be considered as a force or a faculty of the mind. We must try to understand it in terms of an act, a process or a function. Therefore, the use of this term as a noun is misleading. It may be better understood as a verb like attending or a process involving the act of listening, looking at or concentrating on a topic, object or event for the attainment of a desired result. Let us consider a few definitions provided by eminent authorities in order to understand the proper meaning of this word.

**Dumville (1938):**
Attention is the concentration of consciousness upon one subject rather than upon another.

**Ross (1951):**
Attention is the process of getting an object of thought clearly before the mind.

**Morgan & Gilliland (1942):**
Attention is being keenly alive to some specific factor in our environment. It is a preparatory adjustment for response.

**Roedtger et at. (1987):**
Attention can be defined as the focusing of perception that leads to a greater awareness of a limited number of stimuli.

**Sharma, R.N. (1967):**
Attention can be defined as a process which compels the individual to select some particular stimulus according to his interest and attitude of the multiplicity of stimuli present in the environment.

All these definitions highlight the following facts:
Attention is essentially a process, and not a product.
It helps in our awareness or consciousness of our environment
*This* awareness or consciousness is selective.
At anyone time, we can concentrate or focus our consciousness on one particular object only.
The concentration or focus provided by the process of attention helps us in the clear understanding of the perceived object or phenomenon. In the chain of the stimulus-response behavior it works as a mediator.
Stimuli which are given proper attention yield better response. Therefore, for providing an appropriate response, one has to give proper attention to the stimulus to reach the stage of preparedness or alertness (mental as well as physical) which may be required.

Attention is not merely a cognitive function but is essentially determined by emotional and conative factors of interest, attitude and striving.
The foregoing discussion leads us to conclude that attention is a process carried out through cognitive abilities and helped by emotional and conative factors to select something out of the various stimuli present in one's environment and then to bring it to the centre of one's consciousness in order to perceive it clearly for deriving the desired ends.

**Selectiveness of Attention**

How is it possible for an individual to become capable of selecting one message from the environment and to ignore all others? Psychologists have tried to propound some theories or models of attention to properly answer this question. Broadly these can be divided into two categories-an early selection theory of attention like the Fit sensory and the late selection theories.
The Filter theory put forward by Donald Broadbent (1957, 1958) postulated the existence of two external systems the sensory and the perceptual. Many signals from the environment can be registered simultaneously in the sensory system. In order, however, to make it possible for the perceptual system to attend only to one signal and ignore all others, that is roughly equivalent to conscious attention the sensory system filters out all unimportant signals before they can reach the perceptual system. As a result of this filtration, extraneous and 110nessentia~ signals' are excluded from interfering with the selected signals. Since the signal for attention is selected in the initial' stages of the process, the filter theory is considered as one of the early selection theories of attention.
Shiffrin (1977) assert that ignored information is not filtered out at a sensory level. Instead, the information is processed through early stages of perception, and attention to one signal occurs much later, just before conscious awareness. Emphasizing the point further, these theories maintain that although people may still not be conscious of the different signals at that point, some kind of decisi9nmaking opens the door to consciousness for the most important or expected signal by ignoring the others.

**Signs and Effects of Attention**

How can we know that a particular individual is paying attention or not? In this connection much can be said through observation of the symptoms or reactions that accompany the state of preparedness or alertness required by the process of attention. As a person initiates the state of attention, he may turn his head, fix his eyes or set his ears toward the' object of attention. Besides this, the muscles and the biological functions of the body may be seen to be specifically preparing for the object of attention. He may adopt a specific posture or hold his breath, or his respiration rate may slow down. In this way, from the observable symptoms in the form of stance, bodily conditions and facial expressions, we may decide whether or not a person is paying attention. However, for drawing more reliable and definite conclusions, the experimenter must try-Io avail the introspection analysis report prepared by the subject himself. He should also try to test the validity and reliability of his conclusions by studying attentively the effects of the efforts made by his subject.
Some of these effects of attention may be summarized as follows:
Attention helps in bringing about mental alertness and preparedness.
As a result one tries to apply one's mental powers as effectively as possible.
Attention helps in providing proper deep concentration by focusing one's consciousness upon one object at one time rather than on any others.
It makes us better equipped to distinguish or identify the object of attention from others.
4_ Attention acts as a reinforcement of the sensory process and helps in the better organization of the perceptual field for maximum clarity and understanding of the object or phenomenon under observation.
Attention provides strength and ability to continue the task of cognitive functioning despite the obstacles presented by the forces of distraction like noise and unfavorable weather conditions.

When attention is paid to an object, even the process or phenomenon yields better results in the form of the amount and quality of learning remembering, transfer of training, thinking, reasoning and problem solving as well as displaying the inventive abilities and creative functioning.

## Types of Attention

Various authors have classified attention in a variety of ways. The classification given by Ross (1951) seems to be the more acceptable.

**1. Non-volitional or involuntary attention.**

This type of attention is aroused without the will coming into play and we attend to an object or an idea without any conscious effort on our part. A mother's attention to her crying child, attention towards members of the opposite sex, sudden loud noise and bright colors are some examples of non-volitional attention.

Non-volitional attention as shown in the above table can be aroused by our instincts as also by our sentiments. The attention which is aroused by the instincts is called enforced non-volitional attention. A youngman, when we make an appeal 10 his sex instinct or curiosity, becomes quite attentive in his task. The type of attention which he pays at this time can be termed as enforced non-volitional attention.

The other sub-type of non-volitional attention, aroused by the sentiments is cased spontaneous non-volitional attention. It is the result of properly developed sentiments. We give somewhat automatic or spontaneous attention towards that object, *idea* or person around which or _whom our sentiments have already been formed.

**2. Volitional or voluntary attention.**

Attention is volitional or voluntary when it calls forth the exercise of the will. It demands a conscious effort on our part. It is neither automatic and spontaneous nor given whole-heartedly like volitional attention. Usually in this type of attention, we have a clear-cut goal before us and we make ourselves attentive for its accomplishment. Attention paid at the time of solving an assigned problem of mathematics, answering questions in an examination consulting the railway time-table before starting on a railway journey are some example of volitional attention.

Volitional attention is further sub-divided into two categories-implicit volitional attention and explicit volitional attention. Whereas in the former, a single act of volition is sufficient to bring about attention, in the latter we need repeated acts of will to sustain it. When a child is assigned some mathematical sums in the class-room, and he does not attend to them, be is warned by the teacher that he will be punished if he does not do his assigned work. This can make him exercise his will power attend to the assigned task and finish it properly. Here a single act of will is responsible for the arousing of attention. Hence we can take it as an example of implicit volitional attention.

One has to struggle hard to continue to be attentive. It requires strong wiI1 power, application and strong motives to accomplish the task. The attention paid at the time of examination days for the required preparation against heavy odds and distractions, is an apt example of such attention.

## Factors or Determinants of Attention

***External factors or conditions.*** External factors or conditions are generally those characteristics outside the situations or stimuli which make the strongest bid to capture our attention. Let us consider these characteristics.

***Nature of the stimulus.*** All types of stimuli are not able to bring forth the same degree of attention. A picture attracts attention more readily than words. Among pictures, the pictures of human beings capture more attention than those of animals or objects. Among pictures of human beings, those of great personalities as also of beautiful women or handsome men attract more attention. In this sense colored pictures are more forceful than two-tone ones. Thus, the most effective stimulus should always be chosen for capturing maximum attention.

***Intensity and size of the stimulus.*** In comparison with a weak stimulus, the stronger stimulus attracts more attention. Our attention becomes more easily directed to a loud sound, a bright I1ght

or a strong smell. Similarly, a large object in the environment is more likely 10 catch our attention than a small object. A large building will be more readily noticed than the small ones.

***Contrast, change and variety.*** Change and variety attract attention more easily than sameness and routine. When a teacher is lecturing to his students, the use of maps and charts suddenly attracts their attention. We do not notice the ticking of a clock on the wall but it arrests our attention as soon as it stops. We notice any change in the pattern of attention to which we have become adapted. Actually the factor-contrast or change is highly responsible for capturing attention of the organism and contributes more than the intensity, size or nature of the stimulus. If all the LETTERS on this page were printed in capitals, the capitalized word in this sentence would have no greater attention-getting value than any other word. It is the contrast or change which makes it more forceful.

Novelty also attracts attention. We are compelled to attend to anything that is new or different. So it is always better to introduce change or novelty to break the monotony and secure attention.

***Repetition of stimulus.*** Repetition is a factor of great importance in securing attentlon. We may ignore a stimulus the first time, but when it is repeated several times, it captures our attention. A misspelled word is more likely to be noticed if it occurs twice in the same paragraph than if it occurs only once. In the classroom also, the particular point on which the teacher tries 10 draw the attention of the students is raised again and again. While giving the lecture, the important aspects of the speech are often repeated, so that the attention of the audience can be easily directed to the valuable points. But this practice of repetition should be used carefully. Too much repetition of a stimulus may bring diminishing returns.

***Movement of the stimulus.*** A moving stimulus catches our attention more quickly than one which is stiJI. In other words, we are more sensitive to objects that move in our field of vision. Most of the advertisers make use of this fact and try to capture the attention of people through moving electric lights.

***Internal factors or conditions.*** How much and in what way a person will attend to a stimulus depends not only upon the characteristics of that stimulus or the favorable environmental conditions but also upon the person's own interest. motives, basic needs and urges etc. Every person likes to do or attend to those objects or activities that fulfill his own desires or motives and suit his own nature, interest and aptitude. Let us try to see the part played by these inner factors in securing the attention of a person.

***Interest and attention.*** Interest is a very helpful factor in securing attention. We attend to objects in which we are interested and we do not attend to those in which we have no interest. If we go to the market to buy a book, our attention wil1 be captured more by book shops than by cloth and hoe shops etc. A boy interested in hockey wi II be more interested in watching a hockey match than football or the volleyba11 matches being played at the same time on adjacent grounds. A wise teacher is able to draw the attention of his students if he tries to make his lesson interesting by connecting it with their basic needs, drives and interests.

***Motives.*** The basic drives and urges of the individual are very important in securing his attention. Thirst, hunger, sex, curiosity, fear are some of the important motives that exercise a definite influence upon attention. A hungry person will definitely notice the smell of cooking. The man who fears snakes, will definitely be more attentive to things which resemble a snake. The sex drive occupies a unique place among the different drives. Even the most inattentive student in the class can be made to sit on the edge of his chair if the teacher announces that he is going to talk about the sex-practices of American hippies. Nowadays in the world of advertising, sex is the drive that has been most widely exploited. We can see the shapely girls in bathing suits to sell such unrelated items as tyres, nuts, bolts and tractors.

***Mind set.*** Besides our interests and motives the mind set is an important factor in securing attention. Mind set means the tendency or "Wndle ThInG. A. person always attend' to those objects towards which his mind has set. A person waiting for a letter from his beloved can recognize her envelope from among a huge pile of envelopes. Similarly, on the day of an examination the slightest thing concerning the examination easily attracts the attention of the students. All this happens because the

persons concerned possess a definite bent of mind and consequently their attention is immediately directed towards the related objects.

**Span of Attention**

While defining attention we emphasized that in a strict psychological sense only.

**Distraction**

When we are attending to an object or activity, there are things in, the external environment as *well* as inside ourselves that tend to intrude and -divert our attention from that object or activity. These things which interfere with our attention are called distracters. Distraction, as a psychological term, has been defined by H.R. Bhatia (1968) as follows:

Distraction may be defined as any stimulus whose presence interferes with the process of attention or draws away attention from the object to which we wish to attend.

The sources of distraction can be roughly divided into external and internal factors. Among the external or environmental factors the more common and prominent are noise. music, uncomfortable seats, unfavorable temperature, inadequate ventilation, defective methods of teaching, improper use of teaching aids, a defective voice or improper behavior of the teacher etc. The sources of distraction are very diverse and affect an individual according to his own mental set and personality characteristics. The conditions which cause distraction to one individual may prove helpful in sustaining the attention of another.

Therefore, the common notion that unusual environmental conditions always hinder the progress of work is misleading. Some people are found to lark better in a noisy environment; for instance, some can concentrate better on studies while the radio is playing. Actually speaking, the source of distraction lies more commonly within the Individual himself than in the external environmental conditions. Internal distractions such as emotional disturbance, ill-health boredom, lack of motivation feeling of fatigue or preoccupations unrelated to the matter in hand have more effect than the everyday external distracters. If one is in normal health and not suffering from unusual mental worries' and emotional disturbances, no power on earth can distract one's attention in case one is determined to pursue one's course. Most of us are in the habit of offering lame excuses in the name of distraction for failures resulting from our unwillingness and lack of determination.

It should not be concluded from the foregoing that external factors of distraction have little significance and so can be ignored. In the presence of external distraction, an individual has to struggle bard to concentrate. He has to put in greater effort to keep the object before his mind. Certainly, there should not be such misutilization of energy which otherwise can be applied to achieve higher aims. 'Therefore, great care should be taken to do away with all possible environmental causes of distraction. The working situations and environmental conditions should be so modified and adjusted as to provide adequate working facilities and a healthy congenial environment for an individual whose attention in the work we wish to capture and sustain.

**Strategies to Encourage Motivation and Thoughtful Learning**

First the classroom must be relatively organized and free from constant interruptions and dis-ruptions. You need to make sure this requirement is melt. Second, the teacher must be a patient, supportive person who never embarrasses students for mistakes. Everyone in the class should see mistakes as opportunities for learning (Clifford, 1990, 1991). Third, the work must be challenging but reasonable for work is too easy or too difficult, student will have little motivation to learn. They will focus on finishing, not on learning. Finally, the learning tasks must be authentic.

Once these four basic conditions are met, the influences on students' motivation to learn in a particular situation can be summarized in three questions: Can I succeed at this task? Do I want to succeed? What do I need to do to succeed? (Eccles & Wig field, ] 985). As reflected in these questions, we want students to have confidence in their ability so they will approach learning with energy and enthusiasm. We want them to see the value of the tasks involved and work to learn, not just try to get the grade or get finished. We want students to believe that success will come when they

apply good learning strategies instead of believing that their only option *is* to use self-defeating, failure avoiding, face-saving strategies. When things get difficult, we want students to stay focused on the task, and not get so worried about failure that they "freeze."

The basic requirements and strategies for encouraging student motivation to learn:

**Fulfill basic requirements**

Provide an organized class environment.
Be a supportive teacher.
Assign challenging, hut nut too difficult, work.
Rake tasks worthwhile.
Build confidence and positive expectations.
Begin work at the students' level.
Making learning goals clear, specific and attainable
Stress self-comparison, not competition.
Communicate that academic ability is improvable
Model good problem solving show the value of learning
Tie class activities to the students' interests
Make the learning task fun
Make use of novelty and familiarity
Explain connections between present learning and later Me
Provide incentives and rewards if needed
Help students stay focused on the task
Give students frequent Opportunities to respond
Provide opportunities for students to create a finished product
Avoid heavy emphasis on grading
Reduce task risk without oversimplifying the task
Model motivation to learn
Teach learning tactics
Connect the learning task to the needs of student

**Lesson 08**

## NATURE AND THEORIES OF LEARNING

Learning occupies a very important place in our life. Most of what we do or do not do is influenced by what we learn and how we learn it. Learning, therefore, provides a key to the structure of our personality and behavior. An individual starts learning immediately after his birth or in a strict sense even earlier in the womb of the mother. Experience, direct or indirect is found to playa dominant role in molding and shaping the behavior of the individual from the very beginning. When he touches a burning matchstick the child gets burnt, and the next time, when he comes across a burning matchstick, he loses no time in withdrawing from it. He learns to avoid not only the burning matchstick but also all burning things. When this happens we say that the child has learned that if one touches a flame, one gets burnt. In the same way from some other experience, he may conclude, for instance, that "green apples are sour", "barking dogs seldom bite", "a bird in hand is better than two in the bush", "be very cautious in believing strangers", etc. All these conclusions derived from experiences, direct or indirect, bring about a change in the behavior of the individual. These changes in behavior brought about by experience are commonly known as learning. In this way, *the term learning broadly speaking, stands for all those changes and modifications in the behavior of the individual which he undergoes duri]1g his life time.*

However, this term has not been always interpreted in the same way by the numerous thinkers and psychologists as may be seen from the following definitions:

***Gardner Murphy* (1968):**

The term learning covers every modification in behavior to meet environmental requirements.

**Henry P. Smith (1962):**

Learning is the acquisition of new behavior or the strengthening or weakening of old behavior as the result of experience.

**Woodworth (1945):**

Any activity can be called learning so far as it develops the individual (in any respect, good or bad) and makes him alter behavior and experiences different from what they would otherwise have been.

**Kingsley and R. Garry (1957):**

Learning is the process by which behavior (in the broader sense) is originated or changes through practice or training.

**Pressey, Robinson and Horrocks (1967):**

Learning is an episode in which a motivated individual attempts to adapt his behavior so as to succeed in a situation which he perceives as requiring action to attain a goal.

**Crow and Crow (1973):**

Learning is the acquisition of habits, knowledge and attitudes. It involves new ways of doing things, and it operates in an individual's attempts to overcome obstacles or to adjust to new situations. It represents progressive changes in behavior. . . . It enables him to satisfy interests to attain goals.

**Hilgard (1958):**

Learning is the process by which an activity originates or is changed through reaching to an encountered situation, provided that the characteristics of the changes in activity cannot be explained on the basis of native response, tendencies, maturation, or temporary states of the organism (e.g. fatigue or drugs, etc.).

**Kimble (1961):**

Learning is a relatively permanent change in behavioral potentiality that occurs as a result of reinforced practice.

The above definitions reveal the following facts:

1. Learning is a process and not a product.
2. It involves all those experiences and training of an individual (right from birth) which help him to produce changes in his behavior.

3. Learning leads to changes in behavior but this does not necessarily mean that these changes always bring about improvement or positive development. One has an equal chance to drift to the negative side of human personality.
4. Instead of change in existing behavior or acquisition of new behavior, learning may also result in discontinuance or abandonment of existing behavior. Though it is referred to as unlearning, actually unlearning is also a learning process.
5. Learning prepares an individual for any adjustment and adaptation that may be necessary.
6. Learning is purposeful and goal-oriented. In case there is no purpose, there would definitely be hardly any learning.
7. The scope of learning is too wide to be explained in words. It is a very comprehensive process which covers nearly all fields--conative, cognitive and affective--of human behavior.
8. Learning is universal and continuous. Every creature that lives, learns. In human beings it is not restricted to any particular age, sex, race Or culture. It is a continuous, never-ending process that extends from the womb to the tomb.
9. As maintained by Crow and Crow, learning involves new ways of doing things but there is no limit to adopting these ways and means. All learning does not take place in the same manner. Therefore, learning as a process is of different types and involves different methods.
10. As maintained by Hilgard, the concept of learning excludes changes in behavior on the basis of native response tendencies like instincts and reflexes, etc. Instinctive or' species specific programmes cannot be termed as learned behavior. Similarly, reflexes, the innate involuntary responses to stimulation e.g., blinking at bright lights and the infant's sucking behavior, cannot be attributed to learning.
11. Learning does not include changes in behavior on account of maturation, fatigue, illness, or drugs etc.

The last mentioned characteristic reveals that changes in one's behavior are not always brought about and controlled by learning only. There are other factors like fatigue, drugs, illness, maturation and imprinting, which produce behavioral changes. Can we, then, attribute all such changes in our behavior to learning? The answer is, no. The reasons are explained in the following discussion:

**Learning and Maturation**

The changes produced in behavior by maturation are definitely linked with the unfolding and ripening of inherited traits, i.e., the process of natural growth. They are quite independent of activity, practice or experience. In the of Biggie and Hunt (1968), Maturation is a developmental process within which a person, from time to time, manifests different traits, the 'blue-prints' of which have been carried in his cells from the time of his conception.

The resultant behavior, thus, on account of the process of maturation does not fall in the category of acquired or learned behavior. However, maturation is closely linked with results of learning and with the process of development. Before certain kinds of learning may take place, one has to have achieved a certain level of maturation. For example, a six-month old baby cannot learn how to control bowel movements because neither his brain nor his body is mature enough to do so. Similarly, a child cannot learn certain speech patterns before a certain degree of maturation has occurred.

**Learning and Other Temporary Change-producing Factors**

The behavioral changes brought about by factors like fatigue, drugs, illness or emotional situations, are purely transitory in nature. These changes, like physical changes in material objects, are quite unstable. As and when the factor causing a change is removed or restored, the behavioral may revert to its original form.

Hence, the changes in behavior produced by such factors cannot fall in the category of learning and in comparison to all other factors that lead to changes in human behavior, the changes brought about by learning, i.e., experience and training, etc. are relatively more enduring and stable.
It is to be noted that we have deliberately used the phrase 'relatively enduring and stable changes' in place of 'absolutely permanent changes' in the behavior of the learner. It is true that learning brings about changes in behavior but these changes are not as permanent as the changes brought about by chemical reactions in material objects. The habits we pick up, the interests we develop, the skills we acquire, the knowledge we gain as a result of learning at one or the other occasion can be unlearned, modified or replaced by some other set of similar or different acquired behavior. Therefore, it is safer to use the term relatively permanent in place of absolutely permanent for the resultant changes in one's behavior on account of learning and consequently a proper definition of learning may be,
*Learning is a process which brings relatively permanent changes in the behavior of a learner through experience or practice.*

**Learning and Imprinting**
The term 'imprinting' is often confused with learning. However, it is not proper to label or include the changes in behavior brought about as a result of imprinting in the category of learned or acquired behavior. Let us explain this by describing and illustrating the concept of 'imprinting'.
'Imprinting' as a term was first used in the 1930s by the Austrian ethologist Konrad Lorenz for describing the attachment behavior of new-born birds to the first large moving objects in their environment. He conducted a series of experiments for studying such attachment behavior. A few of these are described below:

1. In his initial experiments he demonstrated that ducklings and goslings follow the mother soon after hatching perhaps on account of the stimulation provided by her movements and the noises she makes.
2. Afterwards Lorenz used some big objects like a football in place of the mother to be followed by ~he new-born ducklings and goslings. To his surprise he found that as soon as these birds were hatched, they began to follow the floating ball in the pond.
3. In one of his later experiments he himself worked as a substitute for the football and the mother. For conducting this experiment he first hatched a group of goslings in an incubator and then presented himself as the first moving object they saw. He found that the new-born birds began to follow him wherever he went (see Figure 13.1). Surprisingly, when the goslings were returned to their real mother at a later stage, they turned away and continued to follow the first perceived moving object the experimenter, Lorenz. They even showed resentment and gave vent to *cries* distress when they were prevented from following *him*. From such experiments orenz concluded that:
Imprinting represents a sense of strong connection or attachment hat is made between the new-born organism and the first object it ma: have initially responded to. Howsoever, strange this first object may be, they continue to follow it to the extent that they show no attachment to their own mother or anyone of their own kind.
Imprinting thus represents an inborn perceptual process independent of any training or experience.
It is unquestionably a survival mechanism and whatever the first object, it is followed for safety, security, love and attachment. It is like bve at first sight, a kind of 'value acquisition', an effective 'imprint' or 'impression' on the tender mind.
Imprinting, i.e., connection or attachment is made to the first perceived object within the critical period.
It may be taken as an instinctive response or species-specific behavior i.e., a behavior pattern common to all members of a particular species and it occurs naturally, depending upon the environmental stimulus which sets it off. In case there is no such stimulus; i.e. moving object, available to the new-born within the critical period, it is doubtful whether the attachment behavior would be exhibited at a1. For example, geese or infant rats, isolated from the natural mother or a

mother substitute within the first few days or birth may never develop any significant attachment behavior (Lorenz, 1952).
The critical period, the special and distinct time essential for establishing attachment behavior, i.e., the process of imprinting, lifters from species to species. In baby ducks for example, the ideal tine for imprinting is fourteen hours after _hatching, in Iambs it is one to seven days after birth and in puppies between three and twelve week.
Imprinting is thus quite dissimilar and distinct from the actual process of learning. It depends on an. instinctive and inborn species-specific behavior mechanism rather than the experience and training carried out during specific critical periods of the species' lifetime soon after birth.

**Types of Learning**
Learning, defined as a process of bringing about relatively permanent changes in the behavior of an organism, may be classified into a number of categories depending upon (a) the domain or specific area of the behavior in which changes are introduced, or (b) in terms of the methods or techniques that are employed for the introduction of behavioral changes. If we follow the former criterion, learning can be classified as verbal learning (involving verbal expression), learning of motor skills, (such as walking, dancing, typing, swimming, etc.), affective learning (learning of habits, interest, attitudes, appreciation, etc.), and cognitive learning (learning of concepts, principles, problem solving, etc.).
In terms of the latter criterion, we may categorize learning as trial and error learning, classical conditioning, operant conditioning, chain learning, shaping, learning through generalization, learning through discrimination, serial learning, associate learning, insightful learning, and so on.

An alternative basis adopted by Gagne (1970) for the purpose of classifying learning is worthy of note. By taking into consideration a specific hierarchical order, he classified learning into the following types:
1. Signal learning or classical conditioning
2. S.R. learning or instrumental and operant conditioning
3. Chain learning
4. Verbal associate learning
5. Multiple discrimination
6. Learning of concepts
7. Learning of principles
8. Problem solving

Various types of such learning are discussed in different parts of this text in the proper context. However, 'a few are discussed here.

***Verbal learning.*** Learning of this type helps in the acquisition of verbal behavior. The language we speak, the communication devices we use, are the result of such learning. Rote learning and rote memorization which is a type of learning is also included in verbal learning. Signs, pictures, symbols, words, figures, sounds and voices are employed by the individual as essential instruments or engaging in the process of verbal learning.
***Motor learning.*** The learning of all types of motor skills may be included in PIIS type of learning. Learning swimming, riding1Ch'brse, driving a car, flying a ade, playing the piano, hitting a moving target, drawing a geometrical design, and multiplying long series of digits, performing experiments and handling anous *instruments* are examples of such learning. Acquisition of various skills through such learning helps in acquiring speed and accuracy in the field of operation of these activities and creates a sort of confidence in the learner to perform with ease and satisfaction. The art of these skills can be acquired through a systematic and planned acquisition and fixation of a series of organized actions or responses by making use of some appropriate learning methods and devices.

**3. *Concept learning.*** A concept in the form of a mental image denotes a generalized idea about things, persons or events. For example, our concept of 'tree' IS a mental images that up the similarities or common properties of all the different trees we know. We will call a thing 'tree' when it has some specific characteristics, the image of which we have already acquired in our mind on account of our previous experience, perception or exercise of imagination. The formation of such concepts on account of previous experience, training or cognitive processes is called concept learning. Concept learning proves very useful in recognizing, naming and identifying thin~ All our behavior, verbal, symbolic, motor as well as cognitive, are influenced by our concepts. Thus what we do, say, understand, reason and judge is, to a great extent, controlled by the quality of our concept learning.

**4. *Problem solving.*** In the hierarchical order of learning and acquisition of behavior, problem solving learning denotes a higher type of learning, This learning requires the use of the cognitive abilities like reasoning: judgment, the power of observer, discrimination, generalization, imagination, the ability to infer, draw- conclusion and out novel ways and experimenting, etc. Based on earlier experiences, effect of coaching, training, formal or informal learning and acquisition of knowledge, habits, attitudes, interests and learning, sets, etc., an individual may be motivated to reach an unknown target or to unfold the mystery of an unresolved problem. It is this type of learning which has essentially enabled human beings to contribute significantly to the progress and improvement of society.

In the process of learning one has to adopt an adequate technique in the form of certain methods and processes. In some cases, connections or associations in the form of a stimulus-response mechanism or conditioning may help while in others organization of the perceptual field and the use of cognitive abilities may work.

**5. *Serial learning.*** Serial learning is a learning situation in which the learner is presented with learning material which exhibits some sequential material order Children encounter it often in school where they are expected to master material such as the alphabet, multiplication tables, the names of all the states 10 their country, the names of presidents or prime ministers in order, etc. Experiments in the field of serial learning have shown that of the serial learning material, the items presented at the beginning and at the end of the list are easier to remember than those in the middle, and this seems to be true whether the items are non-sense syllables, actual words or longer passages such as a poem.

**6. *Paired-associate learning.*** In this learning, learning tasks are presented is such a way that they may be learned by reason of their associations. The name °e a village like Kishanpur is remembered on account of its association with the naJ1 of Lord Krishna. Ganga, a girl's name may become easy to remember in a paired association with the river Ganges. Much of the verbal or motor learning may, thus, be acquired or remembered by means of the technique of paired or multiple association.

To obtain practice of such paired-associate learning the learner may be presented with a series of paired words or non-sense syllables like the following:

| *Paired words* | *Paired non-sense syllables* |
|---|---|
| Dog - Animal | PN - PF |
| Pan-ot - Bird | NLP - JDS |
| Cat - Milk | RJBP - RNYS |
| Motor - Child | TIPBK - GMPRK |

The learner views the pair (two words or syllables) for a brief time, usually less than five seconds. He is then presented with one member of the pair and asked to recall the other. The practice with such procedure then helps in building what is known association. (An example of paired associate learning is the acquisition of foreign language vocabulary items that are paired with their mother tongue

equivalents. The matching items presented in the objective type of questions of the achievement test also emphasize such learning.

**Outcomes of Learning**

Learning, as a useful process, may result *in* the following outcomes:

**1. *Bringing desirable changes in behavior.*** Learning is the process of bringing changes in behavior. It can help in introducing *desired* changes in. the behavior of a learner, in all its three domains *i.e.,* cognitive, conative and affective.

2. *Attaining of teaching-learning objectives.* The teaching-learning objectives and teaching learning situation can be effectively reached through the help of learning and consequently a child can be made to acquire essential knowledge, skills, applications, attitudes and interests etc.

3. *Attaining of proper growth and development.* Learning helps in reaching one's maximum in terms of growth and development in various spheres namely physical, mental (cognitive), emotional, social, moral, aesthetic and language.

4. *Attaining balanced development of personality.* Our educational efforts are directed to bring an all-round development in the personality of a child. Learning results in bringing such an all-round development in personality.

S. *Attaining proper adjustment.* Adjustment is a key to success in life. Learning helps an individual to get adjusted to himself and to the environment.

6. *Realizing of the goals of life.* Every man has his own philosophy and style? If life and he strives to achieve the goals of his life. Learning process helps an individual to realize his goals.

**Lesson 09**

## Memory, Remembering and Forgetting

**What is Memory?**

Learning occupies a very significant place in one's life. It is the basis not only of the development and progress of human society but also of its survival. Learning, however, would be futile if its products cannot be utilized by us in the Future. Whatever is learned needs to be somehow stored in the mind so that it can be utilized whenever required in the future. In psychological terms, this faculty of the mind to store the past experiences or learning and to reproduce them for use when required at a later time is known as 'memory'. Ryburn (1956) endorses this meaning of memory in the following words:

The power that we have to 'store' our experiences, and to bring them into the field of our consciousness some time after the experiences have occurred, is termed *memory*.

An assessment of the strength of the power or quality of this ability can be made on the basis of performance in terms of the quality of the revival or reproduction of what has been learnt and stored up. In this sense, a good memory must reflect "an ideal revival" as Stout (1938) puts:

So far as ideal revival is merely reproductive. This productive aspect of ideal revival requires the object of past experiences to be re-instated as far as possible in the order and manner of their original occurrence.

However, the term 'memory', or the process of memorization, cannot be viewed merely in terms of reproduction or revival of past experiences or learning. It is quite a complex process which involves factors like learning, retention, recall, and recognition.

**Mechanism of the Process of Memorization**

Our mind possesses a special ability, by virtue of which every experience or learning leaves behind memory images or traces which are conserved in the form of 'engrams'. Thus what is learned leaves its after-effect which is conserved in the form of engrams composed of memory traces. This preservation of the memory traces by our central nervous system or brain is known as retention of the learned or experienced act. The duration of retention depends upon the strength and quality of the memory traces. When we try to recollect or repeat our past experiences or learning, we make use of the memory traces and if we are successful in the revival of our memory traces, our memory is said to be good. But if, somehow or the other, the memory traces have died out, we cannot reproduce or make use of our past experiences and learning. In this case it is said that we have been unable to retain what has been learned or that we have forgotten.

Learning is then the primary condition for memorization. If there is no learning there would be no remembering. At the second stage we have to ensure that these learning experiences are retained properly in the form of mental impressions or images so that they can be retrieved when the need arises. The third and fourth stages in the process of memorization can be termed as recognition and recall. Recognition is a much easier and simpler a psychological process than recall. The difference between these two terms can be illustrated by the following example:

Suppose, Ramnath had been your classmate for two years and you spent a fairly long time together. The old experiences would have been retained as memory traces. Now if, at the mention of his name, you are able to recollect all the experiences you shared with him, and describe him, it is said that you have a good memory, because the memory traces were stored or retained in a proper form. If on the other hand, you can recall the mutual experiences only vaguely or not at all, the memory traces have either become weak or have disappeared.

In such cases 'recognition' is, however, possible because this requires the awareness of having known an object or situation. Here the presence of the already experienced object or person aids the task of recollection. In the above example, a photograph or the actual presence of Ramnath may facilitate the task of recollecting the past experiences.

The process of memorization, thus, begins with learning or experiencing something and ends with its revival and reproduction. Therefore, memory is said to involve four stages, viz., learning or experiencing something, its retention, recognition, and recall.

**Remembering and Memory**

As discussed above, memory denotes the ability or power of mind to retain and reproduce learning. This power of ability helps in the process of memorization. Both the terms 'memorization' and 'remembering' carry the same meaning. While differentiating memory and remembering, Levin (1978) says:

Memory can be likened to a giant filing cabinet in the brain, with data sorted, classified and cross-filed for future reference. Remembering depends on how the brain goes about coding its input.

However, in a practical sense, when we say that a person has a good or a poor memory, according to Woodworth and Marquis (1948): we always weigh it in terms of "remembering what has previously been learned". It is in this sense that the terms memory and remembering, in spite of their being noun and verb respectively, are used synonymously. In the present text, however, these words have been used interchangeably.

**How Do We Remember—Models of Memory**

Several theories and models have been devised by psychologists to explain how we remember or how memory works. Some of these are briefly discussed here:

**Storage and transfer model.** This model has been suggested by Atkinson and Shiffrin (1968. 1971). In connection with the working of memory, they have suggested three different memory storage systems: sensory stores, a short-term store, and a long-term store.

The process of memorization starts with the interaction of one's sense organs with one's environment. The sensory information is first picked up by the sense organs, then it travels through the nervous system and reaches the brain which interprets it. The sensory message or information must stay or linger in the nervous system briefly, to give the brain time to interpret it. This momentary pause of less than a second, or lingering or persistence of the sensory information, is referred to as sensory storage. According to Atkinson and Shiffrin (1971), there seems to be a sensory store for each sense—visual, auditory, smell, taste and touch (see Figure 15.1). However, only the visual and auditory storage systems referred to as *iconic storage* and *echoic storage* respectively have so far been studied extensively.

Sensory information passing through the sensory stores (or registers) either disappears within a second or is transferred to the short-term store. This short-term store, according to Atkinson and Shiffrin, may be thought of as a stage of conscious activity. The information transferred from the sensory store to the short-term store may automatically stay for up to 20 seconds. However, it can be retained as long as an individual wants it in the short-term store through rehearsal, or repetition. In case the short-term store is able to hold or register the information up to 20 seconds, it may move into the long-term store. The short-term store, is thus responsible for the transformation of sensory information to the, long-term store as well as its retrieval. It also decides which responses should be made. Actually for this reason, the short-term store is sometimes called the working memory, as this is the memory employed in much of one's mental work. For transferring information from the short-term store to the long-term store, one can make use of many control processes. Rehearsal is one such process while coding and other mental activities may aid long-term memory much more than simple repetition. In the retrieval (recalling what has been stored in the long-term memory) also, various control processes and retrieval strategies like decoding of stored information are put into use in the short-term storage.

The long-term store is used for storing the sensory information on a permanent basis, while the short-term store contains a limited amount of activated material in current use, the long-term store is assumed to have almost unlimited capacity for the storage of the encoded currently inactive material.

The sensory information is stored (or is transformed from short-term memory) in the coded form. At the time of reproduction or retrieval, this is again decoded. The different forms of such coding are linguistic (verbal), imaginal and motor.

In linguistic coding, the coding of the sensory information is done in the form of language or words. Imaginal coding makes use of images, mental picturization for the storage of information, and the third type of code, the motor code is employed for remembering physical skills like swimming, cycling, etc.

The stored as well as organised information in the long-term store in the coded form is transferred back to the short-term store where it is decoded and employed for response as desired and ordered by the brain.

**Levels of processing model.** According to the model of memory designed by Craik and Lokhart (1972) memory is of only one kind rather than of three types (namely, sensory, short-term and long-term, as suggested by Atkinson and Shiffrin), and the ability to remember is dependent on how deeply information is processed by us. Levels of such information" processing may range from very shallow to very deep. The greater the depth of processing, the better can the material be remembered.

Let us illustrate what is meant by varying depths of the levels of processing and how it affects one's memory. Let us assume that in one of the experiments, the subject is shown the word 'chair' among some other words on the screen. Later on as a test of his recognition, he may be asked to respond to questions like: Is the word in capital letters? Does the word rhyme with hair? Does it belong to something which may be used for sitting? It may be clearly seen that all of these three questions have been designed to control the level of processing of the word. The first question involves the subject's awareness of its sensory or structural feature of what the word looks. The level of processing at this stage is quite shallow. The next stage involves the subject's awareness of its sensory phonetic feature, the sound of the word. This may be termed as the intermediate level of processing. The last question concerns the task of making an association, i.e. assigning a meaning or use to the object. Here, the level of processing is deep, the kind that may help in forming the strong and more enduring memory trace. Experiments like this may reveal that one's memory performs best when it is processed to deeper levels. Apart from the memory of the verbal material, the theory of the levels of processing can be applied equally well to the memorization of non-verbal material. In one of their experiments. Bower and Karlin (1974) showed pictures of people to their subjects and asked them to (i) determine the sex of those persons shown, and (ii) assess whether they would like those persons.

it was found that the subjects were able to remember the faces better when they processed the information related to the second question, i.e. judgement of attraction. It was obvious that in judging person's Iikability, they had to go quite deeper (semantic and meaningful processing) than merely judging a person's sex— male or female.

As further application of the levels of processing model, Perfetti (in Cermak & Craik, 1979, pp. 159-180) has extended the levels of processing framework to language comprehension. He has proposed seven levels: acoustic, phonology, syntactic, semantic, referential, thematic and functional. The first three levels are normally transparent while the fourth le.vel (semantic) is the conscious interpretation of an utterance or a sentence. Processing of the last three levels depend upon context and is likely to result in comprehension, provided there is no ambiguity. One has to go deeper and deeper in gaining comprehension of the verbal or written text. The levels of processing provide us the following significant principles:

The greater the processing of information during learning or memorization, the more it will be retained and remembered.

Processing from one to other levels will be automatic unless attention is focussed on a particular level.

**Types of Memory**

Psychologists have tried to classify memory into certain types according to its nature and the purpose it serves.

**Sensory, Short-term and Long-term Memory**

One of the broad classifications consisting of sensory or immediate memory, short-term memory and long-term memory is based on the storage and transfer model of remembering which was discussed earlier in the previous pages of this chapter. Let us now discuss these types of memory in detail.

***Sensory or immediate memory.*** Sensory or immediate memory is the memory that helps an individual to recall something immediately after it is perceived. In this type of memory, the retention

time is extremely brief—generally from a fraction of a second to several seconds. Old sensory impressions disappear as they are 'erased' by new information.

Immediate memory is needed when we want to remember a thing for a short time and can then forget it. For instance, when we enter an auditorium, we see the scat number given on our ticket. Having occupied the seat, we forget the seat number. We took up a telephone number from the directory and remember it. But after making the telephone call, we usually forget it. In all cases of this nature, immediate memory is needed which helps us to learn a thing immediately with speed and accuracy, remember it for a short duration and forget it rapidly after use.

***Short-term memory.*** This type of memory is also temporary, though not nearly as short-lived as immediate memory. In order to further distinguish it from short-term memory, the following factors should also be taken into account:

Where the retention time is less than one second in immediate memory, the information temporarily stored in short-term memory may last as long as thirty seconds even if the material is not being rehearsed.

Whereas the sensory images in immediate memory decay regardless of the learner's actions, rehearsal by the learner can keep material in short-term memory indefinitely.

The span of immediate memory exceeds the short-term memory span. Whereas five to nine items ("the magical number, seven plus or minus two") can be held in short-term memory at any one time, about 11-13 items are available for recall in the immediate memory for at least half a second. However, some people are able to retain much more information in their short-term memories by a process called *chunking,* which groups information by coding it, e.g. the number 143254376 can be remembered by listing under three heads: 143, 254, 376 and the number 149162536496481 can be arranged as: 1 4 9 16 25 36 49 64 81 (in groups of the squares of 1 through 9) for better remembering.

***Long-term memory.*** Unlike short-term memory, long-term memory has a seemingly limitless capacity to store information with little or no decay and requires little, if any, rehearsal. In addition to these characteristics, long-term memory codes information according to meaning, pattern and other characteristics. It is this memory that helps us to remember a number of things on a relatively permanent basis. Remembering identifying data like one's name, father's name, date of birth, date of marriage, etc., is the simplest example of long-term memory. With the help of our long-term memory we can easily store, retain and remember most of the things in our life at a second's notice and thus easily conduct our daily life.

***Episodic and semantic memory.*** Episodic memory is connected with episodes and events. It may consist of personal events and experiences associated with one's life. What even has happened during one's life is stored in the shape of episodic memory traces organized according to the time, space and other characteristics of the events. At the time of recall, these memory traces are reproduced in the manner and sequence in which they have been organized and stored in one's mental apparatus. For example, if a person has been on an excursion and, on his return, narrates all that he did or experienced, how he felt and enjoyed himself, he is able to do so by the exercise of his episodic memory. Also, when after hearing his account of the events or episodes you make inferences that are the outcome of your episodic memory. Thus, episodic memory is the memory which depends on retrieving the particular events or episodes experienced by a person through his direct or indirect experiences. It should be considered as quite personal and individual in all its shades and nuances because what one experiences and how these episodes and experiences are organised in one's memory is totally an individual affair and thereby one individual's episodic memory of even common events is bound to differ from that of other person.

Semantic memory helps in storing as well as retrieving a collection of relationships between events or association of ideas. Examples of such collection may be found in one's ability to recall names of the capitals of different states of the Indian Republic, the meaning of the symbol $C0_2$, the formula for the computation of simple or compound interest, the rules for converting direct narrations into indirect narrations and vice versa, and so on. Semantic memory is thus based on general knowledge coupled with meaningful interpretation, generalized rules, principles and formulae. Semantic memory

impressions are more or less permanent. Their recall does not necessarily depend on the retrieval of some specific episodes from the past and semantic memory is therefore, not as personal as episodic memory, e.g. the meaning of the symbol $C0_2$ and names of the capitals of the states, etc., are common to each individual's semantic memory.

***Photographic memory.*** According to Haber (1979), the term 'photographic memory' stands for a kind of memory possessed by an individual who can remember a scene in photographic detail. The technical term used for such memory is *eidetic imagery*. Such people can 'see' a picture after it has been taken away, with their descriptions of objects from the picture stating the right colour and the proper locations.

***Paranormal memory.*** This distinctive and unusual type of memory, popularly known as 'reincarnation' has emerged as a result of researches and findings in the field of para-psychology. It consists of the unusual memory traces concerning one's previous life or lives that can be partly or completely retrieved by the individual. In the language of psychoanalysis, such memory reflects an individual's regression not only in terms of time but also in terms of space and matter (from one place and one body to another). It is mostly connected with the phenomenon of rebirth, i.e. the belief that at the time of death one gives up one's body but not the soul which survives to acquire a new body much like one puts on new clothes after discarding old ones.

**What is Forgetting?**

We frequently hear the expression: "I am sorry, but I have forgotten." A student feels ashamed of having forgotten what he had learned, a housewife feels embarrassed because she forgot to season the food she cooked, or a professional feels bad because he forgot to keep an appointment. We are thus generally quite well acquainted with the phenomenon of forgetting. Let us see how the eminent writers on the subject scientifically define "forgetting".

***Munn (1967):***

Forgetting is the loss, permanent or temporary, of the ability to recall or recognize something learned earlier.

***Drever(1952):***

Forgetting means failure at any time to recall an experience, when attempting to do so, or to perform an action previously learned.

**Bhatia (1968):**

Forgetting is the failure of the individual to revive in consciousness an idea or group of ideas without the help of the original stimulus.

In all these definitions, forgetting is termed a failure. Let us see how it counts towards the failure of an individual.

The power of long retention and rapid reproduction (recall and recognition) makes for a good memory. It counts towards the success of an individual in the task of learning or memorizing. Forgetting on the other hand, contributes towards failure. "I have forgotten" implies that I have failed to retain or have been unable to recall what was learned or experienced by me earlier. In this way, forgetting is just the opposite of remembering and is essentially a failure in the ability to reproduce experienced or studied material.

**Types of Forgetting**

Forgetting may be described in a number of ways based on the nature of forgetting and the manner in which it occurs. It may be broadly classified as natural and morbid forgetting. In *natural forgetting,* forgetting occurs with the lapse of time in a quite normal way without any intention of forgetting on the part of the individual while in *morbid* or *abnormal forgetting* one deliberately tries to forget something. This type of forgetfulness, as Freud explains, results from repression and *is wishful as one happens Co forget (he (hiags which* one <fc€S *mi* wisf\ fo remember.

According to another view, forgetting may be classified as *general* or *specific*. In general forgetfulness, one suffers a total loss in one's recall of some previous learning, while in specific forgetfulness the individual forgets only one or the other specific parts of his earlier learning.
Yet another view related to the cause of its occurrence classifies forgetfulness as *physical or psychological. In case a person loses his* memory on account of *the* factors of age, diseases, biological malfunctioning of the brain and nervous system, accidents, consumption of liquor or other intoxicating materials, etc., it is termed as physical or organic forgetting. However, when loss of memory occurs on account of psychological factors like stresses, anxiety, conflicts, temper provocation, lack of interest, aversion apathy, repression or similar other emotional and psychological problems, the resulting forgetfulness is termed as *psychological.*

**Theories of Forgetting**
Whatever the nature and types of forgetting, it occurs more or less universally to all human beings. How and why it happens has been the subject of extensive research and investigation resulting in a number of theories. Some of the main theories are:
**The trace decay theory.** According to some psychologists, time is the cause of much forgetting. What is learnt or experienced is forgotten with the lapse of time. The cause of such natural forgetting with the lapse of time can be explained through a process known as decay of the memory trace. They believe that learning results in neurological changes, leaving certain memory traces or engrams in the brain. With the passage of time, through disuse, these memory traces or learning impressions get weaker and weaker and finally fade away. Thus the older an experience, the weaker its memory and as time passes, the amount of forgetting goes on increasing.
Experimental results, however, as well as day-to-day experiences in the field of learning and remembering do not bear out the above-mentioned trace decay theory. The theory has proved a failure in many instances of forgetting and in long-tern memory such as learning to ride a bicycle where forgetting does not occur even after years of disuse. Similarly, the trace decay theory, through its disuse mechanism, has proved a failure in explaining the morbid or abnormal forgetting. However, this theory has provided good results in explaining forgetfulness in the context of short-term memory. Drill, practice, rehearsal or repetition of a learning always succeeds in preventing decay. The reverse is also true as, reading a poem once, for example, without repeating it or thinking about it, is likely to result in the death of the memory trace before its coding into long-term memory can occur.
**The interference theory.** The second major theory of forgetting holds the mechanism of interference responsible for forgetting. Interference is the negative inhibiting effect of one learning experience on another. This theory holds that we forget things because of such interference. The interfering effects of things previously learnt and retained in our memory with the things of more recent memory can work both backward and forward. The psychological terms used for these types of interference are retroactive inhibition and proactive inhibition.
In *retroactive inhibition* the acquisition of new learning works backward to impair the retention of the previously learned material. For example, a second list of words, formulae or equation may impair the retention of a first list. *Proactive inhibition* is just the reverse of retroactive inhibition. Here the old learning or experiences retained in our memory works forward to disrupt the memory of what we acquire or learn afterwards. For example, we may find it difficult to learn a second language when vocabulary or grammar from the first interferes; or learning a new formula may be hampered on account of the previously learned formulae in one's memory.
In both types of these inhibition, it can be easily seen that when similar experiences follow each other, they produce more interference than dissimilar experiences. Because in this latter case all experiences are so intermingled that a state of confusion prevails in the mind and consequently the individual faces difficulty in retention and recall.
The interference theory, as a whole, has successfully provided an adequate explanation of natural and normal forgetting for both, short-term and long-term memory. However, for explaining abnormal or morbid forgetting we need to look for explanation elsewhere.

**The repression theory.** Abnormal or morbid forgetting may be explained in the light of the repression theory put forward by Freud's psychoanalytic school of psychology. Repression, according to this school, is a mental function which cushions the mind against the impact of painful experiences. As a result of this function, we actually push the unpleasant and painful memories into the unconscious and so try to avoid, at least consciously, the conflicts that bother us. This kind of forgetfulness is motivated and intentional. We usually like to see ourselves—and to some extent, the world around us—as pleasant and reasonable. The memories that are in tune 'with this view are acceptable to us, but those that conflict with it are often pushed out and this explains why our forgetting, like our attention, is selective. Thus, as a result of repression, we forget the things we do not want to remember. In course of time, we forget about our closest relatives and friends who are dead. We forget to attend a marriage party which we do not want to attend. Similarly, most of us tend to forget the names of the people we do not like. In this kind of forgetting, however, some serious mental cases may also be encountered. People under a severe emotional shock are seen to forget even their own names, or the names of their wives and children.

Apart from causing abnormal forgetting, an impaired emotional state of an individual also plays a part in disrupting his normal memory process. A sudden excessive disturbance of emotions rnay completely block the process of recall. When one is under the influence of emotions like fear, anger, or love, one may forget all one has experienced, learned or believed earlier. When in the grip of these emotions one becomes so self-conscious that one's thinking becomes paralysed. For instance, a child fails to recall the answer to a question in the presence of a teacher whom he fears or dislikes. Similarly, many of us fail to do well before the interview board or in an examination because of interview or test-phobia. An actor, orator or musician may also fail miserably in his performance before an audience because stage fright may cause him to forget his prepared dialogue, lines or music.

## Intelligence

In our day-to-day conversation we often comment that a particular child or individual is very intelligent or is not intelligent. All such comments are based on our observation of the performance or behaviour of the individual concerned in comparison to others of his group. What makes an individual behave or perform well or not well in his group? Interest, attitude, the desire for knowledge, communicative skill and similar other attributes contribute towards his performance or behaviour. However, there is something else which is also responsible to a large degree. In psychology this is termed ***intelligence;*** in ancient India our great ***rishis*** and seers named it ***Viveka.***

### Defining Intelligence

Intelligence as a concept has been understood in different ways by different psychologists and has, therefore, a wide variety of definitions.

**Stern (1914):**

Intelligence is a general capacity of an individual consciously to adjust his thinking to new requirements. It is the general mental adaptability to new problems and conditions of life.

**Thorndike (1914):**

Intelligence may be defined as "the power of good responses from the point of view of truth or fact".

**Terman (1921):**

An individual is intelligent in the proportion that he is able to carry on abstract thinking.

**Waltnon (1937):**

Intelligence is the capacity to learn and adjust to relatively new and changing conditions.

**Woodworth and Marquis (1948):**

Intelligence means intellect put to use. It is the use of intellectual abilities for handling a situation or accomplishing any task.

**Jean Piaget (1952):**
Intelligence is the ability to adapt to one's surroundings.

**Nature of Intelligence**
**T**he true nature of intelligence can be understood by first defining it to understand its meaning, discussing the various theories explaining its structure in terms of the several constituents and factors, and identifying the numerous other aspects and characteristics related to intelligence and its functioning. We have already covered the first two points in the present chapter, let us now concentrate briefly on last point through the following description.

**Distribution of Intelligence**
The distribution of intelligence is not equal among all human beings. It resembles the pattern of distribution of health, wealth, beauty and similar other attributes or endowments. It is a normal distribution that is governed by a definite principle which states that the majority of people are at the average, a few very bright and a few very dull.

**Individual Differences in Intelligence**
Wide individual differences exist among individuals with regard to intelligence. Truly speaking, no two individuals, even identical twins or individuals nurtured in identical environments, are endowed with equal mental energy. The assessment of intelligence by various tests has given reasons enough to believe that not only does intelligence vary from individual to individual but it also tends to vary in the same individual from age to age and situation to situation.

**Intelligence and Changes in Age**
As the child grows in age, so does the intelligence as shown by intelligence tests. The question which now arises is, at what age does this increase stop? The age at which mental growth ceases, varies from individual to individual. It tends to stabilize after the age of 10 and is fully stabilized during adolescence. The idea that intelligence continues to grow throughout life is not strictly true. Since intelligence is basically a function of neurons and neuroglia, its development or deterioration goes hand in hand with the development or deterioration of the nervous system. However, in the majority of cases, the growth of a person's intelligence reaches its maximum sometime between the age of 16 and 20 years.

**Intelligence and the Sexes**
Many studies have been *conducted to find out whether* men are more intelligent than women and vice versa but no significant difference has been found. It may, therefore, be stated that difference in sex does not contribute towards difference in intelligence.

**Intelligence and Racial or Cultural Differences**
The hypothesis whether a particular race, caste, or cultural group is superior to another in intelligence has been examined by many research workers. In the U.S.A. it has been a burning problem for centuries. The results of earlier studies which take the Whites to be a superior race in comparison to the negroes have been questioned. It has now been established that intelligence is not the birthright of a particular race or group. The 'bright' and the 'dull' can be found in any race, caste or cultural group and the differences which are found can be the result of environmental factors and influences.

**Assessment of Intelligence**
We can observe the intelligence of an individual only to the extent that it is manifested by him in one or more intelligence tests. Many such tests have been devised by psychologists for the measurement of intelligence. In reference to these, however, the term 'assessment' is preferred because, intelligence being only a concept or an abstraction rather than a substance, it cannot be measured in physjca) units Jjke a )ength o f cloth or temperature o f the body.

In this context, Griffiths (1933) observes: "the standard of measurement is a group performance". Therefore, when we measure an individual's intelligence by means of an intelligence test, we try to interpret his score in terms of the norms set (group performance) by the author of the test. One's intelligence is thus determined in relation to the classified group to which one belongs. Thus, whereas a piece of cloth may be measured in absolute terms, relative measurement or assessment has to be resorted to in the case of intelligence.

**Classification of Intelligence Tests**

Intelligence tests may be classified broadly as follows:

Intelligence tests may also be classified on the basis of their form *as* verbal or language tests *and* non-verbal or non-language tests.

***Verbal or language tests.*** In these the subjects make use of language in which the instructions are given in words, written, oral, or both. The individuals being tested are required to use language, verbal or written, for their responses. The test content is loaded with verbal material which may include varieties of the items listed below.

***Vocabulary tests.*** In these the subject is required to give the meanings of words or phrases. For example, what is the meaning of the word 'eventually'? What is the difference between bear, wear and bare? What does the phrase many roads to Rome' convey?

***Memory tests.*** These are designed to test the subject's immediate and long-term memory, and include recall and recognition type of items. He may be called upon to tell the full names of teachers who teach him different subjects; his phone number, the number of his vehicle, the dates of birth of his siblings and so on.

***Comprehension tests.*** By means of these, the subject is tested for the ability to grasp, understand and react to a given situation. The questions, for example, may be like: Why do big ships float in the sea while a small needle would sink in it? Why are the nights longer and the days shorter in winter?

***Information tests.*** The subject is tested on his knowledge about the things around him by means of these tests, e.g.. Where is the Taj Mahal situated? Name the countries which surround Iraq.

***Reasoning tests.*** In these tests the subject is asked to provide answers which demonstrate his ability to reason—logically, analytically, synthetically, inductively or deductively as outlined below:

Complete the series: 1, 2, 4, 7, 11, 16, 22, 29, ?, ?, ?

A picture is to frame as an island is to . . .

***Association tests.*** Through these test items the subject is tested for his ability to point out the similarities or dissimilarities between two or more concepts or objects. For example:

In what ways are animals and plants alike?

Which of the items mentioned below is the odd one? gold, silver, copper, iron, glass.

***Non-verbal and non-language tests.*** These tests involve activities in which the use of language is not necessary except for giving directions. Performance tests are a typical example of such tests. The main features of these are:

The contents of the tests are in the form of material objects.

What is required of the subject is conveyed by the tester through oral instructions, or by pantomime and signs.

The subject's responses are assessed in terms of how he reacts or what he does rather than what he says or writes.

Generally these are individual tests. As Pillai (1972) observes: "These cannot be used as group tests, chiefly because it is necessary to supervise the individual testee at work and give him necessary directions".

**Values of Intelligence Testing**

**Use in selection.** Results of intelligence tests can be properly used for selection of suitable candidates for educational and professional activities such as the following:

admission to a special educational programme or course of instruction.

identification and offer of scholarships to gifted students.

selection of students for assigning specific responsibilities in the school's academic and co-curricular programmes.

selection of trainees for a vocational programme or job.

**Use in classification.** Intelligence tests help in classifying individuals according to their mental make-up. In the school, it is possible for the teacher to classify the students in his class as backward, average, bright or gifted and thus arrange for homogeneous grouping to provide them with proper educational opportunities according to their individual capabilities. Enrichment programmes for the

gifted and remedial education for the backward and dull can thus be possible with the help of classification done through intelligence testing.

**Use in assessment for promotion.** The results of intelligence tests along with the achievement tests can be successfully used for promotion of students to the next higher grades of classes. Besides this, such tests can also be used in deciding the promotion of people in their chosen profession and social careers.

**Use in provision of guidance.** The results of intelligence tests may be successfully used in providing educational, vocational and personal guidance to students by teachers and guidance personnel. Problems like, what courses or special subjects one may study, how one should proceed on one's course of learning, what can be achieved by the removal of some learning or emotional difficulties, what profession or occupation should be aimed at by a particular individual, etc. may be successfully solved on the basis of the results of intelligence testing.

**Use for improving the learning process.** Results of the intelligence testing may prove helpful to teachers to plan the teaching-learning activities. In this connection, Crow and Crow (1973) write:

Results of intelligence tests can help a teacher to discover what the child can learn and how quickly he can learn, as well as the teaching methods that should be applied and the learning content that should be utilized to guide the learner to use his mental potentialities to their utmost.

**Use in setting proper level of aspiration.** According to Sawrey and Telford (1964):

One should aim for what one desires. In other words, one should very carefully set one's level of aspiration neither too high nor too low, if one ventures to be successful. It is possible only when one's potentiality can be properly assessed. Intelligence tests can serve this purpose, and hence they are found to assist the individual to establish a level of aspiration that is realistic in terms of intellectual potential.

**Use for diagnosis.** The other use of the intelligence testing relates with its capacity to diagnose, distinguish and discriminate the differences in the mental functioning of individuals. This potentiality of intelligence testing can be utilized for (a) identifying exceptional children like gifted, backward and the mentally retarded (both on a general or specific dimension); (b) assessing the degree of mental retardation or extent of giftedness; (c) diagnosing the cause of problematic behaviour and suggesting possible remedial action; (d) arranging suitable educational programmes in view of the varied individual differences found in the mental functioning of the learners.

**Use in research work.** Finally, the results of intelligence tests can be used in carrying out research in the fields of education, psychology and sociology. For example, to ascertain (a) whether individual differences in mental capacities are the result of heredity or environment or both; (b) whether delinquency or problematic behaviour is caused by inferior intelligence; (c) how mental capacities grow with age, experience or training; (d) how far scholastic achievement depends upon the results of intelligence testing or how far the I.Q. tests can predict one's school performance; (e) what is the interrelationship among mental traits and to discover definite mental or psyche types and; (f) the relationship of intelligence with creativity, anxiety, task performance, job satisfaction, adjustment or a number of other variables.

## Creativity

### Introduction

The Almighty God, the creator of the universe, is the supreme-mind who possesses the finest creative abilities. He has created all of us and all that is revealed in nature. We are elevated to be called His creation. According to Indian philosophy, we are constituents of the Supreme Power as the rays of the sun are the constituents parts of their creator, the sun. Therefore, every one of us ought to possess creative abilities—and has these abilities. Every one of us is a unique creation, but does not possess the same creative ability as his pears. Some of us are endowed with high creative talents and contribute to advancement in the fields of art, literature, science, business, teaching and other spheres of human activity, and are responsible for propounding new ideas and bringing about social and cultural changes. Mahatma Gandhi, Abraham Lincoln, Homi Bhabha, Newton,

Shakespeare, Leonardo da Vinci were some of the creative individuals who left their mark in their chosen fields. Though they were undoubtedly gifted with creative abilities, the role of environment in terms of education, training and opportunities in their development cannot be ignored.
Good education, proper care and provision of opportunities for creative expression inspire, stimulate and sharpen the creative mind, and it is in this sphere, that parents, society and teachers make a significant contribution. They are required to help the children in nourishing and utilizing their creative abilities to the utmost. The educational process, therefore, should be aimed at developing creative abilities among children. This can be achieved by acquainting the teachers and parents with the real meaning of the creative process and the ways and means of developing and nurturing creativity.

**Defining Creativity**
The terms 'creativity' or 'creative process' have been defined in many ways. Some of these definitions are as follows:
**Stagner and Karwoski ( J 973):**
Creativity implies the production of a 'totally or partially' novel identity.
**Drevdahl (1956):**
Creativity is the capacity of a person to produce compositions, products or ideas which are essentially new or novel and previously unknown to the producer.
**Bartlett (1958):**
Creativity is an adventurous thinking or a getting away from the main track, breaking out of the mould, being open to experience and permitting one thing to lead to another.
**Spearman (1931):**
Creativity is the power of the human mind to create new contents by transforming relations and thereby generating new correlates.
**Wallach and Kogan (1965):**
Creativity lies in producing more associations, and in producing more that arc unique.
**David Ausubel (1963):**
Creativity is a generalized constellation of intellectual abilities, personality variables and problem-solving traits.
**M.J. Levin (1978):**
Creativity is the ability to discover new solutions to problems or to produce new ideas, inventions or works of art. It is a special form of thinking, a way of viewing the world and interacting with it in a manner different from that of the general population.
**Paplia and Olds (1987):**
Creativity is the ability to see things in a new and unusual light, to see problems that no one else may even realize exist, and then to come up with new, unusual, and effective solutions.
**Wilson, Guilford and Christensen (1974):**
The creative process is any process by which something new is produced—an idea or an object including a new form or arrangement of old elements. The new creation must contribute to the solution of some problems.
**Stein (1974):**
Creativity is a process which results in novel work that is accepted as tenable to useful or satisfying to a group of people at some point in time.
There seems, however, to be considerable lack of agreement among these scholars regarding the true nature and concept of creativity—its process as well as its product. Some of them consider it to be purely a function of the mind, a component of the cognitive behavior while Ausuble and others maintain it to be an attribute of the person as a whole involving his total behavior and functioning of his whole personality. Some like Stein use a cultural frame of reference and opine that besides being novel, a creative product must be useful from the cultural and social angles while yet others view it in a personal frame and hold that:

a product may be a creative one if it is new or novel to the individual involved, if it is his creation, if it is expressive of himself rather than dictated by someone else. It need to neither useful nor unique. Its social recognition and cultural impact may be zero, but if it is a unique personal experience, it is creative (Maslow. 1970 quoted by Telford & Sawrey, 1977).

By assigning the characteristic of "a unique personal experience" to the creative product, the scope has been so widened as to include any novel idea or thing including the rearrangement or reshaping of already existing and known ones. The definitions given above have considered creativity both as a process and a product, the thought as well as its result, but the central, essential condition of novelty or newness in the creation has not been overlooked by any one. By incorporating all these viewpoints, we may describe *creativity as the capacity or ability of an individual to create, discover, or produce a new or novel idea or object, including the rearrangement or reshaping of what is already known to him which proves to be a unique personal experience.*

**Nature and Characteristics of Creativity**

Creativity as a unique and novel personal experience, and on the basis of the experiences and findings of the various scholars, may be said to possess the following characteristics:

*Creativity is universal.* Creativity is not confined to any individual, groups of individuals, caste, color or creed. It is universal and is not bound by the barriers of age, location or culture. Everyone of us possesses and is capable of demonstrating creativity to some degree.

***Creativity is innate as well as acquired.*** Although many research findings and incidents favour the suggestion that creativity is a God-given gift and natural endowment, the influence of cultural background, experiences, education and training in the nurturing of creativity cannot be ruled out. Therefore, one's creativity may be correctly said to be a function of natural endowment as well as its nurturing.

***Creativity produces something new or novel.*** Creativity denotes the ability of a person to produce something new or novel, but this novelty or newness does not necessarily imply the production of a totally new idea or object which has never been experienced or has never existed before. To make a fresh and novel combination of existing separate elements or to reshape or rearrange the already known facts and principles or to reform or modify previously known techniques, are as much acts of creative expression as the discovery of a new element in chemistry or a new formula in mathematics. The only precondition for naming an expression as creative is that it should not be repetition or reproduction of what has already been experienced or learned by an individual.

***Creativity is adventurous and open thinking.*** Creativity is a departure from the stereotyped, rigid and closed thinking. It encourages and demands complete freedom to accept and express the multiplicity of responses, choices and lines of action. It is a kind of adventurous thinking, calling a person to come out in the open to express himself according to his will and to function unrestricted by routine or previous practice.

***Creativity is a means as well as end in itself.*** Creativity as an urge inspires and persuades the individual to create something unique and thus acts as an impetus for expression. This creative expression proves to be a source of joy and satisfaction to the creator. No one other than the creator can experience the warmth, happiness and satisfaction which he receives through his creation. Creation is a source of happiness and a reward in itself. The creator expresses himself as fully as possible through his creation and has his own perceptions about his creation. It is, therefore, not essential that a creative work would arouse the same feelings or give the same joy and satisfaction in others as is experienced by the creator himself.

**Creativity carries *ego involvement.*** There is complete involvement of one's ego in the creative expression. One's individuality and identity are totally merged in one's creation. One's style of functioning, philosophy of life and personality may be clearly reflected in his creation be it a work of art, or a piece of writing, etc. The creator takes pride in his creation and hence makes ego involved statements like, "it is my creation", "I have solved this problem", "it is my idea", etc.

***Creativity has a wide scope.*** Creative expression is not restricted by any limits or boundaries. It covers all fields and activities of human life, in any of which one is able to demonstrate creativity by

expressing or producing a new idea or object. It is not restricted to scientific inventions and discoveries or the production of works of art but covers multifarious human accomplishments like the composition of poems; writing of stories and plays, performance in the fields of dance, music, painting, sculpture, political and social leadership, business, teaching and other professions as also the mundane activities of daily life.

***Creativity and intelligence do not necessarily go hand-in-hand.*** Research findings and observations have demonstrated that there is no positive correlation between creativity and intelligence. One is not the essential or necessary prerequisite of the other. Those found scoring high on intelligence tests may demonstrate little or no signs of creativity whereas individuals performing poorly in intelligence tests **may** sometimes create something very original.

Taking **a** consolidated view of the researches conducted on this issue, we may conclude that although intelligence and the creativity component of one's personality can function independently, a certain minimum level of intelligence is a necessary precondition for successful creative expression. Were it not so, a person of below average mental ability like a moron or an idiot could also be creative; but in actual-life situations we hardly come across any such instances. Conversely, although creative people generally tend to be relatively intelligent, beyond a certain level, a higher I.Q. does not necessarily predict creativity. In other words, as Kitano and Kirby (1986) state: *"an individual can be extremely bright but uncreative, or highly creative but not necessarily intellectually gifted"*. Therefore, no clear relationship has been seen to exist between intelligence and creativity.

***Creativity rests more on divergent thinking than on convergent thinking.*** Divergent thinking involves a broad scanning operation, enabling a person to evolve a general multiple possible solution and hence it is put into use when one is confronted with a problem which has many possible solutions. (Convergent thinking, on the other hand, requires a narrowing process leading the individual to pin point the one most appropriate solution or response.) It is involved with situations, which require the production of only one correct solution or answer as for example, a multiple-choice test.

Divergent thinking has been considered to be more characteristic of highly creative individuals rather than of those not rated as being highly creative. That is why, in the tests designed to test creativity one is required to list as many uses as possible for some common article such as a knife or a brick, provide as many solutions of a problem as possible, give as many innovative combinations as possible, etc. Tests of this kind, requiring divergent thinking are, therefore, scored for divergence, i.e. the number, diversity and uniqueness of the responses and not for the convergent outcomes in the form of one single correct answer as is usually done in tests of intelligence.

***Creativity cannot be separated from intelligence.*** In spite of the fact that intelligence or creativity may function independently and creativity involves more of divergent thinking as opposed to the convergent thinking employed in the demonstration of intelligence, it is not possible to entirely separate creativity from intelligence. This is because thinking is neither purely divergent nor purely convergent and always has elements of both which are simultaneously involved in the creative and the intellectual process. It, therefore, follows that when a person is considered to be creative, he has to have a minimum level of intelligence certainly above the average.

***Creativity and school achievement are not correlated.*** No significant correlation has been observed between an individual's creative talent and his school performance. One may be creative but score quite low on achievement tests and, similarly, a topper in school or in the Board examination may show little or no creative output. The reason for this is that in the usual achievement testing, assessment is done in terms of the quality of reproduction of the informational input while the creativity testing requires greater output than the input in terms of formal as well informal teaching.

***Sociability and creativity are negatively correlated.*** Creativity requires creative individual to be more sensitive to the demands of a problem than the evaluation of his social environment. The creative individual is more inner—than outer-orientated. He likes to utilize his energy and potential more for the satisfaction of his creative urge than to care for the pleasant security of positive peer approval. It is for this reason that the creative individuals are usually not very sociable.

***Creativity and anxiety often go together.*** It has been noted that creative people demonstrate an above average state of anxiety. However, the anxiety of the creative individual is quite different from that of the neurotic individual with a disturbed personality. The high anxiety of the creative individual may be the result of his craving for the satisfaction of his creative urge and discontent with his status or rate of progress in attaining his creative motive. But creative individuals are quite capable of keeping their anxiety within manageable limits and directing it into productive channels.

**The Creative Person**

The creativity aspect can also be discussed in the lush of *those* personality characteristics of (lie creative wlikrli distinguish them from the non creative*. A number of researches have been done in this area and consequently different researcher* have presented different lists of pcisoiuilily traits attributed to the creative persons Reference in this connection may be made to the studies conducted by Cattail (1968), Torranen (1962), MacKinnon (1902) and Foster (1971 )t etc. These studies along with other personality studies have brought out the following behavior characteristics of personality traits of a potentially creative individual;

1. Originality of ideas and expression.
2. Adaptability and a sense of adventure.
3- Good memory and geneial knowledge.
4. A luyli device o f awareness, enthusiasm and concentration.
5. An investigative and cttnotis nature
6. Lack of tolerance for boredom, ambiguity and discomfort.
7. Foresight.
8. The ability to take independent decisions.
9. An ambitious nature and inteicsl in vague, even silly ideas.
10. An open mind with preference for complexity, asynimeti y and incompleteness.
11. A high degree of sensitivity towards problems.
12. Fluency of expression.
13. Flcxihlity in thought, perception and action.
14. Abilitv to transfer learning
15. A creative imagination.
16. Diversity and divergence or thought even in convergent and xtercotype situations.
17. Ability In elaborate, in work out the details of an idea oi u plan.
18. Absence ot the fear of and even attraction to the unknown, the mysterious and the unexplained.
19. Fnlhmiasm for novelty of design and even of solution of problems.
20. IVide n creation.
21 Peace with liis own self so that hr has more time or creative pursuits.
22. High Ksthctie values and I good aesthetic judgment.

## Psychology of Thinking, Reasoning and Problem-solving

**Introduction**

Cognitive abilities like thinking, reasoning and problem-solving may be considered to be some of the chief characteristics which distinguish human beings from other species including the higher animals. Good poetry, a highly developed computer or a robot, a beautiful painting, or magnificent buildings are all products of the thinking, reasoning and problem-solving capabilities of their creators and inventors. Even to understand, appreciate or put these into use, we have to employ our powers of thinking and reasoning. The challenges and problems faced by the individual, or by society, in general, are solved through serious efforts involving thinking and reasoning. The powers of thinking and reasoning may thus be considered to be the essential tools for the welfare and meaningful existence of the individual as well as society. We will now try to learn something about the processes involved in the thinking, reasoning and problem-solving behavior of human beings.

**Thinking**

Thinking is an incredibly complex process and the most difficult concept in psychology to define or explain. However, it has not deterred the thinkers, and many different definitions exist. Some of them are given here.

**Valentine (1965):**

In strict psychological discussion it **is** well to keep the ***thinking*** for an activity which consists essentially of a connected How of ideas which are directed towards some end or purpose.

**Ross {1951):**

Thinking is mental activity in its cognitive aspect or menial activity with regard to psychological objects.

**Garrett**:

Thinking is bclmviour which **is** often implicit mid hidden and in which symbols (images, idcus. concepts) are uidinanly employed.

**Mofah (1967):**

Thinking is an inipUcu problem-solving behavior.

**Gilmer (1970):**

Thinking is a problem sol. my process in which we use ideas or symbols in place of overt activity.

All Uic foregoing definitions fall into two categories: One class of definitions maintains that thinking is a process of internal representation uf external event, belonging to the past, present or future and may even concern a thing or an event which is not bcing actually observed or experienced by the thinker. The second category of definition* describes thinking in teuns of problem-solving behavior. These latter del-u n i o n s are more concrete as well as more definite because they do not rely on unobsctvHhlc internal representations and define thinking as problem-solving activity that can be readily studied and measured (1 amino and Reynolds. 1975).

Whatever the appaicnt difference may he both classes of definitions actually tell the same story. The internal representation of external factors influences problem-solving behavior and the problem-solving behaviour provides evidence for the existence of internal representation. Therefore, what is representational may be used as functional and vice versa. The process of thinking and the product of thinking are both actually assessed by what is obtained as a result of thinking. The lines along which individuals think must, therefore, always be inferred from the way they behave. Internal representation or mental explanation of the thing or events i.e., internal behavior, should **be** made an essential aspect of the thinking process used in the problem-solving behaviour. Therefore, a workable definition of 'thinking* must combine internal behavior and the product of thinking or the aims or purposes of thinking. *Thinking may thus be defined as a pattern of behaviour in which we make use of interna! representations (symbols, signs eti.i of things and events for the solution of some specific, purposeful problem.*

**Nature of Thinking**

What we have discussed about the meaning of the term 'thinking' so far has bnnight out the following aspects of its nature:

Thinking is essentially a cognitive activity.

It is always directed towards achieving some purpose. In genuine thinking we cannot let our thoughts wander aimlessly as happens in the case of day-dreaming and fantasizing.

Thinking is described as a problem-solving behavior. From the beginning till end there is some problem around which the whole process of thinking resolves but every problem-solving behavior is not thinking. It is related only to the inner cognitive behavior.

In thinking, there is mental exploration rather than motor exploration. One has to suspend one's overt or motor activities while engaging in thinking through some kind of mental exploration of the other.

Thinking is a symbolic activity, in thinking, a menial solution of the uiohlern is carried out through some signs, symbols and mental images. Thinking can shift instantaneously over a span of time and space.

**Reasoning**

**Meaning and Definition**

Reasoning plays a significant role in one's adjustment to one's environment. It controls not (inly one's cognitive activities but may also influence the total behavior and personality hy the proper or improper development of one's reasoning ability. It is essentially a cognitive ability and is like thinking in many aspects:

Like genuine thinking, it has a definite purpose or goal.

It is also an implicit act and involves problem solving behavior.

Like thinking, n involves the use of one's previous knowledge and experiences.

Like thinking, in reasoning also, there is mental exploration instead of motor exploration as it involves mental exploration of the reason or cause of an event or happening

Like thinking, reasoning is a highly symbolic function. The ability to interpret various symbols, development of concepts and language aids reasoning.

In view of the foregoing points of similarity, it is not easy (o clearly distinguish between thinking and reasoning as separate functions Reasoning **IS** said to b«- u productive and advanced stage in the complex process of thinking. I**D** comparison to thinking it may be said to be a more serious and complex mental process which needs a well organized brain and deliberate effort.

The following definitions given by some eminent scholars can throw more light on the meaning and nature of the process of reasoning.

**Garten (1968):**

Reasoning is sicp-wiie thinking with a pu-posc oi goal in mind *Gates (1947):*

Reasoning ts the **ICMI**applied to highly purposeful controlled selective thinking.

**Woodworth (1945):**

In reasoning, iiciiis (facis or principles! furnished by recall, present observation ex both, are combined and examined 10 see what conclusion can be drawn from die combination.

**Skmnct (1968):**

Reasoning is the word used to desenhc die mental recognition of causc-and-effeci relationships It may be the predicuoii of an event fioin an observed cause or the inference of a cause from an observed event.

**Munn (1967):**

Reasoning is combining past experiences in order to solve a problem which cannot be solved by mere reproduction of earlier solutions.

A close analysis of the foregoing definitions may reveal that reasoning depicts a higher type of thinking which is a very careful, systematic and organized function. It may follow some logical systematic steps like:

Identification of the goal or purposes which the reasoning is to be directed.

Mental exploration or search for the various possibilities, cause-arid-effect relationships or solutions for realizing the set goal or purpose* based on the previous learning or experiences and present observation or attempts.

Selection of the most appropriate possibility or solution by careful menial analysis of all the available alternatives.

Testing the validity of the selected possibility or solution, purely through mental exercise and thus finally accepting or rejecting it for the actual solution of the problem.

Reasoning may thus be termed *as highly specialized thinking which hclpi an individual to explore mentally the cause and-effeet relationship of an event* ***ot****solution of a problem by adopting some well-organised systematic steps based m previous experiences combined with present observation.*

**Types of Reasoning**

Reasoning may be classified into two broad type—Inductive reasoning and Deductive reasoning.

***Inductive reasoning.*** In this type of reasoning we usually follow the process of induction. Induction is a way of proving a statement or generalizing a rule or principle by proving or showing

that if a statement or a rule is true in one particular case, it will be true in all cases in the same serial order and it may thus be applied generally to all such cases. Therefore, in inductive reasoning one can formulate generalized principles and conclusions on the basis of certain facts and specific examples. For instance:

Mohan is mortal, Radha is mortal, Karim is mortal. Edward is mortal. Therefore, all human beings are mortal.

Iron expands when healed, water expands when heated, air also expands when heated Therefore, all matter- solid, liquid and gas—expands when heated.

Inductive reasoning may thus be considered to be a type of specialized thinking aimed at the discovery or construction of a rule or generalised principle by making use of particular cases, special examples and identity of elements nr relations.

***The study of inductive reasoning.*** To find the extent to which (trie's reasoning is inductive, we can employ the three following types of problems:

Classification problems like:

**1.** Mouse, wolf. bear....
rose, (h) lion, (c) run
(d) hungry, (e) brown, and so on

**2.** Series completion problems:

(i) 32. II. 33. IS, 34. 19. 35, ...
(ii) 72. 43. 90, 71. 47, 85. 70. 51. 80, ...

3. Analogy problems:

(i) Sugar : Sweet :; Lemon :
(ii) 15 : 19 :: 8 : 12 :: **5 :**
(in) 28 : 21 :: 24 : 18 :: 20 :

(Note: Solutions arc on page 381)

***Deductive reasoning.*** Deductive reasoning is the exact opposite of inductive reasoning. It may be defined as the ability to draw logical conclusions lYoin known iiatcinents or evidences. Here, one starts with some already known or established generalized statement or principle and applies it to specific cases. The following statements are examples of deductive reasoning:

All human beings are mortal, you are a human being; therefore, you are mortal.

Matter expands when heated; iron being a form of matter, will expand when heated.

Henry L Roediger and others (1987) in their book ***Psychology*** have mentioned three types of deductive reasoning—conditioned reasoning, categorical reasoning, and linear reasoning. Let us see what they mean.

***Conditioned reasoning.*** Conditioned reasoning is the reasoning tied down by Hume specific condition such as the following"

If there is a solar eclipse, the slieel will be dark There in a solar eclipse. Therefore, the streets are dark.

***Categorical reasoning.*** This type of reasoning is based on some categorical statements like:

All Robins are birds.

All birds lay eggs. Therefore, all robins lay eggs.

***Linear reasoning.*** This type of reasoning involves straightforward relationships among elements, e.g..

1. If Ram is taller than Mohan, and Mohan is taller than Sohan. Ram is the tallest.
2. If Sila is taller than (Jita. and Oila is not as short as Rita, then Rita is the shortest.

**Problem Solving**

**Meaning a n d Definition**

From birth onwards, everybody in this world is bescl with some problem or the other. There are needs and motives that arc to be satisfied. For this purpose, definite goals or aims are set. In an attempt for their realization one experiences obstacles and interfciences in one's aiicmpt to achieve them This creates problems and serious and deliberate efforts have to be made to overcome these

impediments The productive work involved in the evaluation of the situation and the strategy worked out to reach one's set goals is collectively termed *problem solving* This is an essential exercise for individual advancement as also for the advancement of society. The meaning and nature of problem solving is further clarified by the following definitions:

***Woodworth and Marqtu.\ {1948):***

Problem-solving behavior occurs in novel or difficult situations in which a solution is nor obtainable by UV habitual method of applying concepts and principles derived from past experience in very similar situations.

***Skinner (1968):***

Problem solving is a process ol overcoming difficulties that appear to interfere with the attainment of a goal. It is a proceduic of making adjustment in spue of interferences.

An analysis of the above definitions brings out the following observations about the meaning and nature of problem solving behaviour:

In the satisfaction of one's needs and realization of the set goals, problem-solving behavior arises only when the goal is purposeful and essential for the individual, there is serious interference in the realisation of ihis goal, and this interference or obstacle cannot he overcome by simple habitual acts or mechanical trial and error methods.

One has to utilize one's thinking and reasoning powers and engage in serious mental work by systematically following some well organized steps for the removal of the difficulties and obstacles.

The problem solving behavior involves quite deliberate, conscious and serious efforts on the part of the problem-solver.

Problem-solving behavior helps in the removal of or adjustment with, interferences and ultimately helps an individual to reach his goal and satisfy his motives

Problem-solving behavior helps an individual in the growth and development of his personality, making his lite happier and wiser by appropriate adjustment It also contributes significantly to the progress and development of society.

In view of the foregoing, problem-solving behavior may be said *to be a deliberate and purposeful act on the pan nf an individual to realise the ict goah or objectives by inventing some novel methods or systematically following tome planned step for rcnujvul of the intcrfercnecs and obstacles in the path nf the realization of the>e goals when usual methods liks trial and error, habit-formation and" conditioning fail.*

**Steps in Effective Problem-solving Behavior**

Psychologists have tried to study carefully, the behavior involved in the process of problem-solving in animals as well as in human beings. They have suggested different steps involved in the process of problem-solving according to their respective findings and viewpoints.

**John** Rransford **and** liarry Stein advocated five steps that arc basically **Ksociated** with the task of problem-solving. They referred to these steps as 'IDEAL' kinking and arranged them in the following order:

| | | |
|---|---|---|
| l | = | Identifying the problem. |
| D | = | Defining and representing the problem |
| E | = | Exploring possible strategies. |
| A | = | Acting on the strategies. |
| L | = | Looking back and evaluating the effects of one's activities. |

Bourne, Dominowski and Loftus (1979). on the other hand, enumerated three Heps or stages in problem-solving: preparation, production and evaluation, by proclaiming "*prepare, we produce, and we evaluate in the task uf problem tolvmg"*

Problem solving is an individual phenomenon and involves the exercise of cognitive abilities of a high order and continuous and persistent struggling on the conscious as well unconscious **levels.** Often, there is a considerable movement hack and forth as one moves from one step to another in the task of problem solving In general the following sicps may be followed in the task of problem-solving

***Problem-Awareness.*** The first step in the problem-solving behavior of an individual is concerned with his awareness of the difficulty or problem which needs to be solved. He must be faced with some obstacle or interference in the path of the realization of his goals, needs or motives and consequently he must be conscious of the difficulty or problem.

***Problem-understanding.*** The difficulty or problem encountered by the individual should next he properly identified and analyzed so that its exact nature clear to him This should be followed by relating the problem to his specific goals and objectives. Thus all (he difficulties and obstacles in the path of the goal or solution must be properly named and identified and what is to he achieved through the problem-solving effort should he clearly known in **very** specific terms.

***Collection of the relevant information.*** In this step, the individual is required to collect **all** the relevant information about the problem by all possible means He may consult experienced persons, read the available literature, recall his own experiences, think of the numerous possible solutions, and put in all possible efforts to collect comprehensive data and knowledge concerning the problem.

***Formulation of hypotheses or** hunch **for possible solutions.*** After understanding the nature of the problem and collecting all relevant information, one may start some cognitive activities to think out the various solutions to the problem.

***Selection of** the **correct solution.*** In this important step, all the possible solutions, thought out in the previous step, are closely analyzed and evaluated. Gales and others (1946) have suggested the following activities in the evaluation of the assumed hypotheses or solutions:

Identify the conclusion that completely satisfies all the demands of the problem.

Find out whether the solution is consistent with other well-established or accepted facts and principles.

Make a delibeiale search for negative aspects which might cast any doubt upon the conclusion

The above suggestions would help the individual to select the proper solution of his problem out of the numerous solutions that may be available. In the final analysis, however, he has to use his own discretion by utilizing his higher cognitive abilities to properly identify the appropriate hypothesis or solution by rejecting all olhei hypotheses.

***Verificatum of the concluded solution or hypothesis.*** The solution arrived it or conclusion drawn must be further verified by applying it in the solution of various similar problems arid only if the derived solution helps in the solution of these problems, should one consider the solution to be acceptable. Such a verified solution may then become a useful product of one's problem-solving behavior and be utilized in solving other future problems.

**Lesson 10**

## APTITUDE

Meaning and Nature of Aptitude

It is an observable tact that people differ from one another and within themselves in their performance in one or ihc other field of human activity such as leadership, music art mechanical work, teaching etc. Rarnexh a commercial institute (o learn typing and short-hand. He makes rapid progresses and in due course gets a diploma Later on when he is offered a steno-lypisf s job he carries it out UIIK fact only. Suresh. although in no way inferior to Kamesh in general intelligence* also takes admission in this institute, progresses very slowly and even after gelling the diploma proves lo be an inefficient typist and stenographer. Similarly Kadha profits from musical (raining while Sunila having almost the same intelligence as Kadha under similar circumstance*, makes little or no progress.

In many spheres of everyday life we come across individuals who excel over others under similar conditions, in acquiring certain knowledge or skills and prove more suitable and efficient than their peers in certain specific field*. Such persons are said to possess a certain specific ability or aptitude in addition to intellectual abilities or intelligence, which helps them to achieve success in sonic specific occupations or activities

Therefore, aptitude may be described a\ » special ability or specific capacity distinct from the general intellectual ability which helps an individual to acquire the required degree of proficiency or achievement in a specific field. However, to obtain a clear understanding of the term aptitude let us consider some of the definitions given by different aeholars:

Bingham;

Aptitude refeis to a person's way of behavior which serve to indicate how well he can Icani in meet and solve u certain specified kinds of problem.

TmxUt (1957}:

Aptitude is a condition, a quality or a set of qualities in an individual which is indicative of the probable extCDl to which he will be able to acquire under suitable li.jnini;'. .same knowledge, skill or composite orkiiuwtedjtc, undemanding and skill, nuchas ability toconuibulc to art or music, niecliumcal ability, mathematical ability w ability to read and speak a loteign Language.

Freeman {1971):

An aptitude is a combination of characteristics indicative of an individual's capacity to acquire (with

All these definitions reveal the predictive nature of aptitudes. When we say ihat Rum 01 Radha has an aptitude for teaching we mean that they have die capacity or ability to acquire proficiency in teaching under appropriate conditions.

Similarly, when we say Mohan ha* an aptitude for music we mean that his prexcit condition or ability reveals that if he were to learn music he would be successful. The knowledge of an individual's aptitude thus helps us to predict his future success in a particular Held of activity, with appropriate training or experience.

Like so many other personality traits or characteristics, it is difficult to say whether a particular aptitude is an absolute product of heredity or of eminent aspects of an aptitude may be For example, a person showing an aptitude for singing may have been born with a musical voice and u person showing aptitude for type-wriling or wench repairing may have sensitive and dexterous hands. But this is one side of the picture. It is also equally possible that the musical person's aptitude may be the result of his living in the company of food musicians or the typist's aptitude may be die u cation of his father or mother who also happens to be a typist.

It is safer to conclude, therefore, that the aptitude of an individual a; a paitkuhu moment is in all probability, dependent UJMHI heredity and environment both.

How Aptitude Differs from Ability and Achievement

Aptitude and present ability do not mean the same thing. A crsoii may have no present ability to drive a car but may have an aptitude for driving—which means that his chances of being a successful driver are good provided he receives he pntpcr training. Thus, while aptitude has 3 future reference and tries to predict he degree of attainment or success of an individual in an area or activity after adequate training, ability concern* itself only with the present condition he punctuality or capability which one possesses at the present moment regardless of the pist and docs not try lo make only assessment of one's future success or failure.

Contrary to the predictive nature of aptitude and the contemporary nature of ability, achievement is past oriented, reflects on the past and indicates what an individual has learned or acquired in a particular field.

It does not follow, however, that we can focus an individual's furs accomplishment in any area of activity with the help of aptitude measurement. Aptitude tests, in all their fornix, measure only the present ability or capacity of an individual on which a prediction of Hs future attainments may be based

Difference between Intelligence and Aptitudes

The existing intelligence tests gauge the genuine mental ability of an individual while aptitude tests as we- have seen, .ire concerned with specific abilities Therefore, whereas with the knowledge of intelligence of an individual we cu predict in, success in u number of situation* involving menial function or activity, the knowledge of aptitudes, on the other hand, acquaints us with the specific abilities and capacities of an individual to succeed in a particular field of activity. Therefore, in predicting his achievement in some specific job. (raining, course or specialized instruction we need In know more about his aptitudes or specific abilities rather 'his intelligence or general ability.

Difference between Aptitude and Interest

In aidef to succeed in a given activity, a person must have both aptitude for the activity and interest in it. This does not mean that interest and aptitude are one and the same thing. A (icrson may be interested in a particular activity, job or training but ma> not have the aptitude for it. In such eases, the interest shown in a particular occupation or course of study is often not the result of personal aptitude but of some other outside influence or reason such as the wishes of parens, the probability of getting a particular appointment or job stipend or other financial help or the prestige associated with the work Similarly, a person having long dexterous fingers who makes a good showing on a mechanical aptitude test may have little or no interest in becoming a watch-maker.

A guidance or selection programme must, therefore, give due weightage to the measure, of attitude us well as of interest Roth are essential for the mcctm «f an individual in u given activity, job or course of instruction.

Aptitude Testing

Aptitude tests measure or assess the degree or level of one's special bent or flair much the same way as intelligence tests are employed for measuring one's intelligence. They are chiefly used to estimate the extent to which an individual would profit from a specific course or training, or to predict the cuality of his ur her achievement in a given situation. For example, a mechanical aptitude test would be able to determine whether an individual would do well as a mechanic after uppropnate training und with the right motivation.

Two types (bused on the specific purpose served) of aptitude testa arc usually employed. These are. specialized aptitude tests and general aptitude tests.

Specialized Aptitude Tests

These aptitude tests have been devised tit measure the aptitudes of individuals in various specific fields or activities. Generally, these tests can be divided into the following sub-types according to the specific aptitude tested by hem

1, Mechanical aptitude tests

Musical aptitude tests

Art judgment Tests

4, Professional aptitudes tests, i.e. tests lo measure the aptitude for professions like leaching, clerical duties, medicine, law engineering, salesmanship, research etc.

5. Scholastic aptitude tests, i.e. tests to measure the aptitudes for different courses of in rue I ion.

Let us now discuss these aptitude tests in detail.

Mechanical aptitude tests. Like intelligence, mechanical aptitude is also made up of many components. While explaining its meaning Freeman (1971) writes:

The capacity designed by the term 'mechanical aptitude* is not a single, unitary function It is a combination of sensory and motor capacities plus perception of spatial relations, the capacity to acquire information about mechanical manners and the capacity to comprehend mechanical relationship.

The purpose of mechanical aptitude tests is to test the above mentioned abilities and capacities of LIII individual in to assess his of success in mechanical pursuits.

Some well known mechanical aptitude tests are:

1. Minnesota mechanical assembly test.
2. Minnesota spatial relations test.
3. The revised Minnesota power form board (1948).
4. Stenguist mechanical aptitude tests (Parts 1 & 11)

Rourke's Mechanical Aptitude tests (Parts 1 & II).

Rennet tests of mechanical comprehension.

S.R.A. mechanical aptitude test.

S. Mechanical aptitude Lest battery by Dr. A.N. Sliaimu (published by National Psychological Corporation. Agra). 9. A battery of mechanical aptitude tests (Hindi) prepared by Mono-Vigyanshata, a11 ahad.

These tests usually include the following items:

Asking the subject to put together the parts of mechanical devices.

Asking him to replace cut-outs of various shapes in corresponding spaces on a board.

Solving geometrical problems.

Questions concerning the basic information about tools and their uses.

Questions relating to Ihc comprehension of physical and mechanical principles.

For instance, the Bennet mechanical comprehension test Form AA has 60 items in pictorial form. They present mechanical problems arranged in order of difficulty and involve comprehension of mechanical principles found in ordinary situations. As an example, two items of this test are shown below (Figure 20.1 and Figure 20.2).

C lerical aptitude tests. Like Lhe mechanical the clerical aptitude is also u composite function. According to Bingham, it involves several specific ahilines namely.

- Perceptual ability. The ability to register words and numbers with speed and accuracy
- Intellectual ability The ability to grasp the meaning of words and symbols.

• Motor ability. The ability to use various types of machines and tools like a typewriter, duplicator, cyclostyle machine, etc.

Some of the popular clerical aptitude tests are:

Detroit clerical aptitude examination.

Minnesota vocational lest for clerical workers.

The clerical ability test prepared by the Department of Psychology University of Mysore. Mysoic.

Clerical aptitude (est battery (English and Hindi). Bureau of Educational and Vocational Guidance. Patiu (Bihar).

Musical aptitude tests. These tests have been devised fix discovering latent one of the important musical aptitude tests is described below

Sea hure measure of musical talent. It gives consideration IO the following musical components'

Discrimination of pilch;

Discrimination of intensity of loudness,

Dclcnnin.ition of lime interval;

Discrimination of limbic;

judgment of rhythm;

tonal memory

The test items in this battery are presented on phonograph records. The subject down, and attempts to discriminate. He is required to mark his responses on an answer form supplied to him by the examine: The instructions in rhese tests are of the following nature:

You will hear iwn tunes which differ in pitch You aic to judge wticlhcr the second is higher or lowci than rhc first. If thf second is higher, moid H, if lower, lecord 1-

Aptitude fur graphic art. These tests are devised la discover the talent fur graphic art Two lmponant tests of this nature are;

The Meier an judgement tent.

Home ail aptitude inventory.

One Hem of each pair is an acknowledged art masiapiece while die other is i slight distortion of the original. It is usually altered in such a way iliut it

In the Meier art judgement test there are 100 pairs of representational ptcluies in black and white. Figuie 20 S shows one such pair violates some important principle of art.

***Figure Graphic art aptitude truing.***

The examinees are informed regarding which aspect has been altered and are asked to choose from each pair the one that is better, more pleasing, more artistic, and aesthetically more satisfying. Fro example, in the above illustration, the examinees are required to select the original and aesthetically superior work on the basis of the shapes of the bowls.
The number of correct responses is taken as a measure of the subjects' judgment of aptitude for graphic art.
Another important test of measuring aptitude for graphic art is (he Horn an aptitude inventory. It requires the subject to produce sketches from given patterns of lines and figures. The created sketches ot the subject are then evaluated against the standard given by the author of the test.
Tests of scholastic and pmfessmnal aptitudes. Many aptitude tests have been designed for the selection of students for admission to specific courses or professions like engineering, medicine, law, business management, teaching etc. Some of these aptitude tests are:
The American council of education scholastic aptitude lest (ACE).
Scholastic aptitude text (SAT) developed in U.S.A
Stanford scientific aptitude test by D.L. Zyve.
Science aptitude test (after Higher Sec. stage); NJ.E. Delhi.
Moss scholastic aptitude test for medical students.
Ferguson and Stoddard's law aptitude examination.
Tale legal aptitude test.
Pre-engineering ability test (Education Testing Service. U-S-A.)-
Minnesota engineering analogical test.

Coxe-Orleans prognosis test of teaching ability.
Teaching aptitude test by Jai Prakash and R.P. Shnvastav. University of Saugar (M.P.).
Shah's teaching aptitude test.
Teaching aptitude test by Moss, F.A. & Others. George Washington University Press.
Teaching aptitude test battery (Hindi) by Dr. R.P. Singh & S.N. Shurmn (published hy National Psychological Corporation. Agra).

General Aptitude Tests
Instead of employing specialized aptitude tests for measuring specific aptitudes, the present trend is to use multiple aptitude test batteries to assess the suitability of persons for different professions on the basis of scores in the relevant aptitude tests in the battery. Like intelligence tests, multiple aptitude batteries measure a number of abilities, but instead of a total score, they provide a suitable instrument for making intra*individual analyses through sectional scores. The General Aptitude Test Battery (GATB) and the Differential Aptitude Test (DAT) are two examples of such tests.
GATB, developed by the Employment Service Bureau of USA. contains 12 tests. Eight of these are paper-pencil tests for name comparison, computation, vocabulary, arithmetic, reasoning, form matching, lest matching, and three dimensional space. The other four require the use of simple equipment in the shape of moveable pegs on a hoard, assembling and disassembling rivets and washers From the scores obtained by the subject, the experimenter is able to draw inferences about the nine aptitude ""actors* intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor coordination, finger dexterity and manual dexterity. The OATR has proved to be one of the most successful multiple aptitude batteries particularly for the purposes of classification.
The DAI', developed by U.S. Psychological Corporation, has been adapted in for use in India by S.M. Ojha*. It is available in two forms. It includes test:, for verbal reasoning, numerical ability, absnact spatial relation. mechanical reasoning, clerical speed and accuracy and two tests :or language: one for spelling and the other for grammar DAT has

proved very successful in predicting academic success and far been found specially useful for providing educational and vocational guidance to secondary school children.
The other notable multiple aptitude batteries commonly used for testing aptitudes arc the comprehensive ability battery (1977) developed by Sheridian Psychological Services USA and the Guilford-Zimmerman aptitude survey (1056).

Utility of Aptitude Tests
Aptitude tests have wide areas of application. Firstly, they ore the back-bone the guidance services. The results of these tests enable us to locate with a degree of certainty, the fields of activity in which an individual would be most likely to be successful. Therefore, these tests are found to be very useful for guiding the youngsters in the selection of appropriate courses of instruction, fields of activity and vocations.
These tests can also be used for educational and vocational selection. They help in the systematic selection of suitable candidates for the vanous educational and professional courses as well as for specialized jobs as Murm (1967) puts it:
cliicf value of aptitude te*nng is, in fact, dial it enables us to pick out from those who do not yet have the ability Ml ptrfora certain skills thm* whn, with a reasonable amount of naming, will be most likely to acquire the skilli in question and acquire them to a desirable Irvel of ptoficieiicy.
Aptitude tests thus properly anticipate the future potcniialincs or capacities of an individual (irrespective of whether he possesses those future capacities before the training or not) and thereby help us in selecting individuals arc best filled tor a particular profession and courses of instruction or those who are likely to benefit most from the pre professional (raining or experiences.
It is clear then, dial any purposeful guidance and counseling programmes or entrance examination to specialized academic and professional courses or selection procedures for specialized jobs should give due importance to aptitude. Aptitude testing combined with the other information received through interest inventory, personality tests, intelligence tests and cumulative record etc.

## PERSONALITY

**Meaning and Nature**
The term "pensonality" is derived from the Italian word persona, which was the name given to the makes that a&&nwore and the characters they portrayed. The meaning of the word personality has changed little since classical limes and comment* like what does he see in ha? She has such a poor personality", or "look at that young man, what a fine personality he has" are quite common. Remark* like this make us believe that personality is a thing or quality that is possessed by all of u& and can pa&tc labels such as tine, good or poor on it on the basis of the physical make up. manner of walking, talking, dressing and a host of other similar characteristics of individuals However, (his is a very limited view and the psychological concept of personality goes further and deeper than mete appearance or outward behavior The question of how best to interpret or define personality has long exercised the minds of psychologists
Watson (1930), the father of behaviorism, on the basis of his behavioral studies, concluded:
Personality U the sum of activities that can he discovered by actual ohwrvaiioris over a long enough period of time to give reliable information
In this way lie tried to make the word personality synonymous with the consistent pan of an individual. This, however, reflected a very narrow meaning of the term personality.
During the same years. Morton Piincc (1929) tried to give personality a broader base by accepting die rote of both environmental and hereditary factors in commuting what is termed as personality. In his words:

Personality is die HID total of all the biological innate disposition, tendencies, appetite and insane of the individual and the dispositions and tendencies acquired by experience
This definition ol Morton lYtnce wax criticized on the ground that it docs not present an integrated and organizational view of personality. Personality cannot be described through merely summing up the various elements involved in it and if this definition is lOcepMd. it would be like describing as a collection of brick.
The inability of various existing definitions to describe personality in acceptable terms led AUport (194ft) to engage in trying to discover some useful definition. After evaluating 49 such definitions, he concluded:
392
Personality is a dynamic organization within the individual of those psyclw-physical systems that determine his unique adjustment to his environment.
Although AUport tried to give a comprehensive definition of the term personality by recognizing its dynamic nature and organizational aspects and by emphasizing the role it can play in an individual's adjustment to his environment, his definition suffered fiout some serious defects. In emphasizing the dynamic organization within the individual he seems to view personality as somewhat different from the individual, residing within him, rather than as an integrated unity of mind and body. Personality to him is something put into thc individual like water is put into a jug and it takes the shape of the jug. Contemporary psychologists like Camell (1970), liysenck (1971) are of the opimon that the true nature of personality cannot be understood by considering only the behavioral or dynamic aspects.
Cottel! (1970):
Personality is liiai winch permits a prediction of whut u person will do in a given situation
Eysenck (1971):
Peisoiialily is die mote or less stable and enduring organization of a person's character, temperament, intellect and physique, which determine his unique adjustment to the environment.
In Eyscnck's definition character signified conative behavior or will; physique meant bodily configuration and neuroendocrine endowments, temperament stood for affective behaviour based on emotions, and intellect implied the cognitive behavior or intelligence.
The definition given by liysenck has very strong points in its favor. First, it tries to provide personality with a physiological base and gives a balanced consideration to the role of heredity and environment in building the personality. Secondly, it gives a complete picture of human behavior by involving all of its aspects—conalivc, cognitive and affective. Thirdly, i t stresses the need of integration and organization of the behavioral characteristics. Finally, it aims at making personality somewhat measurable and assessable, thus giving it a scientific base. However, on the other hand, it does have some weaknesses also in that human personality cannot be supposed to necessarily possess a physiological base and it cannot be considered to be as static and fixed as advocated by this definition. It is true that personality should be evaluated on the basis of generality of the behavior hut at the same time, changes cannot he denied. The person who is an extrovert may turn into an introvert depending upon so many intervening factors.
The following definition given by S.R. Madrii (1976), an American psychologist in his work. Personality Theories—A Comparative Analysis, views personality as an organized and integrated whole of definite characteristics and tendencies within the individual which make him correspond to the persons of his group, society, culture and nation and at the same lime maintain the individuality and uniqueness of his personality:
Personality is the stable scl of characteristics and tendencies dial determine those commonalities and differences in the psychological behavior (thoughts, feelings and aeli on si ol people have easily understood in terms of tin: wicial and biological prewrres of llic immediate.

Those characteristics ami tendencies (inherited as well as acquired) although stable to a large extent are subject to change and modification according to the needs of the time and the environmental situation for making one adjusted to one's self as well as to the environment. The causes of such modification and changes arc not necessarily linked with present physical, biological and social situation;, and may be connected with the earlier childhood experiences, genetic code and many other unknown factors. Thus, what a person presents in his totality is the personality

Although this seems to be quire a comprehensive definition, the evolution of an ideal definition capable of explaining the meaning and nature of the term personality in all ils aspects calls for further extensive research In fact, concepts like personality are difficult to explain as they have the identity like sound and electricity etc. the impact of which can be felt but their real nature is always something of a mystery. Something can he known about them by their utility or the description of some of their characteristics and distinguishing features. Let us seek the meaning of the term personality along similar lines.

**Distinguishing Features and Characteristics of Personality**

I he results of various experimental studies and observations have led lo the identification of tlic following characteristics of personality.

1. Personality is something unique and specific. Every one of us is a unique person in oneself. Every one of us has specific characteristics for making adjustments. However, the uniqueness of an individual's personality does not mean that he has nothing to share with others in terms of trails and characteristics of personality. He may have certain characteristics which he may share with others and at the same lime many others which arc unique to him.
2. Personality exhibits self consciousness as one of its main characteristics-Man is described as a poisons or as having a personality when the idea of 'self enters into his consciousness. In (his connection Rhatia (1968) writes
3. “Personality", as stated by Allporl (1948):

It is not only the assumed, the external and the non-essential the vital, the internal and the essential.

It includes everything about a person. Il is all what a person has about him Therefore, it includes all the behavior patterns, i.e conative, cognitive and affective and covers not only the conscious activities but goes deeper to the semiconscious and unconscious also.

4. Personality is not just a collection of so many trails or characteristics. For instance, by only counting the bricks, how can we describe the wall

of a house? Actually. personality it; more than this, it is an organization of psychophysical systems or some behaviour chai act eristics and funciiont as a unified whole. Ju>t us an elephant cannot be described as a pillar only by examining its legs, an individual's personality coimoi be judged by only looking at his physical appearance or his sociability. The personality of on individual can be assessed only hy going into all the aspects that comprise his totality.

5. Although the personality of an individual icmains stable to a large extent, it cannot be said to be static, it is dynamic and continuously in the process of change and modification As we have said earlier, personality is the 'everything' that u person has about him. Ii gives him all that is needed for h* unique adjustment to his environment. The process of making adjustment is continuous One has to struggle with ihe environmental as well as the inner forces throughout one's life. As a result, one lias to modify and change one's persoiuihty patterns and this make\ ihr natuic of pcrMmahty dynamic.

6. Personality is sometimes subjected to disoiganisation and disinie gration, leading to severe personality disordeis on account of factors and conditions like severe anxiety, stress, traumatic experiences, -irolongcd illness, infections, and damage to the brain and nervous system.

7. iveiy personality is die product of heredity and environmmt. UoUi these contribute significantly towards the development of the child's personality. A child is not born with a personality but develops one as a result of continuous interaction with his environment Therefore, not only heredity but also factors like constitutional make-up. Social and cultural influences as well as experience and training etc. all affect one's personality.

8. Earning and acquisition of experiences contribute towards growth and development of personality. Fvery personality i-» ihe end-product of this process of learning and acquisition.

9. The personality of an individual can be described as well as treasured.

10. Personality should not be taken as synonymous with one's character. Character is an ethical concept. It represents a moral estimate, of the individual, while personality as a psychological concept is a more comprehensive term which includes character as one of its constituents.

11. Personality may be further distinguished from temperament which can lie termed a system of emotional disposition. This system of emotional disposition represents only ihe affective side of one's pcrsonalit) and so personality must be taken as being much beyond one's temperament.

12. Personality should also be viewed differently from the ego or the individual self. The word ego is generally used foi that unified part of one's personality which in ordinary language wc call "1". However, as the psychoanalytic view of personality advocated by Freud explains, it is only a small aspect of one's total personality. Personality, therefore, stands for more than what the ego carries.

13. Every person's personality has one more distinguishing feature, that is.

Aiming io an end or towards some specific ***goals.*** Adler clearly MM this view anil is ***of the*** opinion that a man's personality can be judged ***through*** a study and interpretation of the ***goals*** which he ha* set for himself and the approach ***he*** makes to the problems he faces ***in*** his life.

In view of the foregoing discussion regarding 115 characteristics and scope, ***as*** u practical definition, it may be said ***that,*** *personality is a vomptt× hlmd of a ronuamly evolving and changing pattern of one's unique behaviour, emerged as a result of one's interaction with onr.'× environment and directed towards some Specific ends.*

**Theories of Personality**

The search for understanding die meaning ***and*** nature of personality would be incomplete if *w* ***do not*** discuss some important theories of personality. These theatrics in ***one*** way ***or*** another, ***try*** to describe the basic structure and underlying entities or constructs involved in personality ***along*** with

the processes by which these entities internet The theories ***o(*** personality in general can be classified into Ihe following hroad categories:
*Theories adopting the type approach.* Ihe viewpoint of Hippocrates, KrcfKchmer, Sheldon and Jung belong to this category.
*Theories adopting the trait approach.* Theories like AllporTH theory and Cattell's theory of personality arc ***based*** on Ihe trait approach.
*Theories adopting the typc<um>traii approach.* Theories like Gysenck's theory
of personality can he put under This category
*Theories adopting ihe psycho-analytical approach.* Theories like psychoanalytic theory ***of*** Freud, theory ot individual psychology ***by*** Adler, analytical psychology of Jung, social relationship theory of Homey and Enckson's theory o! psychosocial development ***may be*** included ***in This*** category.
*theories adopting the humanistic uppnnich.* Theories like Carl Roger's sell ihciiiy and Maslow'x sclf-actuali7ation theory belong to this category.

T*heories adopting the teaming approach.* Dollard and Miller's learning theory arid Randura and Walter's theory of social learning can be put into ihix category Let us now briefly discuss the view oinix propounded in these theories.
Determining hix behavior but Lakes personality to be the function of one's social learning by focusing on the acquired variability of traits. All the viewpoints expressed, however, irrespective of their seeming differences, should not be viewed as entirely independent of each other, as all of thcm try to explain the nature. Structure and functioning of personality and behavior in their own way.
In fact, an eclectic approach to all the viewpoints propagated by the different psychologists may yield a clearer picture of personality and behavior. The contents of the unconscious focused on by the psychoanalyst are as significant as the contents of the conscious underscored by the humanist. Similarly, behavior may be described as consistent if interpreted by the iraii approach; and equally plausible, as variable in various situations as maintained by the social learning theorists. II is advisable, therefore, to incorporate the views expressed in the main personality theories to obtain a comprehensive understanding of the nature, mechanism and dynamics of personality and the whys and wherefores of human behavior.

**Assessment of Personality**
Why 'Assessment of Personality* rather than measurement of personality has been chosen as the title of this section is a question that needs to he answered. This has been done because die accurate measurement of personality is itself problematical. The accuracy of any process of measurement depends on the following:
The nature of the thing to lie measured.
The instruments to be used.
The person who will do the measurement.
Lei us now evaluate the measurement of personality in terms of these cnieria.
The nature of the 'thing'. Personality is a complex characteristic that il is hardly possible to measure it. First, personality is not a 'thing'; it is an idea, an abstraction, and in an attempt to measure it, we would have to wrongly, try to give it a concrete shape. Secondly, since psychologists are not agreed upon the dimensions or content of personality, what would be measured? Thirdly, personality is not static. How can we accurately measure something which is constantly in the process of change and modification'.' Its measurement would vary from time to lime and hence would not be die some from one moment to the next.
The nature of the instruments. The process of measurement requires appropriate tools and satisfactory units of measurement. In personality measurement we encounter difficulties in this direction as well:
(a) There is no zero (starling point) for reference in case of personality. No

child is born with zero personality, the Lcnglli is measured in units like inches, centimeters etc.. temperature is
measured in degrees but in psychological measurement we do not have any such equal or regular units of measurement, (c) Accurate measurement requires exact scales or measuring instrument.
No such reliable instruments are available for measurement of personality.
X The nature of the person. The depcndahilty accuracy until validity of any process of measurement largely depends on die competence and detachment (if the person doing the measurement. In the absence of standard tools or units of measurement, the results of any evaluation of personality are bound to be influenced by the subjective views and the norms, likes and dislikes of the person carrying out the measurement
In this way the actual measurement (which defines itself in terms of objectivity, reliability ami validity; is not possible. ii is difficult to go round in search for all the constituents or elements of personality, most of which are unknown. Moreover, prediction of the future status is the most essential aim of measurement. In case of a dynamic phenomenon like personality, such prediction possible? Or not justified to use the term measurement. We :an only have the estimate 01 assessment of personality.
Technique and Methods of Assessment of Personality
The methods used for the assessment of personality may be termed as subjective, objective or projective. As it is not possible, however, to clearly demarcilc subjectivity from objectivity and even effectively insulate projective processes against the subjectivity arid personal biases of the examiner, it is necessary to look for other ways to classify the techniques of personality assessment The commonly employed assessment techniques may be classified as follows:
Where an individual's behavior in actual life situations can be observed, namely observation techniques and situation tests.
Where the individual is required to speak about himself namely, autobiography. questionnaire and personality inventory and interview.
Where other people's opinions about the individual whose personality in under assessment are ascertained These are biographic case history, rating scales and sociometric techniques.
Projective techniques involving fantasy which aim at assessing lie individual's reaction to imaginary situations.
Indirect techniques in which some personality variables may be determined in term* of physiological responses by the use of machines or technical devices.
Let us discuss some of the important techniques in detail. Observation
Observation is a popular method to snidy the behavior pattern of an individual in an actual life situation. The observer decides what personality traits or characteristics he needs to know, and he then observes the relevant activities of the subject in real lite situations. The observations can he done in two ways. In one the observer dates hide from the subject or subjects and even becomes more of less a pari of the group undci observation in theatrical he lakes a position which his presence is least Jislurhing to the subject but from where he can clearly obscene every detail of the behavior of the individual under observation. He may also u<e a tape-recorder, photographic cameras, a telescope etc To ensure reliability of (he observed results, the observer may repeat the observmioiis in the same situation several times, or the subject may be observed by a number of observers and the results may be pooled together

**Situational Teats**
Here cautions are artificially created in which an individual is expected In perform acts iclated lo the personality traits under tenting. For example, to test the honesty of an individual, some situations can be created and his reaction can be evaluated in terms of honesty o- disliuncsty Does he 'eel the temptation to resort to copying? Does he iry to

pick up the ten-rupee note which is lying there? His behavior would lead lo an assessment of how honest he is.

**Questionnaire**

The nature of a questionnaire explained by the description Riven by Goode anc Hall (1952):

In general the word questionnaire reicrs lo a device for securing answers lo questions by nsinp a fuim which the respondent fills in himself.

This definition makes it clear that in collecting information from the subject himself about his personality characteristics, a form consisting of a series of primed or written questions is used. The subject icsponds to ihcse questions in die often provided in columns of yes. no or cannot say etc. These answers are then evaluated and used for personality assessment. Items, like the following, are included tn ih; questionnaires:

Yes. No. (Cannot say)

Do you enjoy being alone? — —

Do you enjoy seeing others succeed? — —

Do you laugh ai a joke on yourself? — —

Do you gel along well with your relatives? — —

This is the most popular method and is quire useful in collecting both quantitative as well as qualitative information,

**Personality Inventory**

While this resembles the questionnaire in many respects such as administration, scoring, interpretation etc.. it is deficient in two ways. First, while the questionnaire is a grncriil device and can be used for collecting all kinds of information nnt connected specifically with personality trails Q) the behavior of an individual, personality inventory is specif rally designed lo seek answers about die person and his personality. Second, the questions, set in the questionnaire, are generally worded in the second person e.g..

Do you often feci lonely? Yes, No.

while in the personality inventory, they may be winded in thc first person such as.

1 often feel lonely Yes, No,

The best known personality inventory is the Minnesota Multiphasic personality Inventory (MMHI) developed by J.C. McKinley and SR. Hathaway of the Minnesota Medical School. The items included in this inventory are such that their answers arc known to indicate certain Ifttcifio personality traits it consists of 550 items some of which are:

I sweat very easily even on cool days.

There is something wrong with my sex organs

I have never been in love with any one.

I like to talk about sex.

Each item is printed on a separate card. The subject reads the questions and then, according to his response puis il down as yes no or doubtful in the space provided for the purpose. Evaluation of the important personality traits can then be done in terms of these responses

The California personality inventory, the Eysenck personality inventory and the Sixteen personality facloi inventory (16 RR) developed by Cattell are some of the other well-known Inventories,

The questionnaire and personality inventory technique suffer from the following drawbacks:

I. It is difficult to get die responses in all questions.

2 The subject may give selective responses rather than genuine ones (hide his weaknesses etc.)

3. He may be inguinal of his own traits or qualities which he may possess.

Ruling scale. The rating scale is used to assess where an individual stands in terms of other people's opinion of some of his personality traits. It reflects the impression die subject has made upon the person who rates him. There are three basic factor > involved in this technique.

The specific trait or trails to be latcd.

The scale on which the degree of possession or absence of the trait has to be shown.

The appropriate persons or judges for rating.

First of all the traits or characteristics, which have to be evaluated by the judges are to be stated and defined clearly. Then a scale for the lating has to be constructed. How it is done can be understood from the example which follows:

Suppose we wish to rate the students of u class for the quality 'leadership'. We can nitc ihe degrees of tins quality as divisions such as very good, average, POOT, very poor etc. Now the of these divisions along a line, on equal intervals, from high to low is termed as a rating scale for assessment of the quality of leadership. Usually the of the scale are indicated by number. I to 1, I to 5 or I to 7 comprising a three-point, five-point or seven-point scale The sevcti-poini scale is of the following type:

7 6 3 4 3 2 1^

Excellent Very good Good Average Below average Poor Very pool

Now the raters, who are in a position in properly mie the individuals may be asked lo give them scores, ranging from I to 7 according to the degree of leadership they possess.

Rating techniques suffer from some obvious drawbacks like the ciror of central tendency, subjective bus and halo effect etc in the former; the rates hesitate to give very high or very low ratings and lend to keep their ratings in the middle. Subjective bias leads lo there own likes and dislikes, coloring their assessment of the individuals under rating, and under the halo effect, they may rate an individual (on the basis of general impression) to be more honest or the like, than he may actually be

To bring some reliability into rating scale technique, it has been suggested that instead of having rating by only one judge, we an assign the rating work to more judges —for example lo different teachers, classmates, parents etc.—the rating may be done by pooling the individual assessments.

**Interview**

Interview is a technique of eliciting information directly from the Sltbjecl about his personality in face-to face contacts It gives an opportunity for mutual exchange of ideas and information between the subject and the psychologists. For this purpose, the psychologist tries to arrange a meeting with the person under assessment. The fume to face interaction in the interview is of two types.

An unstructured interview is an open interrogation. Here the interviewer asks the interviewee any question on any subject relevant lo the situation. The interviewer here is not restricted to a particular set of predetermined questions but is free to drift along die paths opened up by the interviewee to explore any issue that may arise, and to clarify any dough that may emerge in the broad assessment of his personality. The structured interview on the oilier hand, adopts a systematic and predetermined approach instead of ruling on the tides of the situation. Heie the interviewer is definite about the peisonality trails or behavior he has to assess and then plans accordingly Usually, a list of questions, is prepared for this purpose and after taking the subject into confidence, the psychologist tries to seek answers m these pre-planned questions lie does not attend lo only the content of the responses but alio lo the tone, behavior and other similar factors, for the total evaluation in terms of the designated personality pattern of the individual.

The limitations of this technique are that it calls for a well trained competent interviewer and is costly in victims of labor, time, and money. It also suffers from the subjective bias of die interviewer. Here also, like questionnaire and personality inventory, we cannot have

any safeguard *10* prevent the subject from hiding his feelings *01* from giving selective responses. The points in favimr of the technique are lhat answers are obtained to cvety question which is put lo the subject In fact, responses even to intimate questions, which s ubjects may hesitate to put in writing, can also he obtained. In fact, inleiview is u lelativcly flexible tool, Il peimits explanation, adjusimenr and variation according lo the siniation and ihus has proved to be one of the essential and more important tools of peisonality assessment.

**Projective Techniques**

We have so tar discussed only those techniques which evaluate the oven of conscious behavior of an individual The coven or unconscious behavior is in fact, not insignificant, rather, it is more significant limn own behavior, as Freud believes that our conscious behavior is only one-tenth of our total behavior There should, therefore, be some oilier techniques which do not stress only the observable pan of human personality but can reveal a person's inner world and go deeper in the unconscious of an individual to dig out the repressed feelings, wishes, desires, fears, hopes and amhiiions. etc.

These techniques, on account of their using projection phenomena are called projective techniques. The material used in these techniques or tests icpicscntx "a son Of screen[1] »" which the subject 'pioccts' his characteristics through processes, needs, anxieties and conflicts (Anaslasi. 1976)

Projective techniques are devised to meet the challenge They arc lo ioNBi ihe total peisonulily of an individual lather than in fragments. Lei as see what these techniques are

***The nature of projective techniques.*** In view of the declared objective of all such types of tests and techniques, relatively indefinite and unstructured stimuli (like vague pictures, inkblots, incomplete sentences, drawings etc.) arc presented to the subject and he is asked to structure them in any way he likes. In doing so he unconsciously projects his own desires, hopes, fears, repressed wishes etc and thus not only reveals his inner or private world but also gives indications on the basis of which his tout personality may be assessed Some Common Projective Techniques are discussed here.

**The Rorschach Inkblot Test**

This technique was developed by Haimann Rorschach (1884-1922). the Swiss psychiatrist. The material used in (his lest consists of 10 cards on which there arc mk-hlots Five of them are in black and white and five are multi-colored. These ink blots are completely unstructured the shapes of the blots do not have any specific meaning (Figure 21.4).

***An inkblot of the type used in the Korvhach test***

1. The cards are piesented one ai the lime in a specified order When the subject gets seated, the examiner gives him the first card with necessary instill actions and asks him to say what he sees in it. What it looks like to him, etc.
2. The subject is allowed as much time as he wants for a given card and ix permitted to give as many responses as he wishes. He is also allowed to turn the card around look al it from any angle lie wants.

Besides keeping a record of the responses of the subject concerning these inkblots on separate pieces of paper, the examiner notes the time taken for each response. The position in which the cards are being held, emotional expression and oilier factors of incidental behavior of the subject during the test etc

4. After all the cards have been presented, the second phase of inquiry which is intended to seek clarification or addition to the original responses follows.

Scoring, analysis and imerpretatum of the test. For the purpose of scoring, the responses ore given specific symbols and are entered into 4 columns.

These scoring categories are marked an (a) location. (b) contents, (c) origiuality and (d) determinants.

Isiculion refers to the part of the blot with which ihe subject associates each response. The symbols W, w, d and f are used for scoring the location responses as follows:

(W) indicates that the subject is seeing the card as a whole

(w) indicules that the subject has failed to sec the problems as a whole.

(D) Indicates the major details.

(d) Indicates minor details involving parry issues or less important matters, (j) indicate the subject's response to the white spaces within the main outlines.

Contents column is concerned with the contents of die responses. It takes note only of what is seen by the subject and not the manner of its perception. Some of the symbols used for scoring the contents of the responses are:

| Scoring Symbol | Contents of the response |
|---|---|
| H | human forms |
| A | animal forms |
| Ad | animal detail |
| Hd | human detail |
| N | natuial objects like rivers, green fields etc. |
| O | inanimate objects like lamp-shade, pot etc. |

TAT or Thematic Apperception Test

This lest consists of perception of certain picture in a thematic manner, i.e. revealing imaginative themes. It was first introduced by Heniy Murray (1943) to measure the need for achievement. Later it was fully developed for ihe assessment of personality with the help of the psychologist CD. Morgan.

Test material and adminvitraium. The test material consists of thirty pictures which poitiay human beings in a variety of actual life situations. Ten of these cards arc meant for mules, ten for females and ten are common to both sexes. The maximum number of pictures used on any one subject is thus, twenty. The test is usually administered in two sessions, using the pictures in each session.

***A sample picture from TAT***

The pictures are presented one at a lime. They are vague and indefinite. The subject is told that this is a test of creative imagination and that there is no right or wrong. He has to make up a story for each of the pictures presented to him within a fixed period of time. He has to take care of the following aspects while knitting the story:
What is going on in the picture?
What has led to this scene?
What would likely happen in such a situation?
In making up the stones the subject unconsciously projects several characters of his own personality. There is no rime to think. Therefore, the express his own natural life's desires, likes and dislikes, ambitions, emotions, sentiments etc The special value of this test lies in its capacity to exploring the underlying hidden drives, complexes and conflicts of the subject's personality. A competent examiner can (earn a hit about the personality of his subject by carefully analyzing the given responses.
Scoring and interpretation. (originally Murray analyzed the contents of the stories according to needs and pressures in the form of the environmental forces to which the subject is exposed. The terms of analysis have now been modified and the system of scoring and interpretation lakes the following into account:

- Theme of the story. What type of personality does lie have?

■ Theme oj the story. What is the nature of theme ir plot used in making up the story?
The style of the story. The length of the story, the language used, whether the expression is direct or indirect, forced or poor, organization of the contents, originality and creativity, etc.
The content of the story. What interests, sentiments, attitudes they depict whether behavior has been expressed in real terms or as fantasy and what inner state of the mind *the* story reveals.

Test situation as a whole. The subjects reaction is to he listed as a whole.
Particular emphasis or omissions. The omissions, addition, distortion and attention to pellicles detail
Subject's attitude towards authority and sex.
Outcome. Whether the ending of the story is happy, unhappy, funny etc.
As a whole, the recurring themes and features contribute more towards the interpretation than a single response. Moreover, the global view of one's personality should be based on the responses of all the twenty pictures shown to the subject There are many chances of misinterpretation of the contents of the stories by an immature examiner. The future of TAT therefore, hangs more on the success in perfecting the interpreter than on success in feeling the material People entrusted with interpreting the lest must be given adequate opportunities to acquire the knowledge and using for this purpose

**CAT (Children's Apperception Test)**
TAT works well with adults and adolescents but it is not suitable for children. Or Leopold Bellak developed this test for children between three and ten years of age.
Description. This lest consists of 10 cards. The cards have pictures of animals instead of human characters since it was thought that children could identify themselves with animal figures more readily than with human figures. These annuals are shown in various real life situations. All ten cards are used for children of both sexes. The pictures designed lo evoke fantasies relating lo the child's own experiences, reactions and feelings. The child's personality is reflected in whatever story emerges. It is a color-free lesi hut demands some alterations according to the child's local conditions.
Administration and interpretation of the test. All the ten cards are presence one by one and the subject is asked to make up stories our of them. The examiner should try lo develop such a rapport that the child Treats the making u p of stories as a game.
Interpretation of the stories is centered around .he following eleven variables:
The hero. The personality trails of the hero as revealed in the story.
Theme of the story. The nature of the theme seeded for building the story.
The end of the story. Whether the ending is happy, wishful, realistic or unrealistic?
Altitude towards parental figures. Which of the following emotions has been depicted in relation to parental figures: hatred, respect, devotion, gratitude, dependence, aggression, fear?
Family role. With whom in the family has the child identified himself?
Other outside .figures introduced. Objects or external elements have been introduced in the story which are not shown in the pictures.
Omitted or ignored figures. Which figures has the child omitted or ignored should be noted as they may reveal the wish of the subject that the figures were noi diere?
Nature of anxieties. Harassment, loss of love, fear of being left alone etc., should also be noted.
Punishment for crime. The relationship between a crime committed in the story and the severity of punishment given for il should be noted.
Defence and confidence. The type of defences, flight, aggression, passivity, regression etc.. the child adopts the riaiure of compliance or dependence, involvement in pleasure and achievement, sex desire etc. should also he noted.
Other supplementary factors. The language, the overall structure of the stories, the lime taken for completing them and the reactions of the subject at the time of making up the story etc.
Willi all this knowledge an expert interpreter can for an assessment of the various aspects of the child's personality.

Word Association Test

A number of selected words, comprise this resr. The subject is told that the examiner would speak a series of words one word at a time and he (die subject) should immediately say ***the*** first word which comes to his mind and thai (here arc no right or wrong.
The examiner then records to each word spoken by him the reaction lime and unusual speech or behavior manifestations which might company a given response. The contents of the responds along with the other items recorded in connection with them give clues for evaluating the individual's personality and thus help a psychologist in his work.

**Sentence Completion Teats**
lliese tests consist of a ***lint*** of incomplete sentence*, generally open ended, which require completion by the subject in one or more words. The subject is asked In go through the list and answer as quickly as possible (without giving a second thought to his answers). For example, we can have ***the*** following sentences:
I am worried over
My hope is
I feel proud when
My hero is
The sentence completion Tests are considered superior to word association because the subject can respond in more than one word and so it become* possible to have great flexibility and variety of responses as a result of which a wider area of personality and experiences may be revealed.
In addition to the projective technique mentioned above, there are sonic others which may prove useful in several situations. They are, the *play technique,* rf/imin? *and painting texts* etc. Both these techniques arc very useful in the case of small children. In the former, the examiner observes the spontaneous behavior of the children while playing with or constructing something from given material and in the latter, (lie natural tree hand drawing and paintings of the children constitute the matter of study. Both these techniques offer the opportunity for can* Jul analysis of a child's personality.
In spite of being criticized as being very difficult and subjective in interpretation the projective techniques discussed above have been found quite useful in the assessment of the personality of people belonging to different age groups including the older ones and the smaller children Then use has been widely appreciated especially in rendering necessary advice to guidance personnel, clinical psychologists and even to the persons engaged in selection of personnel, their placement and promotion. The chief value of these tests lies in the fact That it is extremely difficult for the subject to give fake responses since there are no right or wrong responses which the subject may try In guess as in the non-projective techniques like questionnaire, inventory, interview etc.

## *Learning Disabilities and Learning Disabled Children*

**Meaning and Definitions**
Learning disabled children are those children who suffer from serious learning disabilities. These children exhibit exceptionally inferior qualities and capacities in terms of learning and understanding in comparison to the normal children of their age or class. In fad, learning disability is nothing but a sort of handicap or helplessness that can be felt by the sultrier in terms of his academic performance (teaming or understanding something) in the same way as experienced by a physically handicapped person in terms of his physical functioning or by a menially handicapped in terms of his mental functioning to know more about the terms learning disabled and learning disabilities with ihe help of Kmc well known definitions given below:
The **Association for Children with Learning Disabilities USA, 1967:**
A child with learning disabilities is with adequar? menial ability processes and emotional stability who has a limited number of specific deficits in perceptual, integrative or expressive processes which severely impair learning efficiency This include* children who

have central nervous system dysfunctions which is expressed unmanly in impaired learning efficiency

*Uefford (1977)*

USA National Advisory Committee to the Education for the Handicapped, 1V69:

"Specific learning disability" mean* u disorder in one or more of the basic psychological involved in understanding or in using or written, that may manifest itself in an imperfect ability ***TO*** listen, think, speak, read, write, spell or lo do mathematical calculation. The term includes such condihuis as perceptual disabilities, brain injury, oiuiitnaJ brain dysfunction, dyslexia and developmental aphasia. The term docs nut apply to children have learning problems that arc the visual, hearing, or motor of menial retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantages.

*Register, 1977)*

*S.A. Kirk (1971):*

The term learning disability is not meant in *be used* for children with minor or temporary difficulties in learning but with a severe discrepancy between ability and achievement in educational performance *and such* severed discrepancy described as learning disutility with learning problems that cannot be explained by mental retardation, sensory impairment, emotional disturbance or lack.

Nationnl Joint Cuinmiltcc on Learning Disabilities USA:

"Learning disabilities" as a *fence* twin refers *10* a heterogeneous group of disorders manifested by *Hgmficaiit* difficulties in the acquisition and use of listening, speaking, reading, writing lessoning nr mathematical abilities These dissuades are intrinsic to Lie individual presumed to be due lo central nervous system dysfunction and nay across the span. Problems in self-regulatory behaviors, social perception and social interaction may exist with learning disabilities but not by themselves constitute u learning disability. Although learning disabilities may occur concomitantly *With* other handicapping conditions (For example, sensory impairment, mental retardation, *scnous* emotional disturbance or social maladjustment) or with extrinsic influences (such as chloral differences *01* lick of opportunity lo *learn),* they are not rhe result of those condition *01* inflexed".

*Kavale A Fnrnesx (1966):*

People with learning disabilities belong to a group Of very diverse individuals hut tlicy do share one common problem They do not Icam m die same way or as efficiently as their nonduablcd peers Although nutt possess normal intelligence, their academic pcrfuimwicr significantly behind *U**KU** claumatM* Some have great difficulty learning mull ternaries, his most find the mastery of rcudiug and writing to he their must difficult challenge.

A close analysis of all these definitions may reveal the following things concerning meaning, and concept of the term learning disabilities and learning disabled.

Learning disabilities refer to certain kinds of disorders in the basic psychological processes of an individual.

These disorders mainly caused by the intrinsic factors (the things lying within the individual) like central nervous system dysfunction (some brain or neurological damage impeding one's motor or learning abilities), specific del kits in information processing or the ability to *leant.*

Although one or other learning problems may be caused by extrinsic factors like mental retardation, sensory impairment, emotional disturbance, cultural differences, lack of educational opportunities, poverty etc. learning disability is not the direct result of *such* external factors or conditions.

Disorders associated with learning disabilities arc usually manifested into some specific severe lea mini; problems confined To one or two cognitive areas like inability to grasp or understand the things, difficulty in language related areas such as communication, written language or Redding, of handicap in terms of acquiring mathematical of social skills

Individuals with minor or temporary difficulties in learning arc nor termed as learning disabled. Only those who have severely impaired learning inefficiency and serious learning problems are included in this category.

The learning disability may allow an individual to have intelligence scores within the normal range hut it essentially makes them substantially delayed in academic achievement, lie always lags behind in terms of his educational progress in comparison to the peers of his age and class.

The impaired learning inefficiency coupled with serious learning problems in one or the other cognitive areas leads to a distinctive gap between an individual's potential and actual educational achievement mid as u result he becomes disabled or handicapped in one nr the oilier learning areas so much so that he need* special cart:, attention and educational services for his adjustment and welfare.

In this way learning disability provides a lot of obstacles and difficulties in the path of learning. Gradually the learning problems become so acute as to cause severely impaired learning inefficiency in one or the other cognitive areas it leads to a distinctive gap between one's potential and actual educational achievement which require special care, attention and remedial measures and when ii happens ***the*** learner is labeled as learning disabled.

**Nature and Characteristics of learning Disabled**

Researches in ***the*** fields of education and psychology have brought into notice a number of significant behavioral and personality characteristics as well as general outcomes of the nature and characteristics of the learning disabled children. Let us mention a few immigrant ones.

1. Learning disabled children essentially suffer from serious learning problems of disorders for a number of reasons.
2. Their problems and disorders are usually manifested by significant difficulties in the acquisition and use of language (listening, speaking, reading, writing, etc.). reasoning or mathematical ability or of social skills.
3. They may *exhibit* symptoms of *hyperactivity*
4. Most of thcm may suffer from motional problems and demonstrate signs of anxiety, mnodinesx or ups and downs in their behavior.

Their learning disability is not apparent in ***the*** physical appearance or *not demonstrable* through their I.Q. Scores. Iney may have *robust body,* good vision, sound ears, and normal intelligence

They *essentially suffer from* severely impaired *learning* inefficiency, or *a* handicap, which is just as real as crippled leg.

All of them essentially exhibit a significant educational discrepancy i.e. a wide gap between their learning if and accrual educational achievement.

Some of (hem may dcmonslralc equivocal neurological signs

They may exhibit disorders of memory, thinking, attention, general coordination, perception and motor functioning, etc.

10. The main problem for all these children lies in their observable deficiency in learning and mastering academic tasks. They are handicapped in learning and acquisition in the same way as physically and mentally handicapped *are*. in physical and mental performance.

I K They usually exhibit the following learning characteristics responsible for their learning impairment (0 lack of motivation, (ii) inattention, (iii) inability (iv)reneialize, and (v) lack of adequate ability in problem-solving. information processing and thinking skills, etc.

12. Their learning impairment is so severe they essentially require .special attention, cure and remedial programmes for the rectification of their learning problems and disabilities:

**Causes of learning Disabilities**

Depending on the types of learning disabilities found in the children a number of researches have been conducted to find out the possible factors or causes of learning disabilities Gcucially (he factors causing learning disabilities may be found to tall in the following categories.

Genetic or heredity factors

Organic or physiological factors y Environmental factors

1. Genetic or heredity factor*. In some cases, the genetic or heredity factor is found to be the major cause for generating learning disabilities among the children On the pattern "Like begets like" it has been found lha( many characteristics commonly found in learning disabled are transmitted from to generation I his relationship between inheritance and disabilities has been established on the basis of the following resiiltx:

(a) Nearly 20 to 25 percent of hyperactive Of impulsive children have been found to have at least one parent of (his nature. (b) emotional imbalances, disorders of memory and thinking, speech and learning have been found lo run in families, (c) Going deep into the genetic research, the USA scientists and psychologists have attained success in identifying particular genes thus may be held responsible for reading and other learning problems

2. Organic or physiological factors. Study of most learning disabled cases reveals that they suffer from malfunctioning or dysfunction of their central nervous system consisting of brain, spinal cord and message carrying nerves etc. This dysfunction, how ever minimal il may be. is caused by the factors like below:

(a) Brain damage caused by an accident or by a lack of oxygen before, during or resulting in neurological difficulties that may affect their ability (o learn.

(h) Damage of injury caused to the spinal cord and message carrying nerves etc. leading to their malfunctioning and subsequent learning difficulties.

(c) Dysfunction of the central nervous system may be caused by biochemical imbalances generated by the factors like below:

(i) Colorings and flavorings in many of the food items consumed by the children may cause hyper activity, impulsivity, emotional imbalance etc. leading to malfunctioning of the central nervous system.

(ii) Vitamin may cause inability of a child's to synthesize a normal amount of vitamins essential for normal functioning of the central nervous system.

In shod ii can be concluded that ones learning capacities and abilities are very much dependent on proper functioning of one's central nervous system Dysfunction of the central nervous system in any form may thin affect and cause Kerious learning difficulties and hence any factor that can cause neurological damage to our central nervous system may lead to its malfunctioning and subsequent learning difficulties.

X Environmental factors. In many cases, learning disabilities may he caused by the improper and uncongenial conditions and factors present in an individual's physical, social, cultural and educational environment. Some of these factors may be ciled as under:

The poor nourishment and defective environment received by the fetus for development in the mother's womb.

Pie-mature delivery, uncongenial und improper environmental settings at die time of birth or a defect in the central nervous system.

Diet deficiency in the early age, severe diseases, accidents and injuries that may cause central nervous system dysfunction.

Children who do not receive proper medical care and attention and as a result suffer from any impairment in their senses of hearing, sight, taste, touch, smell and other neurological functioning beer me handicapped in terms of learning.

Insufficient early experiences and stimulation in lens of learning and acquisition received on account of defective educational set-up.

ft) Pomp or inadequate instructions received on accentor their own family set-up or lack of motivation, skill and ability on the pan of teachers.

(g) Emotional disturbance and lack of motivation on account of so many factors persona in a person's environment and even on account of malfunctioning of his physiological processes

(h) Inadequate and improper development of language skills, lack of concentration and adequate attention.

(i) Use of drugs and intoxicating substances like consumption of alcohol

(j) Imitation and the company of defective learning models present to one's cultural, social mid educational environment (k) Social und cultural deprivation.

Identification of Learning Disabled Children

Identification Of the learning disabled children may be done mainly in two ways'— the employment of non-testing and testing devices.

Non-testing devices. In non testing devices we may include techniques like observation, rating scale, check list, interview etc. By employing these devices, we try to identify the learning disabled in relation to (heir general personality and characteristics We may find a list of these characteristics common with the learning disabled and then weigh the observed child in relation to these for the identification of the degree of disability. We may also seek the opinion of the teachers and other poisons regarding the learning abilities, mental level, scholastic potential etc. through such devices for the diagnosis and identification of learning disabilities of the children

Testing devices. Testing devices include different types of tests that can be used as diagnostic measures for the identification and assessment of children with different kinds of learning disabilities. Generally, the following types of lesu fall into this category:

(a) Standardized diagnostic tests. These are many such tests available in our country as well as abroad. With the help of norms given in these tests we can assess the relative educational standard of the children of same age or grade and thus may be acquainted with the educational deficits and deficiency of a particular child. As a result we can have a reliable and valid diagnosis of the learning difficulties in various areas of scholastic performance especially in language, mathematics, social and experimental skills etc. As examples of such available standardized diagnostic tcxis we may name the following:

(i) Diagnostic lest in Decimal Systems and Percentage hy V.P. Sfiarma and Shukla.

(ii) Durrell Analysis of Reading Difficulty hy Durrell.

(iii) The Stanford Diagnostic Arithmetic Test hy Betty, Madden and Gardner.

(iv) The Spue he Diagnostic Reading Scales h y Spache.

(v) The Gates Mckillop Reading. Diagnostic Test h y Gates and Mckillop.

(b) Ahility tests or process tests. Learning disabled suiter from the inability or incapacity in their process of learning and understanding The ability tests or process tests are so designed as to assess the degree of their inability or poor ability to understand and learn. Since the learning of a child is processed through his abilities of visual per-ception, auditory perception, eye motor coordination, psycho-linguistic understanding etc the ability tests or the process tests are designed to test the abilities of the children related to these, areas. As example of such tests wc may cite the following:

(i) The Marianne Frosting Developmental Test of Visual Perception hy Fronting, Lefever and Wluttlvsey
(if) Illinois Test of Psychalingmsttc Abilities h y Kirk, McCarthy and Kirk.
Achievement tests. These tests are designed to assess the degree Of achievement of the children in various knowledge, skills and performance process areas. These may be of two types, namely Standardized achievement tests and Teacher made texts. While the former are structured by an outside agency and are readily available for administration, the latter are constructed by individual teachers in their respective subjects or areas for assessing the degree of die children's achievement or diagnosing their learning difficulties and disabilities. The performance of the individual students in these tests may reveal many things about the nature and extent of the learning deficiencies und deficits related to various learning areas.
Daily assessment system. There can be a systematic, well planned regular daily assessment system in schools for recording the children's achievement on various specific knowledge, skill and performance areas. This process of continued infoi matron may bring into limelight many important things related with the nature and extent of learning deficiencies and deficits of individual learners particularly, in relation to the processes of their leurning and understanding.

**Educational Provisions for the Learning Disabled**
Let us think what can be done to the learning disabled children once we identify them as such. Their identification clearly reveals that they suffer from somewhat a severe learning inefficiency, deficiency or deficit resulting into a serious gap between their potential and actual educational achievement. One or the other factors lying within them or their environment may cause it We can find diversity in terms of their learning disabilities, (heir nature, types, degree of handicapness and etiology As a result it is not proper to treat them as a group for the learning deficiencies and disabilities. Everyone of diem is unique. Therefore no uniform treatment or remedial measure can be prescribed to all the learning disabled. Faeh one of (hem is to be cared and treated as a separate and individual case. This is why great care should be taken for the proper identification of die nature and amount of learning disability or disabilities of a particular child. The treatment then should be given on die basis of proper analysis and evaluation of the identification data. The researchers in this field have advised many ways. Let us discuss a few of such measures.
Provision of specialized schools or classes.
Provision of special remedial and educational programmes.
Stnietuiing and improving die existing environmental set-up.
I .el us discuss these one by one.
1. Provision of specialized schools or classes. This provision is based on the assumption that learning disabled children me quite distinct from other children of their schools or classes. They cannot be taught along with others as they suitor from severe learning deficiencies and deficits. Hence there should be special schools or at least separate classes for them where they can be taught by specialized teachers through special methods and techniques essentially on the same curriculum with greater care and attention.
In die specialized schools, learning disabled children thus find a complete specialized-segregated setting. However, in the specialized classes in a regular school there is somewhat less segregation in comparison to the specialized schools. Here there is a provision for special instruction by special teachers for overcoming the learning deficiencies of the sufferers. In this task the help of the regular class teachers may also be counted for providing assistance in teaching subject matter. Along with instructions related to academic subjects experiences related lo social and co-cunicular activities arc also provided along with (lie other normal students.

However, the segregated settings, whether in the form of separate schools or classes, suffer from serious defects arid limitations. In fact, such segregation is neither feasible nor practicable. Il is far from ground realities and may prove fulile as we can't arrange segregation or separation based on the individualized learning inefficiencies and deficits. Each of the learning disabled is a unique case in itself. He or she needs individualized attention, care or even different mcthods, techniques and treatment for the rectification of his or her deficiency and overall adjustment. Therefore, the provision of putting die learning disabled in separate schools or classes cannot work well and hence we should now try to evaluate the other two provisions mentioned earlier.

2. I'rovision of special remedial and educational programmes. This provision can work well in the existing school and educational set-up. Here the beginning can he made with the proper identification of the nature, type and amount of learning difficulties, deficiencies or deficits. Then proper special remedial and educational programmes may be made out of the readymade programmes available in the market of at other places having provision fur such educational services. The Resource Center of the Colleges of Education, DIETS, SCERT. NCERT. Extension Department of Universities and many other social and community usually provide such educational services and thus we may obtain the necessary help from these centers simply on the institution to institution transaction basis. The remedial programmes, material and guidance available through such sources may definitely help the cause of learning disabled. For example, if the deficiency and deficits of the suffering children are related to the neural impairments in sensory-motor system, we can follow remedial programmes like (i) The Strauss-I-chlincn-Cruickshank Perceptual Motor Programme, (ii) Uetman's Visuo-Motor Programmes etc. Similarly if their deficiencies and deficits are related to their psycho-linguistic ability, these can be rectified through standardized remedial programmes like (i) Winner's Psycho-Educational, (ii) The Fernald Kinesthetic Remedial Reading Method, (iii) The Pragmatic General Dignostic Remedial Approaches by Blanco or Morgan etc.

3. Structuring and improving the existing environmental set-up. Many of learning difficulties and deficiencies of the children are caused by the uncongenial, improper and negative factors present in their physical, social. Cultural and educational environment. Therefore, attempts should be properly and honestly made for the adequate structuring and improving the existing environmental set-up. It will definitely help in reducing the cases of learning disabled by providing ihem due assistance, care and guidance tor rectification of their learning disabilities. The task requires ihe joint efforts of all who are concerned with ihc brought up. education and welfare of the children. The parents, members of the family, teachers, guidance and counseling workers, educational authorities, social and community agencies clc. all should join hands for providing due care, attention and remedial and educational programmes lo the learning disabled. They should help (hem in acquiring desirable personality traits in overcoming their deficiencies with regard lo their educational progress and behavioral drawbacks What can be expected m«n them can he summarized in the following way.

(neat care should be taken by the parents and leathers, to pick up propel methods of learning, communication, perceptual motor movements and general coordination etc.

Efforts should be made to restructure and improve the men-maierial facilities provided in the school as to suit the individual learners according lo their needs, interests and abilities. There must be proper integration of theory with practice as well as cuticle with co-cumcular activities Methods of teaching as well as the handling of the students should be so structured as to calcr to the needs and difficulties of the learning disabled present in a particular group, a section or as class.

If (he learning disabilities are so severe as to demand very special care and attention then learning disabled should be placed in a lull time special learning setting under the guidance of a specially trained teacher. Here they must be given full opportunity and training for

improving their poor study habits, methods of improper learning and modifying the undesirable and in appropriate socio-emotional and psycho-educational behavior. After putting the learning disabled into a highly structured environment and getting satisfactory results should be moved back into a less isolated setting and then mm a normal classroom setting.

Whether we employ specialized trained teachers or the usual classroom or subject teachers with some extra knowledge and training lo deal with learning disabled, the one thing, which is most important is their behavior and attitude towards these children. One should not lose patience as these children are essentially slow learners, underachievers and far from satisfactory in their socio-psychological behavior they should be accepted with all their weaknesses and deficiencies Snubbing, ridiculing, or punishing these children in any form brings negative and harmful results. The parents, elders and tcaclicis all should exhibit love arid care while dealing with them. Our approach towards them, as far as possible, should be very constructive, pleasant as well as encouraging so that these disabled children may learn the proper method of teaming and behaving and develop required self-confidence and positive attitude of their educational progress by getting rid of themselves with some or the other learning difficulties and deficiencies in their behavior, (e) In schools as well as in community setting there should be a proper arrangement with regard to a well-structured educational setting or resource centre with adequate learning material equipment und some trained specialized teachers, experts in guiding and helping the learning disabled. With the help of men and material resources available the learning disabled should be helped in overcoming their deficits and deficiencies in skills tike spelling, handwriting, memory, verbal expression, comprehension, mathematical skills, experimentation and observation, thinking and reasoning skills, visual and auditory perception, sensory motor development and social skills etc.

Let us now think about some special measures that can be adopted for the rectification of the deficiencies and difficulties pertaining lo specific learning abilities and skills.

### *Remedial Measures for Some Specific Learning Deficiencies*

1. Handwriting. Poor handwriting may be one of the major learning deficiencies found in the learning disabled. It may cost them heavily in terms of academic achievement or may create inferiority feelings; lack of confidence and similar other things. Hence steps should essentially be taken for improving their handwriting right from the early diagnosis and identification of such deficiency among them. Some of the following measures can work well in this direction.

(a) Since lack of proper motor control may be one of the causes for their poor handwriting we must try to overcome it by adopting the following means:

(i) Using manipulative exercises to strengthen muscles. For this purpose it is better that before resorting to paper and pencil writing, the children should be provided opportunities in writing letters by doing manipulative exercises like writing in sands, modeling through clay games, doing chalkboard practice etc.

(ii) Helping the learn a proper position and form for writing. For this purpose they must be made to learn that while writing on Ihe paper with a pencil or pen

The paper should not be kept slant while writing and

The writing instrument should be held between thumb and middle finger with index finger applying pressure.

(b) Children should be made to learn proper figuring of letters. For this purpose, sufficient practice can he provided through manipulative

activities as well as through individualized assistance as described now.
(i) Tape alphabet forms to the floor and ask them lo repniduce the forms with colored chalk.
(ii) Ask the children form letters in wet fingerprint or in the sand
(iii) Make use of colored directional cues such as green arrows and led
Dots.
(iv) Try to help the children in building some useful associations for the shape of lencr that they mjy never go avirity in the process of writing that letter in proper form.
(v) When necessary they should be helped actively just like supporting their hands and providing them due direction etc.
The children should be given sufficient practice and help for writing in straight lines. Use of lined paper or even graph paper can be recommended for providing them due practice.
The children should be made lo use good quality of ink: paper and pencil for providing them needed confidence in producing better results in their writing
(c) Tliey should be made to write legibly by maintaining proper links and gaps between the lines and curves ot the letter as well as words and sentences.
(f) There should not be any overwriting, cutting or overlapping in their manuscript.
2. Spelling. Many of the learning disabled may suffer fiom difficulties in writing words with the eonect spelling. To help them in this direction start framing a list of words usually missspelt by a child and make the child learn the correct spellings—one word ar a time
(a) Write the word with correct spelling on the chalkboard or paper, ask the child to look at the correctly spell word and compare it with the one he has written. Ask him to pronounce the word with its correct spelling. Ask him us pronunciation. The correctly spelt word may then he covered and the child asked lo write it on his own on the paper or chalkboard spelling out all Idlers. He may then be asked lo compare his spelling with the one already written on the chalkboard or paper. He may then be asked to write this word twice or thrice as the need may be for learning its proper spelling. For further practice, he may be given for writing a text or manuscript in which this particular word is repealed sufficient number of limes.
(b) The child may be given opportunity lo read and compare his misspelt word or words with die correctly spell word or words from a .standard text or manuscript. He may then be asked lo write them first by copying und then without the aid of the test, using their memory
3. Reading skiUs. Learning disabled children may exhibit dieir weakness and poor performance with regard to reading and comprehension of text material of manuscript their difficulties and deficiencies in respect of reading skills are quite varied and diversified. Therefore while dealing with the children suffering from leading skill disabilities, a diagnostic prescriptive approach must be adopted and hence any remedial programme for bringing improvement in their reading skills must be in with their individual needs and abilities like below.
(u) The children who can't pronounce a word, letter or sound correctly should receive phonetic guidance and drill to overcome their deficiency.
(b) The children who have some medical or psychological problem should be properly diagnosed for proper identification of tlieir problems und accordingly, remedial measures should be taken with the help of medical or psychological experts.
The children suffering with inadequacy or impinge style of reading should be provided with model reading. A teacher, a model student or a recording device may be used for this purpose. The children should be asked to copy or imitate the model reading pattern.
The children who feel difficulty in comprehension should be treated with multi-sensory techniques. Use of stories, narration of personal experiences, oral discussions, use of

necessary multimedia facilities etc. prove useful in overcoming such deficiencies and they can be made lo read and comprehend the material of their reading level. Gradually, they can be given material Of some advanced level. The difficult words, the meanings of which they do not know should be clarified lo them. The meaning of these words or sentences should be explained in Utem by adopting a suitable learning situation. Sometimes oral explanation may be sufficient, other limes the teacher has lo seek the help of some picture, tell a story or narrate personal expense etc.

4. Thinking and reasoning abilities. Thinking and reasoning abilities are essential instruments in the process of learning. The learning disabled mostly suffer from lack of proper lessoning and thinking ability. To overcome this, may be helped to adopt the procedures given below.

Initially, they may be asked lo collect data by leading listening, observing or doing.

Then they may be asked lo analyze this data. Find the similarities and dissimilarities here they may be helped and promoted by asking questions, giving examples etc for learning how to discriminate ami weigh oui similarities or dissimilarities.

(c) They may be persuaded to classify the data into different groups.

Children should be given proper opportunities, help and due encouragement for building up their self-confidence and self-respect lo help them overcome their shyness, resistance and rigidity etc. and involve in group and social activities.

They must be helped in shoring their thoughts and actions with others. Initially they may be helped in making friendship, joint efforts and group ventures with the help of some of their peers who are more active, cooperative and social.

They must be helped in learning of social skills, group participation and social interaction with the help of pre-arranged and structured learning situations. Here through oral communication, charts and pictures, slides and films. They should be made lo learn the essential things regarding expression of emotions, body language and symbols, desirable or undesirable behavior in social encounters and social interaction.

(0 After identifying their area of interests in circular and co-euniculai areas, they should be given opportunities for discussion, group work and other social participation with their peers, school males and neighbors.

(g) Teachers, with the help of useful instructional material and developed technology should try to transmit useful personal social experiences and skills to these children so as to improve their social behavior and social inter action.

6. Attention deficit. Most of the learning disabled suffer from what is known as attention deficit or inattention. These children do not concentrate or focus on the task of occurring or arc in the habit of paying attention to unimportant details of the task. These children may be helped in some of the following ways:

(a) These children should be made the focus of the teachers, by making their seating arrangement at the centre of the classroom. Individual attention and extra care is to be given for observing their actions and movements in the class. They should be given enough opportunities for classroom interaction by asking them to cooperate in the display of aid material, experimenting etc.

lb» The method of advanced organizers may work well with these students, that is, we can provide an introductory overview of Uic material lo be presented. This overview may acquaint the learners why the information (hey are going to be provided is important and what are the crucial elements of presentation.

(c) A highly structured learning environment providing direct instruction and incorporation of following features is very much recommended by educationists and researchers:

(i) Have a calm and cool environment by neutralizing ihe factors causing distraction or inattention.

(ii) Give clear and precise instructions

(iii) Use appropriate and interesting rriethods to provide information.
(iv) Involve the students in teaching-teaming process.
Make use of reinforcements, appreciations and rewards etc.
(vi) Make the practice work, homework and assignment more interesting.
(vii) Provide instruction that meets their individual needs.
(viii) Teach the students to practice self-restraint and overcome inappropriate behavior.

**Specialized Approaches and Techniques for Helping the Learning Disabled**

There are several specific and specialized techniques and approaches that have heen evolved through long experiences and researches while working with the learning disabled children. Let us discuss in brief some of them.

Behavioural approach. In this approach, attempts are made to modify the behavior of the learning disabled by restructuring and reorganizing the environmental condition-, providing opportunities for modification or change in behavior, properly reinforcing their changed behavior and thus helping them lo acquire desirable learning behaviorism.

Psychoanalytic approach. In this approach, attempts are made to analyse the hehaviour of the disabled child and find out the root cause 01 causes of his learning deficiency. Accordingly, a remedial programme is planned and administered hy establishing proper rapport with him.

Individualized instructional uppntuch. This approach advocates the use of small groups or even individuals for helping them rectify their learning deficiencies. Peer tutoring (making use (if competent and good peers) has proved to be successful technique fur providing individual assistance to the affected ones. The learning disabled feels quite safe and secure for receiving needed assistance in sjch a set-up and arc then able to come up on the satisfactory learning level.

Self-instructional appnmch. In this approach, learning disabled children are required to adopt sell learning und self-improvement measures foi treating their learning deficits and deficiencies. For this purpose, remedial programmes present in Ihe form of programmed learning text, computer-asxisied instrucnons. leaching machines, lape-recorder and video disc etc. can be put into use. Self-learning questionnaire and instructional modules can also be prepared and made into use with ihc help of teachers. In this approac'i. the learning disabled can avail valuable opportunities and means for rectifying their deficits and deficiencies by their own pace, needs and learning capacilies. Foi a better out put. their progress can also be supervised and guided by the specialized or trained classroom teachers.

MuM-sennnry approach. In this approach, learning disabled children are taught by appealing lo their multiple senses visual, auditory, touch, smell, and taste etc. depending upon the nature if the subject material and its learning objectives. For example, to provide wholesome language experiences, a multi-sensory approach named VAKT (providing visual, auditory, kinesthetic and tactile experiences to the children) has been devised. This is a slcp-by-step approach where a learner is first acquainted with the letters of a word and then slowly familiarized with the word. The learner is then made to sec, say hear and the experiences woven around (his particular word. Once the word is mastered, the learner is asked to make use of it in a sentence. After the learning of words and sentences the learner may be given a story writing test then, finally, (hey arc provided reading practices It can also be done through vicarious experiences provided through multi-sensory aid materials and equipments.

Technological approach. In this approach, advanced technology is used for providing icmedial instructional programme to the learning disabled. Some of them are:

Audio tape and tape-recorder. Use of audio tape and (ape-recorder can work well with the learning disabled. They may able to rectify many of their language learning difficulties particularly related lo pronunciation, proper intonation and way of speaking etc. Reading, speaking and conversation skills can be better developed with the help of audio tape and tape-recorders.

Video-due instruction. Ttm type of remedial instruction provides high quality visual and auditory presentation. It can work well for arranging properly planned remedial programmes to all types of learning disabilities The learning disabled can watch useful and interesting academic as well ax social persuasions on the video discs in the form of continuous motion pictures and simultaneously listen to the carefully prepared narration for providing useful indication.

© Compu'er-asusted instruction. The use of computer has opened a vast field of remedial induction for the learning disabled of all types. With die use of computer technology, we can arrange self-instructional or individualized instructional as well as group instructional remedial programmes to the learning disabled. The deficiencies regarding reading, writing, conversation, mathematics, science and other practical oriented subjects and social skills can well be treated by this method.

**Lesson 11**

## CLASSROOM MANAGEMENT

### The Need for Organization

Knowledge and expertise in classroom n limy mi ill are marks of expertise in teaching; stress and exhaustion from managerial difficulties are precursor's bum- in leaching (Fawner & Plough. 20011. What is ii classroom that make management so critical?

Classes lire particular kinds of environments. They have distinctive features that their inhabitants no material how the students *01* the desks arc organically, or what the teacher believes (Doyle, 198ft). Classrooms an *multidimensional.* They are crawled with people, tasks, and time pressures. Maw individuals, all with differing goals, and abilities, must share resources, accomplish various tasks, use and materials without losing them, and out o. the room, and so on. In addition, actions can have multiple. Calling and low-ability students may encourage their participation and thinking but may and lead to management problems if the students cannot answer. And event occurs— everything happens at once the *pace is* Teachers have literally hundreds with students during a single day.

In this rapid existence, even is are when plans made projector is in place, and the demonstration is ready, I he lesson can still be interrupted a burned out bulb in the projector or a loud, angry discussion right outside the classroom. Because classrooms are *public,* the way the these unexpected intrusions is seen and by all. Student are always noticing if the is being "fair." Is? What happen when a rule is broken? classrooms *historic**. The meaning of a particular teachers *01* student's depends in pan on what has happened. The fifteenth time $ student arrive* late requires a different response the teacher than the first late arrival. In addftfOA, the history of the few week, of school life in the class all ear.

### The Basic Task: Gain Their Cooperation

No productive activity can lake place in a group without the cooperation of all members. This obviously applies to classrooms, liven it some students don't, they must allow others to do so. (We all have seen one or two students briny an en tire class to a halt.) So the basic management task for teachers is total order and harmony by gaining and maintaining student cooperation in class activities the multidimensional. Unpredictable public, and historical nature of classrooms, ibis is quite a challenge.

Gaining mean: much more than dealing, effectively with misbehavior. It means planning activities, having materials ready, making appropriate behavioral and academic demands or students, giving clear signals, trans it ions smoothly, foreseeing problems and slopping before they, selecting and sequencing activities so that (low and interest are maintained and much more. Also, different activities require different managerial skill, For example, a new or complicated activity may be a greater threat to classroom management than a familiar or simple activity.

Obviously, gaining the cooperation of kindergartners is not the same task as gaining the cooperation of high school seniors. (1978) identified four general stages of classroom management, defined age related need. Putting kindergarten and the first few years of elemental y school, direct teaching o (classroom rules and procedures is . For children in the middle elementary years, classroom have relatively automatic, but new procedures to a particular activity ay have to be taught and tit entire system still needs monitoring and maintenance.

Toward the end of elemental")' school, some students begin to test and authority. management challenges at this stage are to deal productively with these disruptions and to students who are becoming concerned teachers' opinions and more interested in (heir social lives. By the end of high school, the challenges are to manage the curriculum, lit academic material to students' interests and abilities and help students become more self- managing. The first few classes each semester may be devoted to teaching particular procedures using materials and equipment, or for keeping track and submitting assignment.1. But most students know what is expected.

*What Would* You *Say?* ate 4 job in a great distort—it is known for innovation The assistant principal looks at you for a moment and then ask* "What is classroom management?" How would you answer[7]

The aim of classroom management is to maintain a positive, productive learning environment. Hut order for its own sake is an empty goal. As we discussed in Chapter 6, it is unethical to use classroom management techniques lust to keep students docile and quiet. What, then, is the point of working so hard to manage classrooms? There are at least three reasons.

More Time for Learning. As a child, 1 once used a Stopwatch to time the commercials during a TV quiz show. I was amazed to find that half of the program was devoted to commercial*. Actually, very little quizzing took place. If you used a similar approach in classrooms, timing all the different activities the day, you might l>e surprised by how little actual teaching takes place. Many minutes eat are lost through interruptions, disruptions, late starts, and rough transitions <Kar-wcit. 1989; Karweit & Slavin, 1981).

Obviously, students can only learn what they encounter. Almost every study examining time and learning has a significant relationship between time spent on content and student learning (Berliner. 1988). In fact, the *cat* relations between content studied and student learning are usually larger than the correlations between specific teacher behaviors and student learning (Knxenshiiie. 1979). Thus one important goal of classroom management is to expand the number of minutes available for learning. This is sometimes called allocated time.

Simply making more time for learning will not automatically lead *10* achievements. To be valuable, time must be used effectively. As you saw in the chapters on cognitive learning, the way students process information is a central factor in what they learn and remember, basically, students will leant what they practice and think about (Doyle, 1983). Time spent actively involved in .specific learning tasks is often culled engaged time, or sometimes time on task.

Again, however, engaged lime doesn't learning. Students maybe struggling with material that is too difficult or using wrong learning strategies. When students are working with a high rile of success—really learning and understanding we call the time spent academic learning time. A second goal of class management is to increase academic learning time by keeping students *activity engaged in worthwhile, appropriate learning activities.* Figure I I.I on page 98 shows how the 1,000+ hours of time mandated for school in most states can become only about Vs. hours of quality academic learning lime for a typical student.

Access to Learning. Lach classroom activity has its own rules for participation. Sometimes these rules are clearly staled by the teacher but often they are implicit and unstated. Teacher and student's may not even be aware that they are following differ rules for different activities (Berliner, 14H.V). For example, in a reading group,«u-dents may have lo their hands U> make a in A show and-tell circle in the same class, they may simply have to catch the teachers eye.

An example of being sensitive to participation structures was documented by Alton her colleagues in a classroom in New Zealand {2U0I I-All critical a unit on children in hospitals, the Ms, Nikon, planned one of her students. a Maori girl named Huhana, a next visit to the ml agreed. But when the lime came and asked her to come to the "mm of the class and share her experiences, looked down and took her head. Rather than confront or scold I, the teacher simply said, "All right If we sit in a circle ... might he able to tell us aboflt what happened." When students were in a circle, the teacher said, "All right, after Ms. Nikora called v mum and she ... Where did she take you lo? As 1 began In share her experience, the teacher scalloped her participation by asking questions, providing reminders of details the teacher had learned in previous conversations with Huhana, and waiting patiently for the student's responses. Ralhei than perceiving the lacking competence, the *situation,* hinder expression.

**Management for Self-Management.** The third goal of any management system is to help student's become better themselves. The movement from demanding obedience to teaching self-regulation and self control is a fundamental shift in discussions of classroom management today (Weinxlciu, 1999). Tom Savage ***(19991*** says simply, "the most fundamental purpose of discipline is the

development of self-control. . . . Academic knowledge and technological skill will be of little consequence if those who possess them lack self-enntrol" (p. II). Through sell-control, students demonstrate *responsibility* -the ability to fulfill their own needs without interfering with the rights and needs of others Cilasser, 1990). Students learn self-control by making choices and dealing with die consequences, selling goals and pi unities, mail aging time, collaborating to learn, mediating disputes and making peace, and developing misting relations with trustworthy teachers and classmates (Lewis, 2001; Rogers & Frieberg, 19941.
self management leaching students how to take responsibility is an investment well worth the effort. When elementary and secondary teachers have very effective class management systems but neglect to set student self-management as a goal, their students often find that they have working independently after they graduate hum these "well managed "classes.

**Creating a Positive Learning Environment**
In making plans for your class, much of what you have already learned in this book should prove helpful. You know, for example, problems are prevented when individual variations, such as discussed in Chapters 2, 3,4, and 5 are taken into account in instructional planning. Sometimes students disruptive because the work assigned is difficult. And students who are bored by lessons well below ability levels may be in finding more exciting activities to fill time.
In one sense, teachers prevent discipline problems whenever they make an effort to motivate students. A student involved in learning is usually not involved in a clash with the teacher or other students at the same time. All plans for motivating students arc steps toward preventing problems.

**Some Research Results**
What else can teachers do for several years educational psychologists at the of Texas at Austin studied classroom management quite 2003). Their general approach was to study a large number of classrooms, making observations the first weds of school and less frequent visits Liter in the year. The most and least effective teachers were identified on the basis of the of classroom management and student achievement later in the year.
Next, the researchers looked at their observation records of the first web of class to see how he effective got started. Other comparisons were made between the teachers who ultimately harmonious, high-achieving classes and those whose classes were fraught with problems. On the lusts of these comparisons, management principles developed. The then taught these principles to *I* new group of teachers; (he results were qui positive, teachers who applied the principles had fewer problems; their students spent more time.

**Rules and Procedures Required**
What if the three or Four most important lutes you will have for your classroom.
At the elementary level, teachers must lead 20 to 30 students varying through many different activities each day. Without efficient rules and procedures, a great deal time is wasted answering the same question over and over. I do my with my story What hit me!""! left my homework in my locker."
Al the secondary school level, teachers must deal daily with over 100 student who use do/em materials and often change rooms for each class. Secondary school students are also more likely to challenge teachers authority. The elective managers studied by and their colleagues had planned procedures and lot toping Witt these situations.

**Procedures.** 1 low will materials and assignments be disabused and collected? Under what conditions can students leave the room? How wUl grades Ik- determined? What are the .special routines (or handling equipment and supplies in science, art. or vocational classes? Procedures (often called routines) describe how activities are accomplished in 'dasuooms, hut tliey are seldom "written down; they are simply the ways of getting things done in class. Carol Wcinstetn and Andy Mignano suggest that teachers establish routines to cover the following aieas:

*Administrative routines,* such as taking attendance.
*Student movement,* such as entering and leaving or going to the bathroom.
*Housekeeping,* such as watering plants or storing personal items.
I. *Routines for accomplishing lessons,* such as how to collect assignments or homework.
5. *Interactions between teacher and student,* such M how to get the teacher's attention when help is needed. S. Tift *among students,* such as giving help nr socializing.
You might use these six areas as a framework for planning your class procedures and routines. 'I he *Guidelines* should help you as yon plan.
Rules. rules specify and forbidden actions in the das. They classroom rules arc down and establishing rules, what kind of atmosphere you want to will help you teach effectively?
**Rules for Elementary School.** Fvertson and her colleagues (2003) give pies of general for elementary school classes:
*lie polite* This applies to behavior toward adults teachers). Examples of polite behavior include waiting your saying "please" and -thank you," and not lighting nr culling names.
his might include picking up litter; library books; not marking cm walls, desks, or bases; and getting before using other people's things.
*/ are speaking.* This applies lo the teacher and other dents, in large class or small-group discussion.
*Respect to all people* Give clear explanations of what you mean by] including not hitting, fighting, or leasing. All people includes the teacher.
*Obey all school lilies.* This reminds students that all rules apply in your I classroom Thai students cannot claim, for example, that they thought okay to chew gum or listen to a radio your dais, even though these are school rules because you never made a against for us."
Whatever the students need IP be taught die behaviors that the rule includes and | excludes. Examples, practice, and discussion will be needed before learning is complete.
As you've seen, different activities often different rules. This can be con fusing for students until they have thoroughly learned all the rules. T'd| prevent contusion, you plight consider making signs list the rules for each. before the activity, you can post die appropriate sign as a reminder ihiij provides clear and[1] consistent cues about participation structures so all students lust the "well behaved," know what is expected. Of course, these rules must he and discussed before the signs can have their hill elect.

**Rules for Secondary School.** Emmer and colleagues {20031 suggest six examples rules for secondary students:
*Respect and Jie polite to all people.* This fighting, verbal abuse, and troublemaking. All people includes the *other people's property. This* means belonging to the school, the teacher, or other students.
*Listen and stay sealed while someone rise is speaking.* '1 his applies when the teacher or other students are talking.
6. *Obey all school rules.* As with the elemental y class rides, this covets many behaviors arid situations, so you do not have to repeal every school rule for your class. Consequences. As soon as you decide on your rules and procedures, you must consider what you will do when a student breaks a or does not follow a procedure. It is ton late to make this decision alter the rule has been broken. For many in frail it his, the logical consequence is having lo go back and "do it right." Students who run in the hall ma> have to return lo where they started and walk properly, papers can be redone. Materials left out should be put back (Charles .'-002b). Sometimes consequences are more complicated. En their case studies lour expert elementary school teachers.

**Getting Started: The First Weeks o f Class**
Determining a room design, rules, and procedures are lust steps toward having a well-managed class, but how do effective teachers gain student cooperation days and weeks? One study carefully analyzed the first weeks' activities of effective ineffective elementary teachers, and found striking differences son, & Anderson.

**Effective Managers for Elementary Students.** In the effective teachers' Clan-rooms, the very first day wan well organized. Name lags were ready. There was some-thin}*, interesting each child lo do away Materials were set up The teachers had planned carefully lo avoid any lad-minute tasks that might lake them away from their students. 1 teachers dealt with the children's pressing concerns. "Where do 1 put my things?"" How do I pronounce my teacher's name?" "Can I whisper **to** my neighbor?" Where is die bathroom'" The collective teachers hail a woe kale, easily understood set of rule* and taught the students the most important rules right away They legit the rules like any other subject—with lots **of** explanation, examples, and practice.

Throughout the first weeks, the effective managers continued to spend quite a bit time teaching rules and procedure*. Some used guided practice lo (each procedures; used rewards to shape behavior. Most students to respond a Ml or some other signal to their attention. These teachers voiced with the class as a whole on enjoyable academic activities. They did not rush **to get** students into small groups **or** to get them started in readers, this whole-class work gave the leach a better opportunity to continue monitoring all students' learning of the rules and procedures. MisMiaviui was stopped quickly and hardly. Hut not harshly.

In the poorly managed classrooms, the first weeks were quite different. Rules were not workable; they were either **too** vague or very complicated. For example, one teacher made a rule that students should "be in the **r**ight place at the right time. "Mu-denls were not told what this meant, so their behavior could not be guided by die rule. Neither positive nor negative behaviors had clear, consistent .After students broke a rule, inflective managers might give a vague criticism, such as Some of my children arc too noisy." or issue a warning, but follow through with the consequence.

In the poorly managed classes, procedures for accomplishing routine tasks led from day lo day and were never taught or practiced. Mislead dealing with these obvious needs, inflective managers spent lime on procedures that could have waited, l-or example, one teacher had the class practice for a fire ill the first day, but let! un explained other procedures that would Iv needed every day. Students wandered aimlessly and had to ask each other what they should be doing. Often the students talked to one another they had nothing productive **lo** do. Ineffective teachers frequently kit the room. Many became in paperwork or in helping just one student. They had not made plans **for** how to deal with late arriving students or in. One ineffective manager tried to teach students lo respond to a hell as a signal let the student's ignore it. All mall, the lust weeks in these were disorganized and tilled with surprise for teachers and .students alike.

**Effective Managers for Secondary Students.** What about gelling started in a school class? It appears that many of the differences between effective and in effective elementary school teachers hold at the secondary level as well. Again, effective managers focus on establishing rules, procedures, and expectations Oil the In day of class. These standards for academic work and class behavior are clearly communicated to students and consistently enforced during the first weeks of skis. Student behavior is closely monitored, and infractions the rules are dealt with quickly. In classes with students, work cycles are shorter, students are it lo spend long, unbroken periods **on** one type of activity. Instead, during each period they are moved smoothly through several different tasks.

### Student Conflicts and Confrontations

***Handling conflict is difficult for must us—for people it be even harder. (Jiven the public's concern about violence in school little we know almul conflicts among students 1 Rove & Gallup 2001; Johnson, Johnson.Dudley, Ward, & Magmiuin, 1995) There evidence that in elementary schools, conflicts often center on resources (school supplies, computers athletic equipment, or toys) and over preferences (activity lo do or what game lepton. Over 20 years ago. a large study of more than 8.000 junior and high students 500 faculty from three major cities concluded that other conflicts among students are resolved in destructive ways or newt at all (DfCcxtu & Richards, 1974). The few studies conducted ma time have reached similar conclusions. Avoidance, force, and threats seem to be the major strategies for with conflict (Johnson el al.. 1995).***

Peer Harassment. ***One common form of conflict in schools involve* the kind off leasing and harassment described in the "What Would You Do?" situation at the beginning of this chapter Teachers tend to the amount of bullying and harassment in schools. For example, in one survey of 8th graders, ft0% the student said that they had been harassed by a bully, but teachers in schools estimated the would be about 16% Barone, 1997). A national Mirvey found 33% or 6th through 10th graders had been involved in moderate or frequent bullying et al., 2001}. The line between good-natured ei-changes and hostile leasing may seem thin, but a rule of thumb is that teasing someone who is less powerful or less popular or using any racial, ethnic, or religwu kdui should not be tolerated. When teachers are silent, students may "hear" agreement with*** the ***insult (WeinKlein,2003). Table 11.3 is a list of dos and don't in school.***

**C*ommunicating* with Families about Classroom Management**

Resides, can also establish mentoring program conflict training, social skills training, more relevant, and parent and torn involvement (KuIiHa. 199% lˣatks. iSffS). One intervention that seem to be helpful in peer mediation.

**Lesson 12**

## TEACHING FOR ACADEMIC LEARNING

### Teacher-Directed Instruction

How would you go about identifying the key* to successful Teaching? You might students, principals, college of education, or experienced hers in list the characteristics Rood teachers. Or you could do intensive studies of a few classrooms over a long. You might observe classrooms, rate different teachers on certain .liar autistics and then see which characteristics were associated with whose students either achieved the most or were the motivated to learn. (To do this, of course, you would have to decide him to assess achievement and motivation.) You could identify teachers whose students, year after year learned more than students working with other teachers; then you could watch the successor teachers, and note white they do. You might also train leathers to apply several different strategies to teach the same lesson and then determine which strategy led to greatest student learning. You could videotape teachers, and then ask them to view the tapes and report what they were thinking about as they taught and what influenced their decisions while leaching. You might study transcripts of classroom dialogue to learn what helped students understand.

All these approaches and more have been used to investigate teaching (Flodeti 20011. Often researchers use the relationships identified between teaching and learning as the basis for developing teaching approaches and testing these caches design experiments (Brown, 1992; Cireeno, Collins, and Resmck, 199oJ. Let examine some of the specific knowledge about leaching gained from these projects.

### Characteristics of Effective Teachers

Some the earliest research **oil** effective teaching focused on the personal quality of leathers themselves (Medley, 1979). Results revealed **Home** lessons about three teacher characteristics: knowledge, clarity, and warmth.

Teachers' Knowledge, teachers who know more about their subject have mute positive on students? When we look at teachers knowledge of fact] and concepts, as measured teal .scores and college grades, the relationship to student learning is and may be indirect. Teachers who know about their subject do not have students who learn more. But teachers who know more may make clearer presentations and student difficulties more readily. They are ready for any student questions and do not have to be evasive or vague in answers. And we know from Linda Darling-Hammond's (2000) work that the quality of as measured by the teachers were fully certified and had a major in their teaching field—is related to student performance. Thus, knowledge is necessary but not sufficient for effective teaching because being more knowledge able helps teachers be clearer and more organized.

Clarity and Organization. When Barak Rosenshine and Norma (1973)reviewed about ill .studies of teaching, they concluded that clarity was the most promising leather behavior for future research on effective leaching. Teachers who provide clear presentations and explanation tend to have students who more and who rate their teacher mote positively, Cruickshank. ***Hi*** Kennedy, 1985; Land, 1987|. Teachers with more knowledge of the subject lend to be less vague in that explanations to the class.

**Warmth and Enthusiasm.** As you are well aware, some teaches are much more enthusiastic than others. Some studies have found that ratings teachers' enthusiasm their subject are correlated with student (Rohcnshinc & rural, 1973). Warmth, TrienJlinew, and understanding seem lo he the teacher traits most strongly related to student attitudes (Murray. 1983; Ryans, I960; Soai & Soar, 1979). In other words, teachers who are warm and friendly lend lo have student*) who like and the class in general. But notice, these are correlation studies. The results do not tell us that teacher enthusiasm causes student learning causes positive attitudes, only that the two variables lend lo occur together Teachers trained to demonstrate their enthusiasm have students who arc more attentive and involved, but not necessarily more successful on tests of content (Gillett & Gall. 1982). The *Guidelines* on page 442 include some ideas communicating warmth and enthusiasm.

Beyond general characteristics, how can teachers design instruction? he following sections describe formats or strategies building blocks that can be used lo lessons and units. We begin with the strategy many people associate most directly with teaching direct instruction and explanation.

**Explanation and Direct Instruction**

Some studies have found that teachers' presentations take up one-sixth to one-fourth of all classroom time. Teacher explanation is appropriate for communicating a large amount material to many students in u short period of lime, introducing a new topic, giving background information, or motivating students to learn more on their own. Teacher presentations are therefore most appropriate for cognitive and objectives at the lower levels the taxonomies described earlier for remembering, understanding, apply ng, receiving, responding, and valuing (Arends, 2001; Kinds vatter, When, [shier. 1992).

Direct Instruction. In the 1970s and 1980s, there was an explosion ot research that focused on effective teaching. The results of all this work identified a model of leaching that was related to improved student learning. Barak Roscuslune calls this approach **direct instruction** *i* 197V) or **explicit teaching** (IVK6). Tom Good (I9«ia) uses the term **active teaching** a similar approach.

The direct instruction mode fits a derived from a particular approach to research. Researchers identified the elements direct instruction comparing teachers whose students learned more than expected (based on entering knowledge) with teachers whose students performed at an ex peered or average level. The researchers focused on existing practices in American classrooms. Because the focus was on traditional forms of teaching, the research could not identity successful innovations. Effectiveness was usually defined us average provident in standardized test scores for a whole class or school. So the results hold for large groups, but in the group. Even when the average achievement of a group improves, the achievement some individuals may decline (Brophy *St* Good. 1986; Good, 1996;Shuell, 19961.

Given these conditions, you can see that direct instruction applies best to the teaching of **banc skill*—**clearly structured knowledge and essential **skills,** such as science facts, mathematics computations, reading vocabulary, and grammar rule* f Rosen shine & **Stevens,** 1986). These skills involve tasks that are relatively unambiguous; they tan be taught step-by-step and tested by standardized **tests.** The leaching approaches described below die nut necessarily appropriate for objectives such as helping students to write creatively, solve complex problems, or mature emotionally. Weinert 11995) describe direct instruction as having the following (a) the teacher's classroom management is especially effective and the late of student intransitive behaviors is very low; »b) the teacher maintains a strong academic focus and uses available instructional time intensively to initiate and localizable students' learning activities; (c) the teacher insures that as many students as possible achieve good by carefully choosing appropriate tasks, clearly presenting .subject-matter information and solution strategies, continuously diagnosing each student's learning progress and learning difficulties, providing effective help through r e m e d i a l instruction, (p. 1.18)

How would I teacher turn these themes into actions?

**Rosenshinc's Six Teaching Functions.** Rosenshine and his colleagues i Rosen-shine. I9H8; Rosenshine Stevens. 1986) have identified leaching functions based on the effective instruction. These could serve as a checklist for leaching basic skills.

**Review and check the previous day\ work.** Reteach if students made errors.

**Present new material** Make the cleat, in small steps, and provide many examples and examples.

**Provide guided practice.** Question give practice problems, and listen for misconceptions and misunderstandings. Reteach if necessaiy Continue guided practice until students answer about 80% questions correctly.

**Gir feedback and corrective** based on student answers. Reteach if necessary.

**Provide independent practice-** let students apply new learning on their own, in sea I work, cooperative groups, or homework. The success during independent practice should be about 95%. This means that students must be well (or the. work by the- presentation and guided practice and

that assign must not be too difficult. The point is for the students to practice until the skills become over learned and automatic—until the students are confident. students accountable: check if.

**Review weekly and monthly to consolidate learning.** Include some items as homework. Test often, and reteach material missed on the these six functions are not steps to in a particular order, but all of them dements of effective instruction. For example, feedback, review, should whenever necessary and should match the abilities of the students. Also, keep in mind the age and knowledge of your students. younger or the less prepaid your students, the briefer your explanations should be. Use more and cycles of presentation, guided practice, feedback.

There are several other models of direct but most share I he elements; presented in Table 12.5 on page 444, which summarizes Madeline I [miter's Mastery Teaching (Hunter, 1982), another example of direct instruction.

**Criticisms of Direct Instruction.** instruction, when involves extended teacher tons 01 lectures, has some disadvantages. You may find that some students have trouble listening for more minutes at a time and that they simply tune out. Teacher presentations can put (he students in a passive position by doing much of the cognitive work them and may prevent students from asking 01 **even** thinking of questions (Preiberg & Driscoll, 1996; Gilslrap Martin, 19 Scripted cooperation is one wav of incorporating active learning into lectures. Several tunes during **the** presentation, asks students to work in pairs. One is the and the other the summary. This gives students a chance their understand ing, their thinking, and translate ideas into their own words. Other possibilities aie described in Critics also claim that direct instruction is based the ***wrong*** theory of learning. Teachers break material into small segments, present each segment clearly, and reinforce or correct, thus transmitting accurate understandings from teacher lo student. The student is seen as an "empty vessel" waiting to be filled with knowledge, rather than an active constructor of knowledge (Anderson, 1989a; Beig & (Jlough. Davis. Matter, & Nodding, 1990). These criticisms of direct instruction echo the criticisms of behavioral themes.

**Seatwork and Homework**

Carol Weinslcin and Andy Mignano (2003) describe several altenatives to workbooks and dittos, such as reading silently and reading to ***a*** writing for a "real" audience; writing letters or journals: transcribing conversations and punctuating them properly; making up problems; working on long-term projects and reports; solving and puzzles, and engaging in computer activities, of my favorites is crating a group limy. Two students begin a story on the computer then two more add a paragraph. The story grows with each new pair's addition. The students leading and writing, editing and improving.

**Homework.** In contrast to the limited research on have been studying the effects of lot over 75 years (Cooper & Valentine. 2001a. 2001b; Corno. 2000). As yon can see from there continues to be a debate about the value of homework.

To benefit from individual group seatwork homework, students must stay involved and do the work. The first step toward involvement is getting students started correctly by making sure. It may help to do the first few questions as a class, to clear up **any** misconceptions, this is especially important for homework assignments, because students ma> have no one at home to consult if they haw problems with the assignment.

Making Seatwork and Homework Valuable. In the situations it is especially important for students to know what to do if they need help. One teacher described by Weinstein and Mignano t'2003) taught students rule. "Ask three, then me." Students have to consult three classmates before seeking help from the teacher. His teacher also spends lime early in the year showing students **haw** to help each other how to ask questions and how to explain.

**Questioning and Recitation**

Teachers posequestions, students answer. This lot in leaching, sometimes called been with us for many years (StoHoUky, 1988). The leather's questions (develop a framework the subject matter involved, these steps are repeated over and over.

let us consider the heart of, the soliciting or questioning techniques may heamong I In- most that teachers employ during lessons. An essential element of innovations *is* cognitive apprenticeships, peer learning techniques, authentic activities, and nearly all other contemporary learning techniques is keeping students engaged and that is *where* skillful questioning strategies are especially effective. Questions several roles in cognition. They can *help* students rehearse information for effective recall. They can wink to identify gaps in one's knowledge base, and provoke curiosity and long term interest. The can initiate cognitive and promote the results in knowledge structure.

For now we will focus on teachers' questions, to make them as helpful a possible for students. Many of the work with are how valuable good questions can be and how difficult they aw to create.

**Kinds of Questions,** borne educators have estimated the typical teacher aria between 30 and I JO question an hour, or about *1,5000,1* MM J questions over a leaching career

**Fitting the Questions to the Students.** Both high and low level question.* ran be cttective (Harden, 1995; Kedfieid Rousseau, 1981). patterns seem to be better for however I he best pattern for younger students and lower-ability of all ages is simple questions that *allow* a high percentage answers, ample encouragement, help when the student does not have the corr a l answer, and praise* For high ability students, t h e pattern includes harder at both higher and lower levels and more critical feedbag k Berliner. 1987: Good. 198S; Sadker & Sadker, 2003).

Whatever their age or ability, all students should have some with thought-provoking question* and, if necessary, help in learning answer them. As we saw in Chapter H, to master critical thinking and problem solving skill*, students must have a chance to tire dull*. They also need lime to think about

**Group Discussion**

Group discussion is in some way to the recitation, but should be more like the instructional conversations in Chapter (Thai p &>, A tetchier may pose. listen to student answers, react, and more Information, but in a true group dialogue, the does not have B role Students ask questions, answer each other's questions, respond to each others answers McKcown. Worthy* Sandoia. & Kucan, l!>96; Burbules Sr Bruce, 2001; Market & Hess, ZOOJ).

There are many .advantages! to group discussions- The students are directly involved and have the chance lo participate. Group discussion helps students learn to express themselves clearly, to opinions, and tolerate different views. Croup discussion also gives students a chance to ask for clarification, examine their thinking, follow personal interests, and assume responsibility by taking leadership roles in the group. Thus, group help students evaluate ideas and synthesize personal viewpoints. Discussions are also useful when student art: trying to understand (Jilltcult concepts that go against common sense. As we saw in Chapters 8 and 9, many scientific concepts, such as the role light in vision or Newton's laws motion, are difficult to grasp because they contradict notion. By thinking together, challenging each other, and suggesting and evaluating possible explanations, are mute likely to reach a genuine understanding.

Of course there are disadvantages. Class discussions are unpredictable and may easily into exchanges ignorance Some members of the group may haw great difficulty participating and may become anxious it. In addition, you may have lo do a good deal preparation lo ensure that participants have a background of knowledge on which lo base the discussion. And large groups are often unwieldy In many cases, a few students will dominate the discus lion while the others daydream (Arends, 2001; Kindsvatter, Wilcn, & Ishler, 1988). The Guideline* on page 4bl give some ideas for facilitating a productive group discussion.

No one person is expected lo give in completely; au for and each other. The no lose method is a six step. problem-solving:

I. Dejinc the problem. What exactly are the behaviors involved? What does each person want? (Use active listening lo help students pinpoint the real problem.)

. Generate many possible solutions. Brainstorm, but remember, don't allow any evaluations ideas yet.
V Evaluate each solution. Any participant may veto any idea. If no .solutions are found lo be acceptable, again
**4.** Make a decision. one solution through consensus—Wiling. In the end, everyone must be satisfied with the solution.
V Determine how to implement the solution What will be needed? Who will be responsible for each task? What is the timetable?
6. Evaluate the success of the solution. After trying the solution for a while, ask. "Are we satisfied with our decision? How well is it working? Should we make some?"
Many ol the conflicts in classrooms are between students. These ran be learning experiences for all concerned.

**Group Behavior**
Men live in group and are guided al limes by group and norms. Their individual reaction is modified and their behavior is adjusted and controlled by the social environment.
No doubt the basic instincts and needs prompt our activities for their satisfaction Yet they undergo certain modifications under group pressure. Tills is because man is basically a social creature. Group lite generates new needs and expectations. Values and attitudes thus shape group behavior. Satisfaction plays a prominent part in group behavior. Individuals while interacting with one another lend In gain from their individual course of action* A group mindedness prevails when individuals sacrifice their strong individuality and come to a compromise for adjustment. Individuals need company and co operation for effective functioning. Man can not live in isolation. He is particularly a social animal It is impossible for man to live in an environment cut off from other members of the community. His innate urge to co-operate and coordinate is strong.
Group life the child a social environment. The individual child needs love, encouragement and sense of security within the family and group. Without the group lift the hardly grows. Group interaction helps the child to grow socially and emotionally. Thus when a child comes to school he together and shares his experience.
He gets the opportunity to express his feeling of self-assertion, communion and combat and grows up emotionally, socially and physically. As mentioned earlier, the child grows through *experience.*
He needs sympathy and suggestion for self expansion At time a child feels and looks forward to suggestions and from his groups Sympathy provides sense of security and builds up the strength ot the child.
Atl Times a child is confused or and badly need suggestion, (he role of parents, teachers and even of friends is very significant.
Sympathy is the fellow feeling or feeling with others. This involves emotions when shared among members within a group. is aroused in ease there is any accident or a sudden situation demanding common participation.
It facilitates social solidarity and harmony of even around on occasion or event.
Sympathy also plays a significant rule in animal behavior It prompts them lo share and profit from each others experience and knowledge of a group life. Sympathy may be expressed both in
active and passive.
In a class room situation the teachers can take advantage of their interaction by arousing emotions for die right and good cause aiming the pupils. He can inspire them toward noble causes and creative activities.

Like sympathy, imitation is found to influence group behavior, to love others instinctively as this tendency is ingrained in nature childhood. A child teams to speak gradually. He copies from nearest adults other's behaviors even unconsciously. Imitation is very common when the relationship between the members is close and cordial. We imitate what we admire in others.

The children learn most by imitating their parents and teachers. Most of the habits and modes of behavior are copied by children through imitation is great social bond, a means of uniting a large number of individuals into one group.

Group behavior dominant when there is cohesion and commonality. Group behavior is something more than a collective behavior.

Motivation and interest can be generated by applying group dynamics. Not only in the field of education, are group dynamics applied at present even in the field of industry for better production.

Cooperation, competition and conflict are the various modes of group behavior which can be employed for producing the behavior as end result.

In (he present society we And competition and conflict more than is a snuggle for survival the finest It is the law of the present society. We can hardly ignore this stark reality* Yet there are certain occasions and causes which demand cooperation, and co-ordination our greater interest Any national enterprise demands co-operation in spite of conflicts and competitions within group.

**Dump Behavior and Education**

With the growing of the class room and increasing load of curriculum there is hardly any lime to pay individual attention in the class room. It is also not feasible to treat pupils individually. situation thus demands application of group dynamics, where a is divided into groups for participation in assigned educational activities. This interact ional approach very often proves economic and effective as well

In group approach an individual finds it possible to contribute his best to the group performance and develops a sense of identity with the group. The spirit of social awareness is thus stimulated through this group activity.

**Lesson 13**

## EDUCATING EXCEPTIONAL CHILDREN

**Introduction**

The word exceptional is used here to mean rare or unusual. li represents a kind of significant deviation from the usual, natural or normal happenings. In this sense, a boy standing seven feet tall would he termed quite a typical, exceptional and above average in a population of Indian adolescents Similar would be the case with a boy having height of 4 feet 0 inches, as he would be exceptional at (he lower end of the height scale Thus, people are termed exceptional if they deviate miserably in one attribute to the other from what is supposed to he normal or average for their group. One person may be exceptionally beautiful and other extremely ugly, one a genius with an I.Q. of 2U0. the other an idiot with an i n of 20. Such wide variations and deviation* are found nearly in allattributes and trails of personality and patterns of human behavior Consequently, the term exceptional carries a very wide connotation as it covers the entire range and possibilities of the significant in deviations in every shades of human activity and personality (trait. The term exceptional here stands for a separate and in many ways distinct category or relax of children who have markedly above average or below average traits and characteristics which makes them fundamentally different tom the general of average population of children. These children begin to demonstrate signs of their exceptionality from their very Birth or during their developmental stages a-s they race ahead or lag behind in term* of natural growth and development in various dimensions—physical, mental, emotional, social and moral etc. to such an extent that they exhibit symptom* of maladjustment with average children and with the average way* and mean* of their upbringing and education.

**Definition of the Term "exceptional children"**

The term exceptional children has been defined to many ways by authors and researchers

**Crow and Crow (/97,f):**

The term 'atypical or is applied to atrait or m a person the trail if the extent of deviation from normal possession of the mil is so great that because of it individual receives special attention fromIns fellows andhis behavior response and are thereby affected

**Kirk (1984):**

An exceptional child is he who deviate font the normal or average child in mental, physical and social characteristics such an extent that he acquire a modification of school practices or special educational services in order u> develop to his maximum rapacity, or supplementary instruction..

**Telfoid and Sawrcy (1977).**

The lean exccptiunal children refer* to those children who deviate from the normal in physitJ. mental, emotional, 01 social characteristics to such a degree that they require special social and educational services to develop tlieir maximum capacity.

These definitions highlight the following typical features or characteristics of the exceptional ciildren:

I, Exceptional children are quite different and distinct from the so-called normal or average children.

2- Their deviation from the normal or average children is so great that they can he recognized and distinguished easily average children.

This deviation In terms of their acquired trails or development may fait in any behavioral or developmental dimension, physical, intellectual, emotional or social etc.

The degree of deviation in any behavioral or developmental trait is so marked that children experience unusual or peculiar problems and require special arrangements in terms of care and education for their proper growth and

upbringing to meet the special conditions necessary for the till development and nurturing of their capabilities.
Thus defined, the following types of deviant or exceptional children in terms (if different dimensions of human growth and development may be termed as exceptional:
The gifted backward and the creative children.
The crippled, handicapped, the hard of hearing and the deal, the partially sighted and the blind, etc.
The mentally retarded or handicapped.
The emotionally handicapped ranging from those with minor personality maladjustments to those with serious problems neurotics.
The soc ally handicapped such a* juvenile delinquents.
The learning disabled
Let us know in detail about some of these children in the following pages.

**Gifted Children**
**Meaning and Definition**
The term 'gifted child' has been defined by different scholars and psychologists in the following words:
**Telford and Sowrvy 0977):**
The intellectually gifted can he defined in terms of test scores or demonstrated performance, or x> .he upper l or 7 per cent of the genial population is measured by some d-signaled intelligence and of achievement test.
**Plriither and 8i\h (79.59):**
The term gifted encompasses those children who possess a intellectual potentiality and functional ability to achieve academically m the I Mo 20 percent f school papulation; and/or talent of a high order in such special areas as mathematics, mechanics, science, expressive arts, creative, music and social leadership, and a unique creative ability to deal with their environment
**Witty (1940):**
The gifted or alerted stands (or those whose performance is remarkable in some potentially valuable activity
**Prem Pamdia {1964)**
The gifted child is die one who exhibits superiority in intelligence or the one who is in possession of anilities of u high ante m die fields which not associated with a high intelligence quotient.
**Martand report 0972):**
The gifted are those who possess outstanding abilities or potential the area of general intellectual capacity, specific academic aptitude, creative or productive thinking, leadership ability, visual or performing am and psycho activity
**Havighurst (1958):**
The talented oi gittcd child is one who shows consistently remarkable performance in **Tannenbaum (198$);**
The term giftedness denotes their potential for becoming critically acclaimed performers exemplary producers of ideas in activity mat enhance the moral, physical, emotional, intellectual, or aesthetic life of humanity.
Analysis of the above definitions shows that various scholars and thinkers have adopted different approaches in defining the term giftedness. The first two definitions have tricd to provide a statistical and operational definition by adopting scores on intelligence and achievement tests. Although the use of lite I.Q. and achievement test score has the advantage of objectivity, it cannot he made a sole erigeron for cascading giftedness. Moreover, there lies a difficulty in deciding the cut-off point i.e. the minimum score for labeling one as gifted as some may fix it as 140 (Terman ami Oden. 1947) while may lower it to 110 (Bentlcy. 1937).

Prem Pasrichi's definition takes a proper stand by declaring, that giftedness need not he necessarily associated with high performance on some general intelligence test. A petson who shows outstanding or remarkable performance in other of activity regardless of his average I 0 or lower scholastic achievement may (ho be termed as gifted. This feature has been repeated in almost all the other definitions as well However, while adopting demonstrated social performance as a these definitions have clearly stated that in order to qualify as an indication if giftedness, a person's performance must be consistent.

Outstanding, distinctive, remarkable and clearly above (he average performance of other in the group. It should, at the same time, be useful and worthwhile and should contribute towards (he welfare of society and also of humanity large.

Consequently, on the basis of the above definitions we may draw the following conclusions about the meaning, nature and characteristics of gifted or talented children:

The gifted child is essentially an exceptional child.

In comparison Lo children of his own group, he is superior in some ability or group of abilities.

X In most cases, the gifted child invariably exhibits superior performance only in the area or areas of his giftedness.

4. The appellation 'gifted children' is applicable to not only the academically talented but also to those who show promise in other sphere as music, dance, drama, painting, sculpture, writing and other creative arts. Mechanical work, Social leadership and human relationships. creative scientific experimentation and exploration, physical activities like games, sports and gymnastics

A gifted child need not necessarily possess a very high intelligence quotient (I.Q.).

If he receives proper attention and opportunity for self-expression and development, the gifted child can make a noteworthy contribution u» the welfare of society, the nation and humanity at large.

**Needs and Problems of Gifted Children**

Like other children, the gifted children have certain basic needs, the need for security, for love, for belonging and the need to he accepted as an individual In addition lo these basic needs the gifted children may have certain special needs like <a| (he need for knowledge and, (b) creativity and ingenuity, (c) (he development! of his exceptional ability or abilities, and (d) the need for self actualization or self-expression.

The gifted child thus strives for the satisfaction not only of the basic needs but also has to have the opportunity and (he facilities for the realization of (he above-mentioned specific need*. In case he experiences difficulty in (he accomplishment of these needs he becomes disturbed mentally as well as emotionally. This leads to a sort of maladjustment and he becomes a problem child

The gifted child needs I proper environment for his development. He wants to be understood carefully in response lo his different needs and problems the gifted child is exceptionally curious and has a thirst for knowledge and is. There fore, in the habit of asking search questions. The parents as well as the teachers, who do not understand his urges, usually snub him. Sometimes, he wants appreciation for his ingenuity in a scientific field or creativity in the, but does not gel ii. Consequently, he feels insecure and rejected and any sort of mishandling or carelessness on the pan teachers or patents further aggravates the situation and he becomes a nuisance.

In case the gifted child gets undue attention and appreciation, he becomes conscious of his superiority and develops a boastful and supercilious attitude. He adjust with his fellow students. He considers inferior and foolish and may even dislike them, while they, in turn become jealous of him. They do not accept his superiority and begin to reject him The gifted child, in this way does not get recognition from his peers and faces a sort of social rejection. This him and as u result, he either becomes withdrawn or aggressive and hostile.

From another angle too the gifted children are faced with problems of adjustment in our usual system of instruction We, in the class rooms, plan work for an average child and the same task is to all the children in the class. For the gifted child is no challenge and lie either finishes the assignment

much ahead of the others or lakes no genuine interest in As a result, he becomes restless, careless, inattentive and idle and often utilizes the time and surplus energy in making mischief and indulging in acts of indiscipline in the class room and out of it.

**The Identification of Gifted Children**

The first step in the direction of planning special education for gifted children is to identify or separate them from average children. In absence of identification and adequate provision many of the gifted children, like the flowers in the or diamonds in the earth, go unnoticed.

for the proper identification of the gifted children, we must make a distinction between the intellectually gifted and children with special Talents who show superior in one area or the other.

In the identification of intellectually gifted or academically talented children, intelligence more often used us a screening instrument. Psychologists have differences of opinion regarding demarcation between average and gifted children on the basis of l.Q. Some children with I.Q. I 125 and above as gifted while others raise limit to 1)5 or 140. The criterion is quite arbitrary and not universal. However, an I.Q. of 130 or above (us measured by an individual intelligence) is usually accepted us the most agreed criterion for singling out the gifted children from the average population.

The following list of identifying characteristics prepared by De Haau and Kough (Dun, 1974. p. 2U1) can be of great help in the identification of intellectually gifted or academically talented students.

1 I earns rapidly and easily.

2- Uses a great deal of common sense and practical knowledge.

Reasons things out. Thinks clearly, recognizes relationships, comprehends meanings.

Retains what he has heard or read without much role drill.

Kmiw about many things of which most students are unaware a large vocabulary, which he uses easily and accurately.

Can read books that are one or two years in advance of ihc rest of the class.

Performs difficult mental tasks.

Ask a many questions, has a wide range of interest*

Does some academic work one or two years in advance of the rest of the class.

Is original in his thinking, uses good but unusual methods.

Is alert, keenly observunt and responds quickly

As already mentioned, there are some gifted children who, although do not possess superior general intelligence, exhibit special abilities or talents in one field or the other is not possible lo identify such children by intelligence tests.

**The Education of the Gifted Children**

It is often suggested should be separate schools for gifted children and adequate facilities should be provided in these schools to help them in developing their specific abilities and potentialities. Such segregation is often criticized and labeled as undemocratic. The products of public schools, where there is provision for selective special education also justify our fears and doubts. The students educated in these schools develop a superior and conceited attitude and widen the gulf between the educated and the uneducated or the privileged and the unprivileged.

Similarly, segregation of gifted children into a separate section within same school also involves the. same danger. This plan is known as ability grouping. Here, a given grade is divided into different sections on the basis of ability, the range of ability within each section being relatively narrow. The non-feasibility of both these plans involving segregation is obvious in the Indian context. We can neither afford such segregation as it involves huge expenditure nor can it yield very fruitful results. The gifted child is gifted or talented in his area of giftedness only lie may or may not possess superior general intelligence and children who possess talents in a particular area may be as few as one or less per cent of the total population of their class. It is therefore, impractical to think of having a separate section consisting of these few children. What is more, segregation on the basis of I.Q. is no guarantee to the maintenance of homogeneity in the grouping.

Another concept in the education of gifted children is 'acceleration', usually known as double promotion. According to (his plan, the gifted child is allowed accelerated progress. He is either promoted to the next higher grade in midsession without completing the prescribed full term or is permitted to skip a grade or class at the end of the term. The plan, though quite feasible, suffers from a serious defect in that it creates a gulf between educational ability and experience. The children who get early promotion to the advanced grade usually find it hard to adjust among children who are senior to them in age. Though intellectually at par with them, they lag behind in emotional, social and physical spheres and thus fall
victim adjustment problems.
Another proposal for the education of gifted children is what is technically known as 'enrichment*. Basically, it involves the selection and organization of learning experiences and activities appropriate to the child's adequate development. In this way the enrichment of education should be considered to be a need of all students. But in the case of gifted children it will definitely meet an urgent need of giving them a greater variety of experience or tasks at a more advanced level. Thus, enrichment programmes aim to provide additional educational opportunities to gifted children. For example, it may include, (a) special assignment (within or outside the syllabus), (b) work on independent projects, (c) preparation of reports and participation in panel discussions, (d) independent library reading, (e) visits to the sites to obtain first hand information, (f) construction of models, aid material and improvised apparatus etc.. (g) participation in the organization of cocuricular activities, and (h) experimentation and independent research.

**The Mentally Retarded**

In the classification of exceptional children, the mentally retarded children belong to the lower end of the scale of intelligence and scholastic aptitude quite opposite and contrary to the gifted and who lie at the high end of scale. As I matter of terminology such children are known by so many names other than mentally re-larded such as, 'feeble minded, 'menially handicapped, 'menially
deficient', 'mentally subnormal' or 'mentally sub average*, etc. By whatever, name we recognize connotes the sub average menial functioning of a group of children which affects not only their behavior and future development hut also creates serious problems for the people responsible for their welfare. Who are these children? What are their specific characteristics and requirements? What can be done for them specially in the sphere of education?

**Defining Mental Retardation or Mental Deficiency**

The term 'mental retardation" or 'mental deficiency' has been defined in several ways Some definitions of mental retardation are:

**PaKe 0976):**

Mental deficiency is a condition of sub mental development, present at or early childhood and characterized mainly by limited intelligence and social inadequacy.

**Rosen, Fvx and Gregory (7972):**

Mental retardation to a chronic condition present from birth or early childhood which is impaired intellectual functioning ax measured by and impaired adaptation to die daily demands individual's social environment.

**British Menial Deficiency Art:**

Menial retardation is a condition of arrested or incomplete development of mind existing before the age of 18 years whether arising from causes or induced by disease or injury.

**American Axxnrtauon on Mental Deficiency (1983):**

Mental retardation refers in significantly sub average intellectual functioning concurrently with deficits in adoptive behavior, and during the developing period.

All these definitions agree that:

Mental retardation is a condition or stale of mind.

It is related to the sub-normal development of the mind or brain.

It is neither a disease nor a medical syndrome with a specific cause. A number of specific identified causes involving both inherent and external factors may be responsible for it.
The deficiency may be observed at birth or manifested latet during the course, of development, generally before the end of years of adolescence.
The menially, can be identified through:

**Detecting or Identifying the Mentally Retarded**
What are mentally retarded children like" Do they have so different a personality make up from the normal as to he easily discernible"' It is possible to some extent, that the physical appearance of the menially retarded may give me to some doubt amid their normal intellectual functioning. This, however, is not always sound in many cases the physical appearance gives no indication of mental retardation In tact, the similarities between the mental retardates and the intellectually nominal people exceed the differences Therefore, great care must be taken for the proper identification and detection of mental retarded ness among children. To correctly answer the question, what type of child should be labelled as mentally retarded, we have to consider the broader concept of the term 'menial reiatdation' oi 'mental deficiency'. It is also clear in the light of our accepted AAMD definition, that a mere knowledge of a child's low I.Q would not suffice for identifying him as mentally retarded. In following considerations would also have to be taken into account for the identification of mental retarded ness among children.
The detection or identification must be carried out during the developmental period, i.e. from the embiyonic stage to the end of adolescence.
Behavior should be closely and objectively observed for detecting deficiencies in adaptive behavior.
In case adaptive behavior is judged to be indicative of possible mental retardation, il should be confirmed through intelligence testing or vice versa.
In all cases, the low 1 Q. and deficient adaptive behavior both, should be used as criteria for detecting mental retarded ness.

**Assessment of intellectual functioning** Intelligence lest scores in terms of I.Q. are and not only for identifying or segregating individuals with subnormal intellectual capacities but also for clarifying the seventy of their mental retardation into various categories such as moron, imbecile and idiot: or degrees like moderate, severe and profound. However, diagnosis of subnormal intellectual capacity cannot be nude merely on the basis 4>f a relatively low I.Q, The following characteristics should also be kept in mind:
Mentally subnormal children lack much in the power of observation, imagination, thinking and reasoning, and ability to generalize
They are abstraction and can only think in terms of concrete objects and situations.
They arc slow learners It has been found that they take longer for a skill.
They aie poor at following general verbal instruction*;, unless these are repealed at frequent intervals.
Their rate of intellectual development is very slow in comparison with children of their age.
The uicas of their interest aptitudes and choices arc limited.
The creativity aspect is almost ahveni in such children.
Assessment in terms of adoptive hehavumr* In addition to the criterion ot sub normal intellectual capacities, an assessment of a child'* deficiency in terms of adaptive behaviour and personality problems may also prove helpful in the diagnosis of menial retardation. Personality problems and deficiency in terms of adaptive behaviour may be assessed through close observation, or with the help of texts like adaptive behaviour scale and the Minnesota developmental programming system.

**Lcvcl of Retardation and \X**

| Level of retardation | Intelligence quotient |
|---|---|
| ***it**/wfi9ni-**Rinet** | **Wecfister sealf** |
| Profound | Under 20 Undn 25 |

| | | |
|---|---|---|
| Severe | 20-15 | 25-39 |
| Moderate | 36-31 | 40-54 |
| Mild | 52-67 | 55-*9 |

A discussion of these categories of retardation in terms of the typical sub* normal intelligence and deficient adaptive behaviour follows:

Mild retardation. A majority or approximately eighty five per cent of OuT retarded are only mildly retarded As grown ups, these individuals attain intellectual levels comparable to those of the average ten-year-old child. Their social adjustment may be compared with that of an adolescent. Here Ukk they lack Ihe innovative and vigorous nature of normal adolescents. They show signs of delayed development early in life and learn to walk, talk, feed and toilet themselves one year later than die average* They may be identified in schools as slow learners and are frequently required to repeat early grades. Speech disturbances are also common among them.

**Causes of Mental Retardation**

It is difficult **10** lay down the standard causes of mental retardation applicable In every such case. A number of factors are believed to cause mental retardation which may be divided into two broad categories;

L Organic or biological factors 2. Socio-psychological factors

*1,* ***Organic or biological factum.*** Causes listed in this broad category arc:

**(a) Gtnetic factors.** Mental deficiency may he established by genetic factors operative at the time of conception in two ways—either through transmission of some defective genes in the chromosomes of one or both parents, or on account of chromosomal aberrations

The transmission of defective genes gives rise to many disorders causing mental deficiency. Menial retardation or deficiency attributable to a dominant gene is very rare because the persons affected are generally incapable of reproduction. It is often the result of the pairing of two defective recessive genes. When defective recessive genes are paired, as in F'KI·. the production of au enzyme, necessary for an important metabolic process, is disturbed. This* in turn, affects the development of the embryo and causes mental deficiency. Jn some cases, like Tay-Sachs disease, mental deficiency may also resull from the pairing of single recessive genes.

Several chromosomal anomalies determine mental retardation at the time of conception. Down's synrdomc or mongolism is one such disorder which is said to be caused by chromosomal aberrations. The majority of the Mongoloid children tire found to have 47 chromosomes instead of Uic usual 46. The number of chromosomes increases as a resell of tripling of chromosome 21 (during the fertilization of the egg the chromosome pair 21 become three instead of two). Another example of chromosomal abnormality is Klinefelter's syndrome in which an extra X chromosome is usually (he culprit. This disorder occurs only in males and symptoms are usually noticed at puberty when the testes remain small and the body develops feminine secondary sexual characteristics such as enlarged breasts and round hips.

**(b) Infections** Mental retardation can also be the result of many infectious diseases like syphilis, rubella (German measles) toxoplasmosis, encephalitis which can damage brain tissue and die nervous system resulting in severe mental deficiency or retardation If mother suffers from one or the other of these infectious diseases she may transmit infection to the developing fetus.

Intoxication. Mental retardation may be caused by intoxication. A number of agents like carbon monoxide, mercury, lead and various immunological agents like unti tetanus serum or the use of small pox, rabies and typhoid vaccine* may result in brain damage during development alter birlh. Similarly, large doses of X-ray in radio therapy in the abdominal region of the pregnant mother drugs administered to the mother during pregnancy, incompatibility in blood types between mother and foetus, and overdose of drugs administered to the infant also lead to toxicity and brain damage.

(d) trauma. Mental retardation may be caused by physical damage to the brain in the form of injuries prior to birth at the lime of delivery, or following biith.

**Psychological Treatment**

Often on account of the link between mental subnormal and psychological factors, psychological treatment in the form of individual or group psychotherapy is found to be useful in providing remedial measures for mental retardation. Children can be helped in solving problems of emotional and social maladjust mcut and revolving their menu) conflicts through psychological measures.

**Educating the parents.** Parents can also help in the welfare, cart as well as treatment of the mental retardates- For this purpose, there is a need for proper counseling services for them Moreover, on account of their emotional Involvement the parents do not always ieahze the shortcomings and deficiency of their children and waste a lot of time and money in tlie hope that some magic cure will found pi the deficiency will automatically disappear with lime

**Planning Education according to the Levels of Mental Retardation**

The menraNy retarded, as emphasized cailier are not all alike. After segregation from normal individuals they can be properly grouped into distinct categories The most accepted classification based on the I.Q. as well as adaptive behavior criteria the four levels of retardation i.e. mild, moderate, severe and profound.

The school's curricular as well as cocurrieular activities should lay stronger emphasis on experience than on abstraction

6. In any case, in spite of these children should not be expected to attain the level of accomplishment of the same chronological age as normal children.

Educational programmes for the trainable mentally retarded (TMR). The TMK children cannot be educated like the EMK However, they can be trained to acquire certain panic skills so that they may lead their future dependent or scmi-indc|>endent lives The following aspects may be considered for planning appropriate training programmes for diem:

**BACKWARD CHILDREN**

**Definition and Meaning of the Term Backward Child**

The term 'backward children' and "backwardness" has been defined in many ways. We give below, some of ihe well-known definitions.

**Uarton Hall (J947):**

Backwardno* m general, is applied to eases where their attainment fall* below die level of abilities

**Schvnell {1943);**

Backward pupil is Compared with other pupils of the same chronological age marked educational deficiency.

**Burt (J9S0);**

|A backward is J One who in career is unable to do the work of die class next below that which is normal for his age.

All the definitions quoted above lead to the following conclusions about a backward child.

He is a slow learner and finds it difficult to keep ace with normal school work

he is not able to attain he should and his educational attainment falls below his natural abilities

He falls far behind other children of his age in matters study. Usually, such children remain in the same class for a number of years

Not only is he unable lo learn at the same level as other children the same age but also finds ii difficult to keep pace with children in lower classes who are youngest to him in age.

**Kinds of Backwardness**

Backward is supposed to be of two kinds, general and specific. The child suffering from such general backwardness is weak in all the subjects of the school curriculum. The child suffering from specific

backwardness on die oilier hand, lags behind in one or two specific subjects only, while in others his progress may be satisfactory or even extraordinary.

**Causes of Backwardness**

It is difficult id list the general causes of backwardness as it is an individual problem and every individual problem is unique. But it is certain that the root* of backwardness of a child must lie wiihin him or outside him in the environment Moreover, it is also found that usually, many factors or causes operate together in a particular ease of backwardness. Let us try to ascertain some possible causes tw factors resulting in backwardness.

**Inherent Factors**

**Physiological or physical factors.** The physiological and physical condition of the child uffeci> his educational attainment at every stage. The studies of Buit. Schoncl! and others have shown that a majority of the educationilly backward children suffer from some kind of developmental or physical retardation. They are either born with poor healih. Iiurk of vitality ni physical deformities or become victims of poor environment and thus suffer from physical ailments, chronic diseases and bodily defects The lesullanl drawbacks like poor eyesight, faulty healing, defective speech etc.. make them deficient and they perforce develop as backward. Physical ailments or generally poor health may also seriously interfere with such children's attendance at school and study ar home. These problems may also undermine iheir healih to such an extent that they may as a resull, be unable lo devote adequate time and energy lo their studies and so became educationally sub-normal and end up being termed backward.

**Intellectual faitins.** Intellectual inferiority in also found l(< be an important contnhutory factor. Some children arc bom with some inherent defects in their brain system or with some intellectual subnormality. These mentally handicapped or intellectually inferior children cannot keep pace with tie normal school curriculum and prove to he very slow in learning. Bun (1053). on the basis of his studies. assertK:

in majority of the ta*es defective intelligence or lower I.Q ha* been found to l»e the sole cause of the backwardness

It is generally seen that students whose intellectual powers like thinking and reasoning, concentration, observation and imagination, are. for some reason, not properly developed generally drift towards educational subnormalily. Such children are not only affected in terms of quick understanding and grasp of meaning or remembering but also suffer emotional imbalance and social maladjustment which impedes their progress in school subjects.

**Environmental factors.** Apart from the above innate factors, environmental forces, especially the hone, neighbourhood and schixil atmosphere significantly influence the educational attainment of an individual. Let us discuss some of these environmental factors.

Home influences, lhc parents, family relationships and home atmosphere have a direct relationship win the child's educational attainment.

The privileged homes and well-to-do families are able to provide the best amenities of life and good education to their children Children belonging to poor families on the other hand, leave alone proper education, are denied even the basic necessities of life. Their health sutlers as a result of maluuuiiion ami unhygienic living conditions Thi\ impairs iheii capacity for learning and they become backward In such an atmosphere the child is also deprived of the elementary fund of general knowledge and expenences. He does not pet the opportunities to acquire experience in the form of vancd social contacts, outings and excursions etc. Consequently, he faces difficulty in grasping idcus related to these experiences and becomes educati(<nally subnormal. In poor homes tie children are often required to help with many household chores or to augment the family income. As I result tliey can devote less lime to dicii itudie.s. They also become tired with the household work and thus arc unable to devote proper ancntiun to their studies at home as well as at school.

Besides poverty, the intellectual inferiority and illiteracy of the parents also contribute towards sub-normal educational attainment of the children. Such parents have neither a positive attitude towards education nor the ability to guide and help the children in their studies

The family relationships and the behavior of family members also contribute lo the child's achievements. Strained relationships and improper behavior not only disturb the harmony of atmosphere at home, but also create many emotional and social problems In homes where the parents are divorced or the child has a father or step-mother or where the parental attitudes are either too harsh or too indulgent or where there arc unusual conflicts and quarrels, the child's psychological and social needs are not satisfied In this kind of environment, the child neither feels secure nor gets enough love, affection and guidance from his parents and hence becomes educationally sub-normal.

School influence. An inappropriate school atmosphere and unfavorable in conditions also contribute to the problem of backwardness Irregular attendance or prolonged absence from school contributes to die scholastic subnormality of a child. Additionally, the following factors operating in school may also affect the educational attainment of the children:

Defective, uninteresting and ineffective teaching.

Lack of equipment, facilities and provision for revision, experimental and creative work, co curricular activities and varied experience etc.

Defective curriculum and examination system.

Lack of guidance and wrong choice of subjects by the children.

Poor adminisUulion and indiscipline.

No regular checking of home assignment and luck of proper incentives and stimulation.

Improper attitude of the teacher and interpersonal relationships among the staff and students.

Influence of neighborhood and other social agencies. The social environment of the child is confined within the boundary walls of his home or the school. The neighborhood where the child lives, the companions with whom he plays and the gang with whom he associates himself, the members of the society he comes in contact with, the press, radio, cinema, clubs, religious and social places that he visits, all contribute to the problem of educational subnormality. Any or all of these may color his altitude towards life, work or study also divert his attention to other socially undesirable activities in place of studies and consequently causes scholastic backwardness.

In this way environmental forces greatly influence and direct the scholastic progress of a child. His interests, altitudes, habits of work and study, thought and reasoning processes, understanding and observational powers -all get affected by thc kind and nature of environment in which he lives and consequently, he attains what his environment allows him lo attain.

**The Education of Backward Children**

Backward child, us we have seen above, suffers from mental, emotional and social problems. Besides a defective intelligence and inherited physical characteristics, this condition is the result of maladjustment and maltreatment. Like other children, he also needs security, love, affection and the satisfaction of his urges of consecutions. self-assertion etc. If for any reason, the satisfaction of his social and emotional needs is denied, he becomes mentally and emotionally disturbed and suffers from serious adjustment problems. As a result of this he fails to pay necessary attention to his studies and becomes educationally subnormal or backward. After being termed backward, he again becomes the victim of serious maladjustment and behavioral problems He becomes conscious of his back-wardness and develops an inferiority complex, he feels socially isolated and may become a delinquent child Thus his backwardness not only becomes a problem for him but it affects the adjustment and progress of other children in his class or group. The backward, therefore, need proper care und there is urgent need of special attention for the backward if wastage and stagnation of human resources and increase in the number of problem children is to be checked.

Educational guidance or treatment of backwardness- After diagnosing the probable cause or causes of backwardness, conscious efforts should be made to help the child to get rid of his backwardness The remedy of backwardness lies entirely in its nature and extent as well as the causes which produce it. Morcnvc. There is no single or simple remedy applicable alike to every case of backwardness. Each

case is unique in itself and, therefore, needs individual attention and planned treatment depending upon the kind of backwardness.

Readjustment in the home and the school. As a consequence of several environmental factors, backward children have temperamental and emotional problems, and suffer from mental conflicts. 'Ihey should be helped in their readjustment in the home as well as at school. Such emotionally starved and mentally perturbed children need tender love, affection and security. They should be properly understood and encouraged. There is a need of close contact with parents so dial the root causes of emotional and mental disturbances can be discovered. Parents also need education lor die proper handling of these children the social agencies and government should come forward not only for educating the patents hut also for giving proper attention to remove the miserable handicaps which die children are faced with due to their poverty and other social maladies.

Provision of special schools or special classes. The provision of education for the backward child is also a basic remedial step. Under this provision, backward children arc segregated from other children and kept in small groups either in special classes or in special schools.

If they are kept normal, they will be pushed back and the backward will become more backward with children of their own level but they will he conscious of then draw-hacks and they will feel more secure in a group of their own type there will he more encouragement and appreciation and less competition.

Special coaching and proper individual attention. When the area and nature of lhc weakness is being identified through proper diagnostic tesls in various subjects, arrangement for special coaching should be made for backward children individually or collectively as the situation demands. This may be given in the form of more practice, drill, repetition, review or explanation etc. By providing such special coaching their deficiencies and lacunae can be filled up.

Checking truancy and non attendance. Backwardness in some cases may be the result of irregular attendance, delinquency or long absence from school.

Provision of cocurricular activities, rich experiences and diversified courses. In some cases the backwardness is caused by lack of interest in the school studies or in a particular subject.

Maintenance of proper progress record. The examination and testing programme of the school needs essential modifications.

Rendering guidance services. I-ack of guidance for making proper choices in the selection of courses of instruction and field of work is also considered to be one of the contributory factors of backwardness.

Controlling negative environmental factors. The social surrounding and gang EM peer group influences play a dominant role in coloring one's interests, altitudes and vision of life.

Taking the help of experienced educational psychologists. Service* of an experienced educational psychologist can also prove valuable in the planning of the education of backward children.

The measures mentioned above arc guidelines for teachers, but the problem is .so complicated and intricate that it needs lo be attacked from many directions. Not only the teachers or school authorities but parents, educational psychologists, social workers and the relevant department, of government should join hands to identify and rectify the conditions und remove the causes of backwardness. Only then can the malaise be properly eradicated and the millions of future citizens given the proper opportunities for self-development and self-realization.

### Juvenile Delinquency

Delinquent children belong to that category of exceptional children who exhibit considerable deviation in terms of their social adjustment and are consequently also labeled as socially deviant or socially handicapped. They arc found to possess criminal tendencies and usually indulge in antisocial behavior. In this sense, they ;*re very much like criminals and antisocial elements In legal terminology, however, they are referred to as delinquents and not as criminals. L«t us try to clarify the distinction between the two terms 'delinquency' and "crime'.

delinquency and crime. 'Crime" and "delinquency' are legal terms and their meaning varies from country lo country, from one state to another in the same county. In India, any person 21 years or

more of uge convicted by a court for violating the provisions of Indian 1'enal Code (IPC) and the Criminal Procedure Code (CrlV) is termed as a criminal. Of course, there are state laws which vary from state lo slate In some states or part of a state, for instance, liquor consumption, except for medica reasons, is considered a crime, whereas in others it may not be so.
Similarly, if a minor individual in the age group of seven to eighteen is convicted by a coon for violating the provisions of the Children's Act, die IPC and die CrPC. he is termed a delinquent.

**Causes of Delinquency**
Hereditary factors The early researches held heredity to be the mail) cause of delinquency. The claim of hereditanans like Henry, Maudsley, Tredgold and Dugdule that delinquency is inherited was tested by William llcalcy. Rurt. Conrad and Jones, Wingtield and Sandiford. They concluded that delinquency is not inherited and, therefore, it is wrong to blame heredity for delinquent behavior.

**Preventive measures.** Initially these involve improvement of social or environmental conditions which in the way of the satisfaction of the basic needs of the individual. The following suggestions may work well in this dire lion;
I- Parental education. Parents should be aware of the psychology of delinquency so that They may and handle their children with understanding and provide them an appropriate environment for the satisfaction of their basic needs and urges This requires parental education which may be provided through guidance services, clinics and voluntary social organizations
**Rectifying school education and environment.** The school environment should be healthy and congenial. The curriculum, methods of teaching, discipline, class-room of the teacher and the social atmosphere of the school should be rectified so that children do not get involved in problems of emotional and social maladjustment. The altitude of teachers who impose their authority on children without understanding then basic needs should be changed. The headmaster as well as ihe teachers should be familiar with the psychology of individual differences and delinquency.
The attitude toward* delinquency **in** our country also is changing. It has now been realized that children who are called delinquents arc ill. primarily in terms of their inability lo conform to the social milieu. Consequently, in most of the states, the Children Act has been enforced and some have gone ahead in the work of rehabilitation and re-education of young offenders Separate child welfare boards have been established to deal with the problem of delinquency and approved schools have also come into existence- Some states encourage voluntary organizations to lake custody of delinquent children. Provisions for the care of neglected and destitute children are also made so that they do not become delinquents. Some states have started foster care programmes which envisage the court giving custody of **a** child lo **a** responsible person. There in. however, the need to arouse public consciousness of this problem. No government can solve a social problem without public cooperation. Therefore, there is a need for a change in our attitude towards delinquent* so that they may he helped in their readjustment and rehabilitation.

**Lesson 14**

## CLASSROOM ASSESSMENT

### Getting the Most from Traditional Assessment Approaches

***Planning for Testing***

Both instruction and are most effective when they arc well organized and planned. When you have a gin plan, you are in a better position to judge the tests provided in teachers' manuals and text* and to write tests yourself.

When to Test? frank Dempster 11991) examined the research on reviews and task and reached these useful conclusions for teachers:

Frequent-testing encourages the retention till information and appears to be movie feticide than a comparable amount of time spent reviewing and studying the material.

Tests are especially effective in promoting learning if you give students a test on the material soon alter they learn it then retest on the material late. The retesting should be spaced tarter and farther apart.

The use of cumulative questions/in tests is a key to effective learning. Cumulative questions also students to apply information learned in previous units to solve a new problem.

Unfortunately, the curriculum in many schools is so full that there is little time for frequent tests and reviews. that students will learn more if we "teach them less," that is, if the curriculum includes lower topics, but explores those topics in greater depth and allows more time for review, practice, testing, and feed back (Dempster. 199».

Judging Textbook Tests. Most elementary and secondary school texts today CORK complete with supplemental materials such as teaching manuals, handout musters, and ready-made tests. Using these tests can save time, but is this good teaching practice? The answer depends on your objectives for your students, the way you taught the material, and the quality of the tests provided (Airasian, ). If the textbook test matches your testing plan and the instruction you actually provided for your ,to dents, then it may be the right lest to use. Table 15.1 gives key points to consider in evaluating textbook test*.

What (there ate no tests available for the material you want to closer or the tests provided in your teachers" manuals are not appropriate for your students? Then it's lime for you or create your own tests. We will consider the two major kinds of traditional tests—objective and essay.

### Objective Testing

Multiple-choice questions, matching exercises, true/false statements, and short answer 01 till in items are all types of objective testing. The word "objective" in relation to testing means' not open to many interpretations,"01 "not subjective."! of these types of items is relatively straightforward] compared to the scoring of essay questions because the answers are mine clear cut than essay answers.

The guiding principle for deciding which item formal Is best is to use the one that gives you the most direct measure of the learning outcome you intents for your students (Gronlund, 2003). In other words, if you want to see how well students can write a letter, have them write a letter, don't ask multiple-choice questions about letters. But if many different item formats will work equally well, then use multiple-choice questions because they are easier to score fairly and can cover many topics. Switch to other formats if wilting good multiple-choice items for the material not possible or appropriate. For

example, it related concepts such as terms and definitions need to be linked, then a matching item is a better format than multiple-choice. If it is- difficult to come up with several wrong answers for a multiple choice item, try a true/false question instead. Allei natively, ask the student to supply a short answer completes a statement (fill in the blank). Variety in objective testing can lower students' anxiety because the entire grade does not depend on one type of question that a particular student may find difficult. Here we look closely at the multiple-choice format because it is the most versatile—and the most dill cult to use well.

Using Multiple-Choice Tests. People often assume that multiple choice items are appropriate only for asking tactual questions. Bat multiple-choice items can test higher level objectives as well, although writing higher level items is difficult- A multiple-choice item can assess more than retail and recognition if it requires the student to deal with new material by applying or concept or principle being tested (Gronlund, 2003; Popham, 2002). For example, the following multiple-choice item is designed to assess students' ability to recognize unstated assumptions, one of the skills involved in analyzing an idea:

An educational psychology professor states, "A z score of 11 on a test is equivalent to a percentile rank of approximately 84." Which of the following assumptions is the professor making?

The scores on the test range from ti to 100.

The Hlamlard deviation of the test scores is equal to .1.4.

The distribution of .scores on the is normal, (correct answer)

The is valid and reliable.

Writing Multiple-Choice Questions. All test items require skillful construction, but good multiple-choice items are a real challenge. Some students jokingly refer to multiple choice tests as "multiple-guess" test*—a sign that these tests are often poorly designed. Your goal in writing test items is to design them so that they measure student achievement, not lest taking and guessing skills.

The stem of a multiple-choice item is the part that asks the question or pusses the problem. The choices that follow are called alternatives. The wrong answers are called distracters hiatus their purpose is to distract students who have only a partial understanding of the material. If there were no good distracters, students with only a vague understanding would haw no difficulty in finding the light answer.

The Guidelines, adapted from Gronlund (2003), Popham (2002), and Smith, Smith. & Dt Lisi (2001) should make writing multiple choice? And other objective test questions easier.

**Essay Testing**

The best way to measure some learning objectives is to require students to create an on own. An essay question is appropriate in lilies cases. The most of essay testing is judging the quality of the answers, writing good, clear questions is not particularly easy, either. We will look at writing, administering, and grading essay tests, with most of the specific suggestions Gronlund (2003), We will also consider factors that can bias the scoring of essay questions and ways you can lies problems.

Constructing Essay Tests, because answering takes lime, true essay tests cover less material than objective tests. Thus, for efficiency, essay tests should be limited to the assessment of more complex learning outcomes.

An essay question should give students a clear and task and should indicate die elements, to be covered in the answer. (Are the questions above clear -rise?) The students should know how extensive their answer should he and about how much time they should spend on each question. Question 2 above gives a page limit, but would you know what is being asked?

Students should be given ample time for answering. If more than one essay is being completed in (he same class period* you may wan: to suggest time limits for each. Remember, however, that time pressure increases anxiety and may prevent accurate assessment of some students. Whatever your approach, do not try to make up for the limited amount of material an essay test can by including a large number of essay questions, It would be better to plan on more frequent testing than to in more than two or three essay questions in a single class period. Combining an essay question with a number of objective items is one way to avoid the problem of limited sampling of course material (Gronlund, 2003).

Evaluating Essays: Dangers. In 1912. Starch and Elliot began a classic series that shocked educators into critical consideration of subjectively in testing, 'These researchers wanted to find out the extent to which teachers were influenced by personal values, standards, and expectations in scoring essay tests. For their initial study, I hey sent copies of English examination papers written by two high school students to English teachers in 200 high schools. Each teacher was asked to score the papers according to or her school's standards. A percentage scale was to be used, with? b% as a passing grade,

The results? Neatness, spelling, punctuation, and communicative effectiveness were all valued to diligent degrees by different teachers. The scores on one of the papers ranged from 64% to 98%, with a mean of HK.2. The average score for the other paper was 80.2, with a range between 50% and 97%. The following year, March and (1913a, 1913b) published similar findings in a study involving history and geometry papers. The most important result of these studies was the discovery that the problem of subjectivity m grading was not confined to any particular subject area. The main were (he individual standards of the grader and lire unreliability of scoring procedures.

Evaluating Essays: Methods. Gronlund (2003) offers several strategies for grading essays that avoid problems of subjectivity and inaccuracy. When possible, a good first Step is to construe! a model answer. Even when students are en some choice in testing, teacher’s cm decide what type of information should be in a model answer. Here is an example from TenUrink 12003. p. 26).

Question: Defend o/refute lie following statement: Civil wars are necessary t«> the ns ill of a developing country. Cite reasons for your argument, for example from history to help substantiate your claim.

Model tmtwtr. All answers, regardless of position taken, should UK hide (I) a clear statement of the position, '2) at least live reasons. (3) at least tour example from history that clearly substantiate the discussions given.

Once you have a model answer, you can assign point* to various pails. You might also give points for the organization of the answer and the internal consistency. You can then assign grades such as 1 to 5, B. C. L>, and sort the papers into piles by grade. As a final

step, skim the papers in pile to see they are coin in quality. These techniques will help ensure fairness accuracy in grading.

When grading essay tests with several questions, it makes sense to grade OU responses to one question before moving on to the next. This helps prevent the quality of a student's answer to one question from influencing your reaction the student i oilier answers. Alter you finish reading and scoring (lie first question, shuffle the papers so that no students end up having all their questions graded first, last, or in the middle.

You may achieve greater objectivity you ask students to put (licit names on in back of lie paper, so that grading is anonymous. A final check on your faints M -i grader is to have another teacher who is equally familiar with your goals and subject matter grade your tests without knowing what grades you ha*v assigned.'! his can give you valuable insights into areas of bias in your girding practices.

Now that we haw examined K»tli objective and essay testing, we can compare examples of the different approaches. Table 15.2 presents a summary of the advantages and disadvantages of each.

**Advantages and Disadvantages of Different Kinds of Test Items**

No kind of item is perfect. A mil of kinds may be the best approach.

| **Advantages** | **Disadvantages** |
|---|---|
| many hen in u short time easy to Score, Excellent formal for math. 'lots | Difficult to measure complex learning. Often ambiguous'. |
| Cut test complex learning (an assess thinking process | To score objectively. a great deal of testing Subjective. |
| Tests the most facts m shortest time, has to score Five. | To measure complex learning. Difficult lo Reliable items Subject lo guessing. |
| for testing associations and Of facts. Although terse, can test compel learning (especially concepts) Objective | to write effective items Subject process of Elimination. |
| Can assess learning ill levels of complexity. t an be highly fairly large MM in Easy to score. | Somewhat subject to guessing. |

**Authentic Classroom Assessment**

Authentic assessments ask students to apply skills and abilities as they would in real tiff. For example. They might use fractions or reduce recipes. Grant Wiggins made this argument over a decade ago:

If tests determine what teacher* actually teach aim what .indents will study for and they do- then the road to reform a straight but steep one: test those capabilities and habits we think essential, and (est (hem in context Make, replicate, within reason, the challenge-, at the head of each academic discipline. Let them be authentic. Wiggins goes on lo say that if our instructional goals for students include the abilities 10 write, speak, listen, create,

think critically, do research, solve problems, or apply knowledge, then our tests should ask students to write, speak, listen, create, think, research, solve, mid apply. How can this happen?

Many educators suggest we look to and sports for analogies to solve this problem. If we think of the "lest" as being the recital, exhibition, game, mock court trial, or other performance, then teaching to the test is just line AH lies, artists, and musicians gladly "teach" to these "tests' because performing well on these tests is the whole point of instruction. Authentic assessment asks students, HI perform. The performances may be thinking performances, physical performance-*, creative parlor malice's, or other forms,

It may seem odd to talk of thinking as a performance, but they an- many Ids. Serious thinking is risky, became real-life problems lire run well defined Often the outcomes of our thinking are public— others evaluate our ideas, lake a dance audio Ironing for a Hroamvav show, we must cope with the consequences, of being evaluated, lake a sculptor looking at a lump of* clay, a student lacing a difficult problem must experiment, observe, redo, imagine and solutions, apply both basic skills and inventive technique*, make interpretations, decide how to communicate results to die intended audited, and often accept criticism and improve the solution (i-isiier, IW9; Hciman, 1997). Tabic I.V5 on page 356 lists some characteristics of authentic tests.

***Performance in Context: Portfolios and Exhibitions***

The concern with authentic assessment has led to the development of social approaches based on the goal of Instead of circling answers nonfactual nonexistent situation., students are reined to solve real problems. Facts are used where they apply for example; the student uses grammar to write a persuasive to a software company requiring donations for the class computer center. The following example of a test of performance is taken from the Connecticut Gore Learning:

Many local supermarkets claim to have the lowest prices, Bui what docs this really means? it mean that item in their sting is prized lower, or just some of them? 1 low can you re-ally tell which will save process portfolios or "best work" portfolios. The distinction is similar to the difference between formative and summative evaluation. Process portfolios document show progress. Best works portfolios showcase final accomplishments (lohnson & Johnson. 20021. Table IM shows some examples for both individuals and groups.

**Exhibition!**. An exhibition is a performance rest that has two additional features. First, it is public, in students preparing exhibitions must take the audience info account; communication and understanding are essential. Second, an exhibition often requires main hours of piepaialion, because it is the culminating experience of a whole program of study. Thomas Guskcy anil lane Bailey 120011 suggest that exhibits help students understand the qualities of good

work and qualities m than own productions and performances. Students also benefit when they select examples of their work to exhibit and their reasons for the selections. Being able to judge quality can encourage student motivation by .wiring clear goals.

Diversity and Equity in Performance Assessment. Equity is an issue in all as and no less so with performances and portfolios. With a public performance, there could be bias effects based on a student's appearance and speech or the student's access to audio, video, or graphic resources. Performance assessments have the same potential as other tests lo

discriminate unfairly against students who are tint wealth* or who are culturally different (McDonald). And the extensive group work, peer editing, and out-of-class line devoted to portfolios means that some students may have access to more extensive- networks of support and outright. Many students in your classes will have families with sophisticated com graphics and desktop publishing capabilities. Others may have little support home these differences can be sources of bias and inequity.

**Effects of Grades and Grading on Students**

W**hen** we think of grades we **often** think of competition. Highly competitive classes may he particularly hard anxious students who lack self-confidence and students prepared**.** So, although high competitions do tend to be gem rally related to guess academic learning it is clear that a balance must be struck between high standards and a reasonable chance to succeed.

**Effects o f Failure**

It sound as though low grades and failure should avoided in school. situation s not (hat simple. After reviewing many yam of on the effects of failure from.

For example, one .study required subjects to complete three sets of problems. On the Ant set, the experimenter* arranged for subjects to experience either 0%, S0%,or 100% .success. On the second set, it was arranged for .subjects tail completely On the third el of problems the experimental merely recorded how well the subjects formed. Those who had succeeded only 50% of the lime before the failure experience performed the best. Il appeals that a history of complete failure or **100%** sue may *yc* bad preparation for learning to cope with failure—must all leant. Some level of failure may be helpful for most students, especially if teachers help the student see connect urns between hard work and improvement. Efforts to protect students from failure and guarantee success may be counterproductive. Cliltoid (1990) gives this advice to leaches:

It is time for educators lo easy success with challenge. We must encourage students lo reach beyond their intellectual grasp and allow them the privilege of learning from mistakes. There he a tolerance for making in every classroom, and gradual success lather than continual *success* must become the yardstick by which learning *is* judged.

The more able your students the more challenging and important it will be to help them lean to.

So far, we have been talking about the effects of lulling a lest perhaps a course. Hut what about the elect of failing an that is, of being/'held hack"!' Al- 20% of seniors has repealed at one grade since kindergarten, usually tin the earlier grades (Kelly, 1999). Some researcher, believe that being held backiniures students self esteem and increases I he chances that they will dropout of school iGris-sorn & Smith, 1989? Ituderick, 1994). In their view, students generally do better academically when promoted, I-or example, in a longitudinal study of 29 retained and low-achieving but promoted students, Shane immersion 1999) found that the retained students had educational and employment outcomes than the pro mooted .students years later. The retained students dropped out more children, had lower paying jobs, and received lwei competence rulings from employers. In addition, the low-achieving hull promoted students were comparable lo a control group in all employment outcomes at age 20.

Other researchers have loud some advantage, for more emotionally immature children of average or above average ability who are retained in 3id grade (Kelly, 1999; Pierson& Cornell. 1992). but the advantage may not last. In one study that followed many students' lot several) cars, children who could have been retained, but who were promoted, did about as well as similar children who were held back, and sometimes better iKeynolds. 1992).

No matter what, students who are having I ruble should get help, whether they are promoted or retained covering the same material again m die same way won't solve the students' academic or social problems. As Oakes i 1999) has said, "No sensible person advocates social promotion as il is currently framed—simply passing incompetent students on to the next grade" (p. 81, The .best approach may be to promote the students along with their peers, but lo give special remediation during the summei or the next year (Manlzieupoulos & Morrison, 199.'.; Shepard & Smith, 1989). An even heller approach would be to prevent the problems before they occur by providing extra resources such as tutoring, as happens in Rattling Recovery program or Slavin's Smu-njoi AlU McCoy & Reynolds 1999).

***Effects o f Feedback***

The results of several studies (feedback fill well with the notion of "successful" or constructive failure. These studies have concluded that more helpful to tell Students why they are wrong so they can learn more appropriate strategies (Bangcit-Drowns, Kulik, Kulik. & Morgan. 1991). Students often need help figuring out why their answers reel-Without feedback, they are likely to make the same mistakes again. Yet this type of feedback is rarely given. In one study, only about 8% of the teachers noticed a consistent type of error in a student's arithmetic computation and the student (Bloom & Bourdon, 1980)

What are the identifying characteristics of effective feedback? With older students I late elementary through high school), written comments are most helpful when they are personalized and when they provide constructive criticism. This means the teacher .should make specific comments on errors or faulty Strategies, but balance this criticism with suggestions about how lo improve, as well as comments on the positive aspects work (Buller ft: Nisan, I9H6; (iuskev & Bailey, 20011. Working With 6th grade teachers, Elawar and Corno (1985) found that feedback was dramatically improved when the teachers used these lour questions as a guide: "What is the key et rot? What is the probable reason the student made this error? How can I guide the student to avoid the error in the future? What did the student do well that could be noted?" (p. 166). Here are some examples of leathers' written comments that proved helpful (Elawar & Corno, \w\ P. 164):

Comments like these should help student's correct errors and recognize good work, progress, and increasing skill.

**Grades and Motivation**

"If you find yourself relying on counting assessment* toward grades « a primary means of motivating student lo work in the class it is time to do a thorough reevaluation of what is happening in your classroom , , , there are more serious problem* than those involving assessment" (Smith, Smith, 8c De I isi, 2001, p. 27). Assessment should motivate students to learn not just to work for a grade.

there really a difference between working for a grade and working In learn? I he answers depend in part on how a grade is determined. As a teacher, you can use guides lo the kind of learning you intend students to achieve in your course. If you test only at I simple but detailed level of knowledge, you may force students to choose between complex learning and a good grade. Bui when a grade reflects meaningful learning, working for a grade and working to learn become the same thing. Finally, while high grades may have some value as rewards or incentives for meaningful in learning, Low grades generally do not encourage greater efforts. Students receiving low grades are more likely to withdraw, blame others, decide that the "dumb" or feel responsible for the low grade but helpless lo make improvement* Rather than give a tailing grade, you might consider the work .incomplete and

give students support in revising or improving. Maintain high standards and give student* a chance to reach (hem (Guskey, 1994; Guskey & Bailey, 2001).

Another effect on motivation occurs in high schools in the race for valedictorian. Sometimes student* and parents find clever ways to move ahead of the competition— but the Mralegie have little to do with learning. As Tom fane Railey note, when a win by a 1/1,000 of decimal point, how meaningful is the behind the difference? Some high schools now name multiple vale—a many as meet the highest standards of the school—because they believe that the educators.

**Lesson 15**

## PSYCHOLOGY O F ADJUSTMENT

**Meaning and Definitions**

The dictionary meaning of the word 'adjustment' is, to make suitable, adapt, arrange, modify, harmonize or make correspondent. Thus, when we make an adjustment between two thing*, we adapt or modify one or both of them to cui respond to each other In some situations, one of the factors may not be changeable and so die one which is. has to be modified in some way to suit the other the extension of a ladder by u suitable length to reach an upper story window is a good example of such an adjustment. Wearing of clothes according to the requirements of the seasons is another such example as ordinarily, it beyond our capacity to change the season* according to our clothes Modem technology has, of course, made it possible In adjust the temperature inside dwelling houses and workplaces lo harmonize with our needs.

There has been a continuous between die needs of the individual and the external forces since time immemorial. According to Darwin's (1859) theory of evolution, those species which adapted successfully to the demands of living, survived and multiplied while others who did not died out. Therefore, the adaptation or changing of or one's surroundings according to the demands of the external environment became the basic need for our survival It is as true today with all of us as it was with the Darwin's primitive species. Those of us who can adapt or adjust to the needs of changing conditions can live happily and successfully, while others cither vanish, lead miserable lives or prove a nuisance to society. However, the concept of adjustment is not so simple us adaptation. Psychologists and scholars differ considerably in interpreting its meaning and nature as can be seen from the following definitions;

***James Drcver (1952):***

Adjustment means the modification u> compensate for of inert special conditions *Webster.*

Adjustment is the establishment of a satisfactory relationship a representing harmony, conformance, adaptation or the like.

***Carter V Good* (/959):**

Adjustment is the process of finding and adopting modes of behavior suitable to the environment or The change in the environment.

*Warren (1934):*

Adjustment relates 𝕀𝕀 any operation an organism 𝕀𝕀 organ becomes mote favorably related lo (he environment m lo the entire outrun. environmental and internal

*Shaffer (1961):*

Adjustment the process by which a living organism maintains a balance between its need) and the circumstances that influence the satisfaction of these need.

*Gates ami Jtrxild (1948):*

Adjustment is a continual process in which a poison vanes his behavior lo produce u harmonious relationship between himself and his environment.

*Vunhalier {1970):*

***We*** think of adjustment as psychological survival in much the same way as the biologist DIM the adaptation lo describe physiological survival.

*Crow and Crow (1956):*

An individual wholesome or to the extent that he has established relationship between himself and the conditions, situation* and persons who compose his physical and social environment

Let us try to analyze these definitions for understanding the meaning and nature of the term adjustment.

In the first definition. James Drever takes adjustment to he the ways and means to help the individual to meet the demands of changed conditions by adopting or modifying his previous ways of doing or facing things. The other three definitions also agree with this opinion that one is required to change one's mode of behavior to suit the changed situations that a satisfactory and harmonious relationship

can be maintained keeping in view the individual and his needs on the one hand, and the environment and its influence on the individual, on the other In doing so as Good's definition .slates, the individual can either change himself according to the needs of the environment or change In-environment Id suit his own needs.

Shaffer's definition underlines one's needs and their satisfaction. Human needs are vital, indispensable and urgently requisite. One feels adjusted to the extent that one's needs are grin lied or are in the process of being gratified. The individual tries to bring about changes in his circumstances in order to overcome the difficulties in the fulfillment of his needs. Sometimes, he reduces his needs and **ms** a result he may feel satisfied within the limits of his environment. He thus tries to maintain a balance between lies needs and his capacity of realizing these needs and as long as this balance ix maintained, he remains adjusted. As soon as this balance is disturbed, he drifts towards maladjustment.

Gates and as also Crow and Crow define adjustment as (he maintenance of u harmonious relationship between man and his environment. An individual needs to change or modify himself in some way or the other to fit into of accommodate himself with his environment. As the concisions in the environment are changing all the lime, adjustment is also a continuous process 1^ instance, if a girl from the city mamas into a rural family and has to live in a village, she would have to change her behavior, her habits and her attitude in order lo accommodate herself (o die changed environment.

Vonhaller's definition takes the clue from Darwin's theory of evolution. Darwin maintained that only those organisms most fitted to adapt to changing circumstances survive. Therefore, the individuals who are able 10 adjust themselves to changed situations in their environment can live a harmonious and happy late. Adjust memo as a psychological term may thus be said to be another name Air the term 'adaptation' used in the biological world. Adjustment, m all its meanings implies a satisfactory adaptation to the demands of day-to-day life. From the foregoing discussion it may be concluded that adjustment is a process that helps a person lo lead a happy and contented life while maintaining a balance between his needs and his capacity to fulfill them. It enables him to change his way of life according to the demands of the situation and gives him the strength and ability to bring about the necessary changes in the conditions of his environment.

In addition to his own basic needs, an individual is also subject to certain demands of society. If he thinks only in terms of satisfying his own needs without thought of the norms, ethics and cultural traditions of society, he will not be adjusted to his environment. Adjustment does not cater only to one's own demands but also to the demands of society. It may, therefore, be slated that in its comprehensive connotation, *adjustment is a condition or state in which the individual's behavior conforms to the demands of the culture or society it? Which he belongs and he feels that his own needs have been, or will he fulfilled.*

Adjustment involves the gratification of a person's needs as governed by the demands of various environmental situations. This is not, however, a one-way process: on individual maintains the balance between himself and his surroundings either by modifying his own behavior or by modifying the environment. In this context, as Arkoff (1908) states:

Adjustment is the interaction between a person and his environment. How one adjusts in a particular situation depends upon one's personal characteristics as the circumstances of the situation. In other words, both personal and environmental factors work side by side in adjustment. An individual is adjusted if he is adjusted to himself and to his environment

**Adjustment as Achievement or Process**

Adjustment can be interpreted as both, process and the outcome of that process in the form of some attainment or achievement. When a poor child studies under the street light because tie has no lighting arrangement at home he is said to be in a process of adjustment. What he attains in terms of success In his examination or the fulfillment of his ambition or pride in his achievement is nothing but die result of his adjustment to his self and his environment. Thus, adjustment as an achievement means how the effectiveness with which an individual can function in changed circumstances and is as such, related to his adequacy and regarded us .in achievement that is accomplished badly or well (I.azanis, 1976).

Adjustment as a process describes and explains the ways and means of an individual's adaptation to his self and his environment without reference lo the quality of such adjustment or its outcome in terms of success or failure. It only shows how individuals or a group or groups of people cope under changing circumstances and what factors influence this adjustment. Let us now consider some salient features of adjustment as an interaction between a person and his environment.

*Continuous process.* The process of adjustment continuous it starts at one's birth and goes on without stop till one's death. A person a well as his environment arc constantly changing as also are his needs in accordance with the demands of the changing external environment. Consequently, the process or terms of an individual's adjustment can be expected to change from situation to situation and according to Arkoff (1968), there is nothing like satisfactory or complete adjustment which can be achieved once and for all lime. It is s that is constantly achieved and received by us.

*Two-way procexn.* Adjustment is a two way process and involves not only the process of fitting oneself into available circumstances but also the process of changing the circumstances to fit one's needs. Emphasizing this two-way nature of the adjustment process. Robert W. White (1956) writes-

The concept i»f adjustment implies a constant interaction between die person and his environment, each making demands on the other Sometimes adjustment is accomplished when the poison yields and accepts conditions which are beyond his to change. Sometimes « » achieved when the environment yields to the person's constrictive activities. In most cases adjustment is a compromise between these two extremes and maladjustment is a failure to achieve a satisfactory compromise.

**Areas of Adjustment**

Adjustment in the case of an individual should consist of personal as well as environmental components. These two aspects of adjustment can be further subdivided into smaller aspects of personal and environ mental factors. Adjustment, although seeming to he a universal characteristic or quality may have different aspects and dimensions

Through the numerous efforts at measuring adjustment through inventories and other techniques, these aspects have been identified and various tests have been constructed to assess their dimensions. For example Bell (1958) has taken five areas or dimensions in his adjustment inventory namely, home, health, social emotional and occupational.

Arkoff (1968) in his book: *Adjustment and Menial Health* lies enumerated the family, school or college, vocation and marriage as the important areas of adjustment.

Recently, Joshi (1964) and Pandey in their research study covering school and college students, have given I I areas or dimensions of an individual's adjustment:

Health and physical development.
Finance, living conditions and employment.
Social and recreational activities.
Courtship, sex and marriage.
Social psychological ideations.
Personal psychological relations.
Moral and religious.
Home and family.
Inutile—vocational and educational.
10. Adjustment lo school and college work.
11 Curriculum and leaching.

In this way. adjustment of a person is based on the harmony between his personal characteristics and the demands of the environment of which he is a pan. Personal and environmental factors work side by side in bringing about this harmony.

**Measurement of Adjustment**

Measurement as an instrument of inquiry is now frequently used in behavioral sciences. At a general level of classification in behavioral science, the following five different types of means using techniques are used:

Testing techniques;
Projective techniques:
Inventory techniques.
Sociometric techniques; mid
Scaling techniques.
In the area of measurement of adjustment inventory techniques are the most popular because they have any advantages compared to other techniques. Testing techniques can only be used to assess the characteristics of individuals at the conscious and projective techniques only at the unconscious level. The adjustment behavior, the adaptation to changed circumstances involves both conscious as well as unconscious behavior. Sociometric techniques are used in the measurement of social relationships. They can provide clues to the level of social adjustment. Social adjustment is only one pail of an individual's total adjustment. The other aspects of his adjustment like physical, mental, emotional, social and occupational are not explored by the sociometric techniques and they cannot, therefore, be used for the accurate assessment of an individual's total adjustment.
In scaling techniques opinions are collected from some other person or persons about the adjustment pattern of a particular individual known to the respondents. Adjustment us a wide phenomenon carries so many things with it that one cannot judge the adjustment pattern of another individual from his overt behavior and the inner private world or reactions of an individual cannot be assessed by the use of scaling techniques.
*Some important inventories and measures of adjustment:*
L. Bell's adjustment inventory developed by Hugh M. Bell. *2.* Edward's personal preference schedule (F.PPS) published by Psychological Corporation. New York.
The Heston personal adjustment inventory developed by Joseph C. Heston.
The Mooncy ptoblem checklist.
Asthana's adjustment inventory developed by H.S Asthana.
Vyaktitva parakha prashnavah developed by M .-. I Suscna.
Sinha's adjustment inventory developed by A.K P. Sinha and R.P. Singh.
Joshi's adjustment inventory developed by M.C. Joshi and Jagdish Pandcy.
9. Adjustment inventory for older people devised by P.V. Kamamurti
10. Teacher adjustment inventory developed by S.K. Mungal.

**Characteristics of a Well-adjusted Person**
A well-adjusted person is supposed to possess the following characteristics:
*Awareness of his own strengths and limitations.* A well adjusted person knows his own strengths and weaknesses. He tries to make capital out of his assets in some areas by accepting his limitations in others.
*Respecting himself and others.* The dislike for one-self is a typical symptom of maladjustment An adjusted individual has respect for himself as well as for others.
*An adequate level of aspiration.* His level of aspiration is neither ton low nor too high in terms of his own strengths and abilities. He does not try to reach for the stars and also does not repent over selecting an easier course for his advancement.
*Satisfaction of basic needs.* His basic organic, emotional and social needs are fully satisfied or in the process of being satisfied. He does not suffer from emotional cravings and social isolation. He feels reasonably secure and maintains his self-esteem.
*Absence of a critical or fault-finding attitude.* He appreciates the goodness in objects, persons or activities He does not try to look fur weaknesses and faults. His observation is scientific rather than critical or punitive. He likes people, admires their good qualities, and wins their affection.
*Flexibility in behavior.* He is not rigid in his attitude or way of life. He can easily accommodate or adapt himself to changed circumstances by making necessary changes in his behavior
*The capacity to deal with adverse circumstances.* He is not easily overwhelmed by adverse circumstances and has the will and the courage to resist and fight odds. He has an inherent drive to master his environment, rather than to passively accept it.

*A realistic perception of the world.* He holds a realistic vision and is not given to flights of fancy. He always plans, thinks and acts pragmatically.
*A feeling of erne with ht\ surroundings.* A well-adjusted individual feels
satisfied with his surroundings. He fits in well ***in*** his home, family, neighborhood and other social surroundings. If a student, he likes his school, school-mates, teachers, and feels satisfied with his daily routine. When he enters a profession, he has a love for it and maintains his zeal and enthusiasm despite all odds.
10. *A balanced phiknophy of life.* A well-adjusted person has a philosophy which gives direction to his life while keeping in view the demands of changed situations and circumstances This philosophy is centered around the demands of hi* society, culture, and his own self so that ***he*** does not clash with his environment or with himself.

**Theories or Models of Adjustment**
Why do some people adjust to their environment and others do not? What arc the factors that make an individual adjusted or maladjusted? There are several theories and models describing the pattern of adjustment for answering such questions. Let us discuss some of the important models.
*The moral mitdel* This represents ***the*** oldest view-point about adjustment or maladjustment. According to this view, adjustment or maladjustment should be judged in terms of morality norms of expected behavior. Those ***who*** follow the norms are adjusted (virtuous or good people) and those who violate or do not follow these norms are maladjusted (sinners). Evil supernatural forces like demons, devils, etc. were blamed for making one indulge in behavior against ***the*** norms (committing sins) while the religious gods, goddess and other saintly great souls were responsible for making one a happy, healthy, prosperous and pious person (adjusted in the modern sense). However, as the medical and biological sciences advanced and scientific reasoning gained a firm footing in the nineteenth century, the moral model was replaced by the medico-mological model
*The medico-biological model* This model holds genetic, physiological and biochemical factors responsible for a person being adjusted or maladjusted to his self and his environment. Maladjustment, according to this model, m the result of disease in the ***tissues*** of the body, especially the brain. Such disease can be the result of heredity or damage acquired during the course of a person's life—by injury, infection, or hormonal disruption arising from ***stress,*** among other things. In the opinion of *l* azoi - (1976). the correction of adjustive failures or disorders requires correction of the tissue defect through physical therapies such as drugs, surgery and the like.
I his model is still extant and enjoys credibility for rooting out ***the*** causes of *adjustiv* failure in terms of genetic influences, biochemical defect hypotheses, and disease in the tissues of (he body. However, it ix not correct to assign physiological or organic causes to all maladapted and malfunctioning behavior, especially when there is no evidence of physiological malfunction Such a situation certainly calls for other explanations, viewpoints or models.
*3. The psychoanalytic model.* This model owes its origin to the theory of psychoanalysis propagated by Sigmund Freud (1938) and supported by psychologists like Adler. Jung and other neo Freudians.
(a) *Freud's views.* Freud's system of psychology arid psychoanalysis has been discussed in Chapter 5 of (his text. We will, therefore, confine the present discussion to only those factors which are relevant lo success or failure in adjustment.
(i) The human psyche ‖ mind consists of three layers, the conscious, the sub-conscious and unconscious. The unconscious holds the key to our behavior. It decides the individual's adjustment and maladjustment to his self and to his environment. It contains all the repressed wishes, desires, feelings, drives and motives many of which arc related to sex and aggression. One is adjusted or maladjusted to the degree, extent or the ways in which these are kept dormant or under control, (it) According lo Freud, man is a pleasure seeking animal by nature. He wants to seek pleasure and avoids pain or anything which is not in keeping with his pleasure loving nature The social restrictions imposed by the mores of society and his own moral standards dictated by his superego come in conflict with the undesignated and unbridled desires of his basic pleasure seeking nature. These

pleasure* are mostly sexual in nature. One remains adjusted lo the extent that these are satisfied. An individual drifts towards malfunctioning of behavior and maladjustment in case such satisfaction is threatened or denied. Freud postulated the imaginary concepts of 'id', 'ego' and 'superego' for the adjustive and non-adjustive behavior patterns and formulated the following conclusion:

A person's behavior remains normal and in harmony with his self and his environment to the extent that his ego is able to maintain the balance between the evil designs of his id and the moral ethical standard dictated by his superego. In case the ego is not enough lo exercise proper casual over one's id and superego, malfunction of behavior would result. Two different situations could then arise:

If the superego dominates then there is no acceptable outlet for expression of the repressed wishes, impulses and appetites of the id. Such a situation may give birth to neurotic tendencies in the individual.

If the id dominates, then the individual pursues his unbridled pleasure seeking impulses, without care for the social and moral norms. In such a situation the individual may be seen to be engaged in unlawful or immoral activities resulting in maladaptive, problem or delinquent behavior.

(iii) Freud also uses the concept of libido, i e., a flow of energy related to sex gratification. He equates it with a flowing river and maintains that:

- If its flow is outward causing sex gratification and pleasurable sensation from outside objects, the individual remains quite normal and adjusted to his self and the environment.

4. **The sociogenic or cultural model** According to this model, the society in general and culture in particular affects one's ways of behaving to such an extent that behavior tikes the shape of adaptive or non-adaptive behavior turning one into an adjusted or maladjusted personality. The society and culture lo which one belongs does not only influence or shape one's behavior also sets a standard for its adherents to behave in *the* way it desires. Individuals behaving in *the* manner that society desires are labeled as normal and adjusted individuals while deviation from social norms and violation of role expectancy is regarded as the sign of maladjustment and abnormality. Although, society or culture plays a significant role in shaping and influencing human behavior, yet it should not be regarded as *the* only factor in the adjustment process Moreover, the societies or cultures may themselves, radio than the be maladaptive and sometimes even destructive to the individual's adjustment like Nazi Germany. It is not proper, therefore, to depend solely on the cultural model for the labeling of one's behavior as adjusted or maladaptive.

5. *The sociopsychnhigicat or behavioristic model* the sociopsychological or behaviorist model in general emphasizes that Behavior is not inherited. Competencies requited for successful living are largely acquired or learned through social experience by the individual himself.

The environmental influences provided by the culture and social institutions arc important but ii is the interaction of one's psychological self with one's physical as well as social environment which plays the decisive role in determining adjustive success or failure.

Behavior, whether normal or abnormal is learned by obeying the same set of learning principles or laws. Generally, every type of behavior is learned or required as an after-effect of its consequences. The behavior once occurred, if reinforced, may be learned by the individual *as* normal As a result, one may learn to consider responses which ore labeled normal, as abnormal.

Not only *is* normal and abnormal behavior learned, the labeling of behavior as normal or abnormal *is* also learned. Whether or not an individual is considered abnormal or maladjusted for a particular type of behavior depends upon the observer of the behavior and also upon the social context of the behavior

(c) Maladaptive behavior may be treated by applying the principle of behavior modification, unlearning, reconditioning and correcting environmental situations responsible for its occurrence.

**Conclusion about the Modtdn**

All the models described above are true to certain extent (except the primitive moral model) for providing explanation for one's adjustive success *0* failure But none of them is complete or adequate in itself for providing satisfactory explanation Although medical or biological provides *a* sufficient

basis for understanding mental illness or maladaptive behavior resulting through organic causes, physical damage to the brain and genetic factors, yet it cannot be applied to the disorders due to psychological causes and societal factors. Adjustment must always be considered as a continuing product of one's interaction with the biological and social determinants lying in one's biological and genetic make-up and environ mental set-up. It is, therefore, innate as well as learned. For its analysis the analyst has to probe into not only how an individual is interacting with his environment at present hut also in the past and how he has resolved his conflicts und crises in the past. It is. therefore, feasible to take a synthetic view of the above models for explaining and understanding one's success or failure in adjustment. All the factors, biological as well as social, the past as well as the present expenences, innate as well an learned patterns of behavior, societal influence on the individual and vice-versa should be taken into consideration for understanding adjustment or maladjustment of the individual with his 'self or environment

**Methods of Adjustment**

In order to lead a healthy, happy and satisfying life one has TO learn the various ways of adjustment, i.e. coping with one's environment as effectively as possible. Also he has to safeguard his self against turning into a maladjusted and abnormal personality. How can it be done? What are the different ways of coping with one's environment? How does one handle and face the conflicts, anxieties, pressures and stresses of one's life? To seek answers to these questions the deception of possible modes, ways and methods used by the individual in his adjustment process is necessary.

The methods used for keeping and restoring harmony between the individual and his environment can be grouped into two categories, direct methods and indirect methods.

1. *Direct methods.* Direct methods are those methods which are employed by the individual intentionally at the conscious level. They ore rational and logical and help in getting permanent solution of die problem faced by the individual in a particular situation. These methods include the following-

*Increasing trials or improving efforts.* When one finds it difficult to solve a problem or faces obstacles in the path. 10 cope will) his environment he can attempt with a new zeal by increasing his efforts and improving his behavioral process

*Adopting compromising means.* For maintaining harmony between his self and the environment one may adopt the following compromising postures:

(i) He may altogether change his direction of efforts by changing the original goals, i.e. an aspirant for **AS** may direct his energies to become a probation officer in a nationalized bank, (h) He may seek partial substitution of goal like selection for the

provincial civil service in place of the I.A.S. (iii) He may satisfy himself by an apparent substitute for the real thing, e.g.. in the case of a child, by a uy car in place of a real car and in the case of a young boy desirous of getting named by a doll in his arms.

*Withdrawal and submissiveness.* One may learn to cope with one's environment by just accepting defeat and surrendering oneself the powerful forces of environment and circumstances.

*Making proper choices and decisions.* A person adapts himself to and seeks harmony with, his environment by making use of his intelligence for the propel choices and wise decisions particularly when faced with conflicting situations and stressful moments.

*2. Indirect method of achieving adjustment* indirect methods arc those methods by which a person tries lo seek temporary adjustment to protect him for the time being against a psychological danger. These are purely psychic or mental devices—ways of perceiving situations as he wants lo see them and imagining that things would happen according to his wishes. That is why these are culled defense or mental mechanisms employed in the process of one's adjustment lo one's self and the environment. A few important mental mechanisms ore:

*Repression.* Repression is a mechanism in which painful experiences, conflicts and unfulfilled desires ore pushed down into our unconscious. In this way one unconsciously Iris lo forget the things that might make him anxious or uncomfortable (tries lo get temporary relief from the tension or anxiety by believing that the tension producing situation does not exist.

*Regression:* Regression means going backward or returning lo the past In this process, an individual tends to regress to his early childhood or infantile responses in to save himself from mental conflicts and tensions. A man failing in his love affair resorts to regression when he exhibits his love for dolls. Similarly an elder child may regress and start behaving like an infant when a new sibling is born and he feels neglected

*Compensation.* This is a mechanism by which an individual tries to balance or cover up his deficiency in one field by exhibiting his strength in another field. For example, an gill who becomes a bookworm to secure a position in the class is making use of such mechanism in order lo alb act attention which she is unable to do who her looks.

*RuHonulixiiion* This is a defense mechanism in which a on justifies his otherwise unjustified behavior by giving socially acceptable reasons for it und thus attempts to defend himself by inventing plausible excuses to explain his conduct. A child makes use of rationalization when he tries to extend lame excuses for his failure, lie may blame the teacher *l*his poor health and thus try to disguise his own weakness deficiency.

*Projection.* Through projection one tries lo sec or attribute one's own inferior impulses und tails in other persons or objects An awkward person sees and criticizes awkwardness in others. Similarly, a student who has been caught in the examination for cheating may satisfy himself by saying that uplifts had also cheated. A person with tang unsatisfied sexual impulses may denounce others for their sexual aims or may try to think in terms of sex for every thing in the world around him. In this way one tries to overlook or defend one's shortcomings and inadequacies by emphasizing that others are worse than he is.