UNIT NO 4

PSYCHOLOGICAL FOUNDATIONS OF EDUCATION-II

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1. INTRODUCTION

The children in the classroom differ in their physical, social, economic and academic background. The teacher has to encounter these differences in their teaching strategies. Individual difference may be cognitive, sensory and non-sensory. Besides these differences children may face behaviour problems, communication disorders and emotional problems. The school is particularly important for these exceptional children who need very special kind of assistance to become a productive member of the society.

Teacher assesses these individual differences by:

- Screening
- Diagnosis, classification and placement
- Instructional planning
- Pupil evaluation
- Programme evaluation

Learning environment for exceptional children vary from least restrictive (regular classroom) to most restrictive environment (residential/institutional). If the individual difference from norm is high, then teaching strategy may require the development of Individualized Education Programme (IEP).

2. OBJECTIVES

After completion of this unit you will be able to:

- demonstrate the ability to provide learning environment according to specific individual differences
- explain the role of psychology in instructional strategy.

3. INDIVIDUAL DIFFERENCES AND LEARNING

We are all aware of how children of the same age vary physically. Some are tall and thin, others are short and chubby, with lots of variations in them.

Variation is found also in intelligence, emotional maturity and social development.

Individual differences can create a problem for classroom teacher. If a third grade lesson is designed for a student having intellectual development of 8 years. What is presented to a child having cognitive abilities of 12 years or 5 years? Lesson becomes too easy or too difficult. At the same time a child with 8 years cognitive abilities may create emotional problems.

Each student who comes into the classroom has a particular background of learned experiences, special capabilities, and expectancies about school so each student reacts differently to teaching strategies and teachers personal style. Every student is unique individual with a particular set of reaction patterns. These are the variations in any given characteristics which we observe are called individual differences.

What is implication of these range of individual differences for learning? Many teachers use the normal curve of distribution to determine their instructional objectives and experiences for student learning. It means that most of the students will fall into the average range of achievements. Bloom (1956) describes a master learning approach in which learner is expected to meet a set of learning objectives. After assessing entry behaviours teachers adjust their objectives accordingly and provide such learning experiences so that objectives can be achieved.

The cognitive differences of the individuals have been described as cognitive style that may be related to learning. Messick (1976) has defined cognitive styles are the characteristics way of organizing and processing information and experiences. Although cognitive styles are classified as personality traits, they also reflect consistent differences in cognitive functioning and this reflects both differences in ability and personality.

Our schools are not well organized to deal with such differences. Usually children start with first grade at about same time, move one grade per year, use the same text books, follow the same curriculum and follow the same standards. Teachers usually forget the individual differences, become intolerant to the students who lag behind or move ahead.

So when students in the same classroom are remarkably different, it is difficult for the teacher to help them reach their potential without some assistance.

The development and use of tests and measurement can determine various levels of development. For a specific case, it can be diagnosed why a particular student is not progressing satisfactorily. If tests are administered to a population, we can see the inter individual differences in a school system, a state, a nation. Differences may be in the following areas.

3.1 Academic Performance

In any academic level, there is range of academic performance. Without introducing other dimensions, teacher faces three different groups:

1) Those performing at grade level
2) Those performing below grade level, this group requires remediation
3) Those performing above the grade level and this group demands greater challenge

3.2 Academic Aptitude

Individual differences are not only apparent in academic performance but also in academic aptitude. The measure of this aptitude can provide information to teachers about student population and how many students are performing below their potential.

Historically intelligence tests are used for academic aptitude. These measure development of memory, association, reasoning, classification and mental operations which are very important to learning. Those who score high on intelligence test usually do well in school.

3.3 Intraindividual Differences

The differences in the abilities within the child provide us information we need for individualized programmes. These programmes adapt to the strengths and weaknesses of the individual child. Intra individual differences can show up in any area: intellectual, psychological, physical, or social. For example child may develop physically according to norm but may not be able to relate socially to pears. For teachers, it is just as important to know the child's unique pattern of abilities and disabilities as it is to know how the child compares with other students.

1) Is there any discrepancy in the development?
2) Is this discrepancy in achievement?

Now let us study some of the major classes of individual differences in relation to physical and mental development.

3.4 Gifted and Talented

This group of individual difference is traditionally referred to people with intellectual gifts. Each culture defines giftedness in its own way but this type of person is blend of individual ability and societal need or reaction. Sidney Marland (1972, p.10) defined these as:

"Gifted and talented children are those identified by professionally qualified persons who, by virtue of outstanding abilities, are capable of high performance. These are children who require differentiated educational programmes and services beyond those normally provided by the regular programme in order to realize their contribution to self and society. Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas:

1) General intellectual ability
2) Specific academic aptitude

3) Creative or productive thinking

4) Leadership ability

5) Visual and performing arts"

Lewis Termon, a professor of Psychology conducted a longitudinal study on characteristics of intellectually gifted students. His findings as reported by Kirk and Gallagher (1986, p.77) are:

Characteristics	Findings
Physical:	Above average in physique and health, mortality rate 80 percent that of average.
Interests:	Very interested in abstract subjects (literature, history, mathematics), broad range of interests.
Education:	Rates of college attendance eight times that of general population; achieved several grades beyond age level throughout school career.
Mental health:	Slightly lower rates formal adjustment and delinquency; prevalence of suicide somewhat lower.
Marriage-family:	Marriage rate average; divorce rate lower than average. The group's children obtained an average IQ score of 133.
Vocational Choice:	Men chose professions (medicine, law) eight times more frequently than did the general population.
Character tests:	Less prone to overstatement or cheating; appeared superior on tests of emotional stability.

There are many ways to provide learning environment to the gifted children. Most of these are designed to provide chances for these children get together for a some time.

There are seven methods to change the learning environment and these are given below:

1) Enrichment classroom
2) Consultant teacher
3) Resource room pull-out
4) Community mentor
5) Independent study
6) Special class
7) Special school

Student acceleration is a method used by teachers for providing better learning environment. In this process, students are allowed to pass through educational system as quickly as possible. Stanley (1979) proposes these styles:

- Early school admission
- Skipping grades
- Telescoping grades
- Advanced placement
- Early college admission

3.5   Mental Retardation

In contrast to our earlier discussion, there is class of children who have significantly subaverage general intellectual functioning. Most common definition of this class of individual differences is by American Association on Mental Deficiency (AAMD)

> "Mental retardation refers to significantly subaverage general intellectual functioning of existing concurrently with deficits in adaptive behaviour and manifested during the developmental period" (Grossman, 1983, p.1).

Students who score between-2 standard deviation and-3 standard deviations on intelligence scale are considered mildly mental retarded if they perform low social adaption also. If performance is below-3 standard deviation but who are capable of responding to test are said to be moderately retarded.

If we use I.Q. level then classification is as:

Mild I.Q. score of 50-55 to 70

Moderate I.Q score of 35-40 to 50-55

Severe and profound I.Q. Score below 35

The most distinguished ability of this group of children is their limited ability of cognition. The memory capabilities of children with mental retardation are deficient in comparison to their age rate. The deficiency is proportional to the mental retardation. Drew et-al (1986) concluded that retarded children are less able to grasp abstract concepts as proposed to concrete concepts when compared with children of normal intelligence. So deficiency in educational achievement is obvious. This deficiency is also due to general language deficiency which these students face.

Learning environment has been given special emphasis now-a-days. The major emphasis is on least restrictive environment and mainstreaming. There may be four types of environments for mentally retarded children:

1) Regular class
2) Resource room
3) Special class
4) Residential institution

But the question is, does the type of environment make a difference in the level of academic achievement, social adaptation, or cognitive development in mild and moderately retarded children? Unfortunately research answer is "does not make a striking difference in any dimension". The impact of mainstreaming or

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special class depends upon what type of disability or handicapping condition is involved. Usually children with behaviour disturbance problems seem to get benefit but children with mild mental retardation do less well in these settings.

3.6   Children with Visual Impairments

This term visually handicapped describes all degrees of visual impairment: from severe visual impairment to the total blindness. Major classification of visual impairment is:

Classification	Level of Vision	Level of disability
Low Vision	Severe	Performs visual tasks at a reduced level of speed, endurance and precision even with aids.
	Profound	Has difficulty with gross visual tasks; cannot perform most detailed visual task.
Blind	Near blind	Vision is unreliable – relies primarily on other senses.
	Blind	Totally without sight – relies exclusively on other senses.

(Source: Educating Exceptional Children by Samual A. Kirk and James J. Gallagher p. 167 Houthton Moughton Mifflin Company Boston).

Many psychologists have tried to investigate the intellectual development of the visually handicapped children. Studies indicate:

- Blind children retain specific experiences as normal children do but their experiences are less integrated.
- Blind score about the same on scales of arithmetic, information vocabulary and numerical ability but less on comprehension and similarities.
- Vocabulary of blind tends to be limited towards definition, sighted children use richer meanings.

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Theme of learning environment provision is to bring visually impaired children closer to normal by least restrictive environment. Spungin et-al (1981) proposed these type of services:

- Pre-school programme
- Teacher Consultant
- Itinerant Teacher
- Resource room
- Special Class
- Special School Programme

Mainstreaming remained part of educational programme in one or other form in this century. If we place blind children in the normal class the teacher of normal class will need assistance from consultant, resource room. This help will be required more when the number of visual impaired students increase or degree of impairment increases.

3.7   Children with Hearing Impairment

This group of children is somewhat heterogeneous. Several factors like degree of hearing loss, time at which hearing loss occurred and the type of loss are involved in this group of individual differences. Range of hearing loss comprises of mild, moderate, moderately severe and profound. Frisina as quoted by kirk and Gallagher (1986, p.212) describes the physical and educational dimensions of hearing impaired persons as.

"A deaf person is one whose hearing is disabled to an extent... that precludes the understanding of speech through ear alone, with or without the use of hearing aid.

A hard of hearing person is one whose hearing is disabled to an extent... that makes difficult, but does not preclude that understanding of speech through ear alone, with or without a hearing aid".

The second important factor is at what time hearing loss occurred i.e. pre-linguigual deafness, post linguigual deafness.

As deaf children usually score significantly below the grade level in school especially in upper grades, one has to think whether these children are cognitively deficient or not? It is a fact that learning problem stems from language difficulties not from cognitive disabilities:

For all children, cognition and language in dynamic interaction are probably most important factors in the learning process.

Teachers of deaf may differ on the methodology of early education, but all agree on importance of early education. The primary objectives of this may:

- To develop language and communication skills
- To give deaf children opportunities to share, play and take turns with other children
- To help the children use their residual hearing
- To develop readiness in basic language, reading, and arithmetic. (Kirk and Gallager, 1986, p.233)

At elementary and secondary level, ideally mainstreaming of learning environment is recommended but mainstreaming at secondary level is difficult as deaf lag behind their age mates in grades.

3.8   Children with Physical Handicaps

This group of physical difference is one of the smallest size but most heterogeneous group. Some physical handicaps are very obvious but some are subtle. Some are result of disease but some are caused by injury. This group is very diversified but can be grouped into two categories. Physical disabilities or health impairments Physical disability results from a condition like cerebral or a spinal cord injury that interferes with the childs' ability to use his or her body. Health impairments is comprised of physical conditions that affect a youngsters' educational performance, including limited strength. Vitality or alertness due to chronic or acute health problems such as heart condition, tuberculosis, and

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rheumatic fever, nephritis, asthma, sickle cell anaemia, haemophilia, epilepsy, lead poisoning, leukemia, or diabetes. Usually when a physical condition makes a student unable to participate in routine activities – the child is said to be physically handicapped. This does not mean that a child cannot learn but it places a special responsibility on teachers as they have to provide/manage the requisite learning environment so that objectives may be achieved.

Children with physical handicaps have many kinds of conditions. These children carry differences as well as similarities. Each usually affects one system of the body particular musculoskeletal system (muscles, bones, joints) or neurological system (brain, spinal cord, and nerves) or cardiopulmonary system (heart and lungs).

Physically handicapping conditions can stem from factors affecting pre-natal development, from later injury or from disease. The cause of condition and the age at which the condition develops influence the kind of problems that children with physical handicaps experiences.

As it is varied group, a variety of learning environment is used to meet the individual differences of the students. Individualization requires continuum of learning environment. This implies to provide opportunities of learning in regular classrooms, resource rooms, special classes, special schools, perhaps at home and hospital also according to their individual differences. As for curricular changes for children with physical handicaps who have normal intelligence the focus is on emotional adjustment, motor, health, and other selfcare skills. Students with only physical handicaps can achieve their potential in regular class because they share the same opportunities and experiences.

4.   INSTRUCTIONAL STRATEGIES AND PSYCHOLOGY

Classroom is a world where uncertainty prevails as a teacher is never sure which student will show up. School day may full of interruptions and unforeseen

events. To deal with these, teacher takes decisions and in this psychology helps the teacher especially in choosing the instructional strategy. These instructional functions are as:

1) Daily review and checking homework

2) Presentation

3) Guided practice

4) Correctives and feedback

5) Independent practice (seat work)

6) Weekly and monthly review

Educational psychology is social science which tries to explain teaching learning process. It tries to solve the problems involved in scientific basis. Teaching strategies are used to accomplish goals, i.e. desirable ends. Educational goals primarily deal with learning, memory and transfer of cognitive, social and moral behaviours. Due to increasing effectiveness, it is recommended that teacher should formulate objectives and goals within scientific problem solving framework and teaching strategies should be selected accordingly.

Effective instruction is more than effective lectures. Carroll (1983) describes teaching in terms of management of time, resources, and activities to ensure student learning. The model proposed by Carroll has five elements:

1) Aptitude: Students general abilities to learn

2) Ability to understand instruction: It is students' readiness to learn a particular lesson. This relates to abilities, but also to the knowledge of pre-requisite skills or information needed to understand the lesson.

3) Perseverance: The amount of time students is willing to spend on learning. Perseverance is mostly product of student's motivation.

4) Opportunity: The amount of time allowed for learning. Opportunity relates to the amount of time teachers spend on teaching a particular skill or concept.

5) Quality of Instruction: The effectiveness with which a lesson is actually delivered. Quality of instruction is high if students learn the material presented to them according to abilities and level of prior knowledge and skills.

Carroll discussed these elements in terms of (1) time actually spent on learning and (2) time needed to learn, and established following relationship.

Degree of Learning = f (time spent/Time needed).

Carroll mixes two kinds of elements: (1) those that are directly under the control of the teacher (2) those that are characteristics of student over which teacher has little control. Ability to understand instruction depends upon partly on the quality of the student and partly upon teacher. While opportunity (time) and quality of instruction are directly under the control of teacher or school.

To deliver effective lesson is the heart of teachers craft. Some aspects of lesson presentation are learned on jobs. But psychologists have studied the elements which contribute towards effective teaching. Effective teaching uses many methods and strategies. Teacher may use discovery, direct instruction, discussion, cooperative learning or other strategies.

There are times when the most effective and efficient way to teach students is direct instruction. In this teacher presents lesson information directly to students, structures class time in such a way that already clearly defined objectives may be reached efficiently. This strategy is useful when well defined subject matter is to be mastered. But not very appropriate when deep conceptual change is objective or exploration discovery are objectives of instruction. A brief detail of the parts of direct instruction are as follows:

1. State learning objectives and orient students and lesson
2. Review pre-requisite
3. Present new material
4. Conduct learning prob
5. Provide independent practice
6. Assess performance and provide feedback
7. Provide distributed practice and review

Another method of instruction is cooperative learning. This refers to instructional methods in which students work together in small groups. There are many different approaches in these methods. Most of the methods involve students in four member mixed ability groups, but some use dyads while some use varying size of group.

An effective co-operative learning method is called Student Teams-Achievement Divisions (STAD). According to Slavin (1994, p.288) STAD consists of a regular cycle of teaching, cooperative study in mixed ability groups and quizzes, with recognition or other rewards provided to teams whose members most exceed their own past records.

Regular cycle of STAD activities are as follows:

- Teach: Present the lesson
- Team study: student work on work sheets in their teams to master the material
- Test: students take individual quizzes
- Team recognition: Team scores are computed on the basis of team members improvement scores, and certificates, a class newsletter or a bulletin board recognizes high scoring team (Slavin, 1994, p.288)

Dozens of instructional models/strategies are available. Bruce Joyce and Marsha Weil (1986) has listed 20 models but there are other models/strategies also.

5. COGNITIVE TEACHING STRATEGIES AND THE TEACHER

By these teachers can prepare students to learn new material by reminding them of what they already know. Teachers can use questions, can help students to develop linkage and recall new information. Detail of this is as:

(a)   Making Learning Relevant/Activating Prior Knowledge

Effective teaching includes making learning relevant, prior knowledge elaborating, organizing of information and using question techniques. The eight instructional events as designed by Slavin (1994, p.266) are:

1. Activating motivation;
2. Directing attention
3. Stimulating recall
4. Providing learning guidance
5. Enhancing retention
6. Promoting transfer of learning
7. Eliciting performance
8. Providing feedback

These eight events are paired with Gagne' Learning Phases:

1. Motivation phase
2. Apprehending phase
3. Acquisition phase
4. Retention phase
5. Recall phase
6. Generalization phase

7. Performance phase

8. Feedback phase

(b)   Advance Organizers

It was developed by Ausubel. Advance organizers increase students'
understanding of certain kinds of material. Methods that activate can be counter
productive if prior knowledge is weak or lacking. Researches on advance
organizers has pointed out a principle that activating prior knowledge enhances
understanding and retention.

(c)   Analogies

Analogies like advance organizers can contribute in developing
understanding of the students. For example, a teacher can introduce a lesson on
human body disease fighting mechanism by telling on image of battle and
consider it is analogy for the body's' fight.

(d)   Elaborations

Elaboration is a process of thinking about material to be learned in a way
that connects the materials to information or ideas already in the learners' mind
(Reigeluth, 1983). The principle which elaborates the information is easier to
understand, remember and apply. So students can be asked to think of connections
between ideas or' relate new concepts to their lives. So elaboration is process of
thinking about new material in a way that helps to connect it with existing
knowledge.

6.   ACTIVITIES

1.   Design some acceleration and enrichment strategies for gifted children on
a specific topic.

2.   Mentally retarded children are usually low on intelligence. Think of five
measures to help mild mentally retarded children while teaching
arithmatic.

3.   Analyse the causes of low academic achievement from low achievers of your class. Sensory deprivation may be one cause of low achievement. How a partial visually impaired child can be assisted in learning in normal class.

4.   First step in Direct instruction is "to state learning objectives and orient students to lesson". Translate this statement in written form keeping in view any topic of your interest and discuss its implications with your colleagues.

5.   Enlist and discuss with your classfellows, the role of psychology in enhancing the level of learning.

7.   EXERCISE

Q. No. 1 Discuss critically any five definitions of intelligence

Q. No. 2 Gifted children fall above 2 standard deviations on I.Q. curve. How a teacher can accommodate their individual differences in a normal class?

Q. No. 3 Why mental retardation needs special adaption and support programme so that potential of these children may be optimized.

Q. No. 4 Enlist the pitfalls of discussion strategy. ?

Q. No. 5 Psychology helps teachers to make their teaching strategies effective. How?

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