

Psychology of Adult Learning

AEU 07102

**Institute of Adult Education
Adult and Continuing Education Studies Department
Bachelor of Adult and Continuing Education – Through ODL**

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About this module

This module has been produced by the Institute of Adult Education. All modules are structured in the same way, as outlined below.

[How this module is structured](#)

The module overview:

Dear learner, the module overview gives you a general introduction to the module. Information contained in the module overview will help you determine:

- If the module is suitable for you
- What you will need to know
- What you can expect from the module
- How much time you will need to invest to complete the module.

The overview also provides guidance on:

- Study skills
- Where to get help
- Unit assignments and assessments
- Activity icons
- Units

We strongly recommend that you read the overview *carefully* before starting your learning.

The module content:

The module is broken down into units. Each unit comprises:

- An introduction to the unit content
- Terminologies
- Core content of the unit with a variety of learning activities
- Unit reflection
- Unit assignments

Resources

For those interested in learning more on this subject, we provide you with a list of additional resources at the end of this module.



Your comments

Dear learner, after completing this module, we would appreciate it if you would take a few moments to give us your feedback on any aspect of this module. Your feedback might include comments on:

- Module content and structure
- Module reading materials and resources
- Unit assignments
- Module assessments
- Module duration
- Module support

Your constructive feedback will help us to improve and enhance this module

Module overview

Welcome to this module

Dear learner, as a prospective adult education facilitator or expert, you will learn the psychology of adult learning. The module will enable you to gain knowledge and understand the learning process. This module comprises three units. Unit one introduces you to the psychology of adult learning. The second unit covers the learning process. Unit three discusses human development and learning. I hope you will enjoy the module. Welcome!

General competence



After completing this module, you should be able to gain knowledge, analytical skills, and an understanding of theories of learning. You will also understand the dimensions and principles of human development and their effect on the learning process. This module will enable you to fulfil your duties and responsibilities as a learner and future adult education facilitator.

Study skills



Essentially, you will be taking control of your learning environment. As a result, you will need to consider performance issues related to time management, goal setting, stress management, etc. Perhaps you will also need to acquaint yourself with areas such as essay planning, coping with exams, and using the web as a learning resource.

Your most significant considerations will be time and space, i.e., the time you dedicate to your learning and the environment in which you engage in that learning.

Need help?



Dear learner, in the course of your study, you may need help with various issues such as the location of and how to get support from resource centres, clarification of various issues pertaining to your study materials, i.e., modules, and so on. If this happens, you are advised to ask for help from your centre coordinator or facilitator. You can also visit the website of the Institute of Adult Education, which is www.iae.ac.tz, or call +255 22 2150838 and ask for help.



Module assessment

After each unit, you will be required to attempt one-unit assignment. This is not meant for submission, rather, for reflection on what you have learned in the whole module. You will also do tests and assignments for submission as guided by your module facilitator. Finally, you will sit for semester examinations to accomplish your assessment.











Getting around this module

Margin icons

While working through this module, you will notice the frequent use of margin icons. These icons serve to "signpost" a particular piece of text, a new task, or a change in activity. They have been included to help you find your way around the module.

A complete icon set is shown below. We suggest that you familiarize yourself with them and their meaning before starting your study.

			
Reflection	Assessment	Assignment	Help
			
Learning Outcomes	Module Outcome	Help	Reflection



Unit 1

Introducing the Psychology of Adult Learning

Introduction

Dear learner, welcome to our first unit in this module, titled *Psychology of Adult Learning*. In this unit, you will be exposed to the importance and contribution of educational psychology to the theory and practice of adult education. Understanding psychology is important in an adult education setting because every adult education facilitator is confronted with the challenges of individual differences in the learning contexts. Probably you have heard about the term psychology on several occasions in your life, but you have not studied it in depth. If you do not study educational psychology, you will lack some valuable knowledge as a professional teacher. This section introduces to you the concept of psychology, its meaning, its branches, and its characteristics. Welcome.

Learning Outcomes

Dear learner, upon completion of this unit, you should be able to:

- Identify the nature of educational psychology;
- Describe the psychology of adult learning;
- Describe the main branches of psychology.
- Explain the functions of educational psychology, and
- Analyse the nature of adult learning.

The Nature of Educational Psychology

The section traces the development of several current educational practices from their historical origins, comments on the influence of past practices on the educational systems and practices of today, and discusses the role of scientific methods in educational psychology.

Meaning of psychology

Psychology can be defined from different perspectives, as indicated hereunder.





In terms of the study of the soul, the earliest attempts at defining psychology owe their origin to the most mysterious and philosophical concept, namely, that of the soul. Etymologically, the very word ‘psychology’ means the study of the soul, as it is derived from the two Greek words *psyche*, meaning soul, and *logos*, signifying a rational course of study.

In terms of the study of the mind, what is ‘soul’? How can it be studied? The inability to find clear answers to such questions led some ancient Greek philosophers to define psychology as the "study of the mind". Although the word ‘mind’ was less mysterious and vague than ‘soul’, yet it still faced the same questions, namely, what is mind? How can it be studied? Consequently, this definition was also challenged.

In terms of the study of consciousness, the failure to define the terms soul and mind persuaded the philosophers and psychologists to search for some other suitable definitions.

William James, in his book of *psychology* published in 1890, defined psychology as "the description and explanation of the state of consciousness as such". This definition was also challenged on the following grounds:

- It had a very narrow range on account of its not talking about the subconscious and unconscious activity of the mind.
- Being entirely subjective, the introspection method for the study of the conscious activities of the mind was an unscientific method.
- It could not include the study of the consciousness of animals.

In terms of the study of behaviour: From the nineteenth century on, with the advent of the modern era of scientific investigation and thought, psychology began to be defined in terms of the study of behaviour.

William McDougall, a British psychologist, was the first to define psychology as the science of behaviour. In his book *Physiological*, published in 1905, he wrote:

Psychology may be best and most comprehensively defined as the positive science of the conduct of living creatures.



Later, in 1908, in his book *Introduction to Social Psychology*, he added the word 'behaviour' to his definition, and, finally, in 1949, in his book *an Outline of Psychology*, he provided the following definition:

Psychology is a science that aims to give us a better understanding and control of the behaviour of the organism as a whole.

However, in later years, in 1993, J.B. Watson, the father of the behaviourist school, elaborated the concept of the term 'behaviour', including in it both human and animal behaviour, and defined psychology as "the science of behaviour": taking into account human as well as animal behaviour.

Taking cues from the earlier works, contemporary psychologists and various other writers have explained and defined psychology as the science of behaviour, using a somewhat different vocabulary.

- Munn (1967) defines psychology as a science, and the properly trained psychologist is a scientist or at least a practitioner who uses scientific methods and information resulting from scientific investigation.
- Similarly, according to Desiderato and Jackson (1976), psychology can be broadly defined as the investigation of human and animal behaviour and of the mental and physiological processes associated with the behaviour.

Although even at this final stage there seems to be no agreement over a universal definition of psychology, the definition may be generally viewed in the light of behaviour. It may be concluded that psychology **is a science of behaviour or a scientific study of behavioural activities and experiences**. The questions that remain unanswered at this stage are:

1. What do we actually mean by the term 'behaviour'?
2. What is the nature of psychology? Is it a science? If yes, then what kind of science is it?

Meaning of behaviour

The term 'behaviour' is taken in its totality, connoting a wide and comprehensive meaning. "Any manifestation of life is activity", notes Woodworth (1948), and behaviour is a collective name for these activities. Therefore, the term 'behaviour' includes all the



motor or conative activities like walking, swimming, dancing, etc.; cognitive activities, e.g., thinking, reasoning, imagining, etc.; and affective activities like feeling happy, sad, angry, etc.

This includes not only conscious behaviour and activities of the human mind but also the subconscious and unconscious, and, hence, covers not only the overt but also the covert behaviour involving all inner experiences and mental experiences of all living organisms.

We are concerned with behaviour in psychology because, from a scientific perspective, we cannot observe feelings or thoughts without the use of special equipment. However, we can observe and measure a person's behaviour. Behaviour cannot only be seen; it can also be recorded and studied. For example, it is possible to hear what a person says and record it. To remain scientific in our study of psychology, we concern ourselves mainly with the observable and measurable, which is behaviour. The role of the brain or mind can only be inferred on the basis of behaviour.

Psychology as a Science

It is an accepted reality that the nature of psychology is quite scientific. This fact has been properly recognized by eminent psychologists and thinkers, as may be inferred from the definitions of psychology in terms of the scientific study or science of behaviour as noted earlier on. Given the stress on psychology as a science, further discussion of the rationale for such a stance is appropriate. Psychology as a science is empirical, which means that its body of information is gathered by means of observation and experimentation. We observe and experiment with certain events to find out whether what we see is what holds true in reality. The observation and experiments carried out must be such that, given the instructions for the procedure, another psychologist will come up with similar results. To use a technical term, the results must be replicable, i.e., repeatable. Psychology does not depend on opinions, beliefs, or revelations.

Second, psychology as a science is systematic, which means that its body of information can be classified in an orderly, consistent, and meaningful fashion. Its information can be summarized economically on the basis of its major principles. This is done by means of general observation followed by laid-down principles. This process is called induction. We make general observations whenever we come into contact with objects or people. Then we proceed to make a careful analysis and formulate general



principles. The opposite of induction is known as deduction. In this type of thinking, we begin with a major principle and then examine an isolated item or object to determine whether it fits in the given description of an established principle. In summary, the systematic aspect of psychology involves induction and deduction, which, in simple terms, involve the paths from observations to principles (induction) and from principles to observations (deduction). One starts by making observations and then formulates principles. Having done so, one makes observations based on principles.

Third, psychology is identified as a science on the basis of measurement. For example, in physics, what is considered most scientific is determined by how precise and accurate its measurements are. In psychology, tests used for measuring human behaviour may be less accurate due to the complex nature of man, but the objective remains to be as accurate as possible.

Fourth, the terms used in psychology are clear and definable. For example, we may need to define terms such as ‘intelligence’, ‘memory’, ‘motivation’, ‘learning’, etc. in such a way that all psychologists can make sense of them. One way this can be done successfully is by defining terms operationally. This type of definition defines a given concept on the basis of measurable and observable behaviour.

Psychology of adults

Adult psychology is different from child psychology. The psychology of adults is based on their basic interests, urges, and capacities (Rogers, 1986). The psychology of adults is described hereunder:

- He or she is more mature—that is, more fully developed. But since none of us is ever fully developed, they are using what talents or aptitudes they have already developed. Of course, we shall all continue to grow and develop, but adults have already developed considerable skills and talents.
- He or she has developed a more balanced sense of perspective. A childish person is one who thinks they are either very important and thus need to be looked after carefully, or not at all important. They tend to act like a spoiled child or like a neglected child. An adult is more balanced. Once again, we are all still growing in our sense



of perspective, but at least we have some idea of where we stand and what we can and cannot do.

- He or she is responsible for their own actions. Sometimes they are responsible for others (children, older parents, relatives, handicapped adults, etc.), but at least they are responsible for themselves.

In dealing with adult groups, one must recognize the above characteristics. If an adult is motivated properly, he/she can put forth his maximum efforts to achieve the goal. Motivated behaviour is characterized by increased activity, a willingness to work, overcoming resistance to achieve the goal, and learning new instrumentalities to achieve the goal.

Branches of Psychology

There is hardly any sphere of human life where psychology is not being used in modern times to understand and improve the existing conditions. Important branches of psychology are:

- a) General psychology
- b) School psychology
- c) Educational psychology
- d) Developmental psychology
- e) Abnormal psychology
- f) Social psychology
- g) Genetic psychology
- h) Military psychology
- i) Industrial psychology
- j) Personality psychology
- k) Clinical psychology
- l) Guidance and counselling psychology

The meaning of each branch of psychology is provided in the following table:

	Subfield	Major concerns and activities
1	Clinical Psychology	It deals with diagnosing and treating emotional illnesses and disturbance, often in a hospital or clinical setting.
2	Guidance and Counselling Psychology	It is concerned with evaluating and counselling clients with behavioural, emotional, and other problems that are not serious enough to require hospital or



		clinical treatment. It is also concerned with assisting individuals making important decisions such as career choice, marriage, business decisions, among others.
3	Developmental Psychology	It deals with changes in human that define growth, maturation and learning from birth to death; and applying findings in education programmes.
4	Educational Psychology	It is concerned with researching, learning, thinking, remembering, instructing and related topics in education settings; developing and applying learning programmes for students.
5	Industrial and personnel Psychology	It is an application of psychology in business and industry by developing and administering tests to evaluate aptitudes, conducting workshops and programmes dealing with motivation, management, interpersonal relations and related areas.
6	Personality Psychology	It is concerned with identifying and describing important, stable characteristics of individuals and developing classification schemes for personality characteristics and methods for identifying and assessing these characteristics.
7	School Psychology	It deals with identification of individual aptitudes and skills among learners in a school setting; developing and administering tests pertinent to school related abilities.
8	Social Psychology	It is concerned with doing research and consulting on the relationship between individuals and groups.



However, in this module, you will be exposed only to educational psychology due to the fact that it deals with teaching and learning and all teachers are required to have knowledge of educational psychology. In the next section, you will cover its meaning, principal functions, and scope.

Functions of Educational Psychology

Dear learner, as a prospective teacher, you may see the study educational psychology as simply a routine one goes through to get an award you are striving for. You may even be wondering whether anything you will learn will be applicable in your teaching profession. In fact, in your mind you could be wondering whether there is any point in studying educational psychology. Your argument could pretty much be like this: for many centuries before the development of educational psychology, teachers taught and students learned. Teaching and learning are natural processes. Everyone teaches and everyone-or almost everyone-learns all the time.

Hightet (1957: vii), who was a famous teacher, had the following to say about teaching:

I believe that teaching is an art, not science. It seems to me very dangerous to apply the aims and methods of science to human beings as individuals...teaching involves emotions, which cannot be systematically appraised and employed, and human values, which are quite the grasp of science.... teaching is not like inducing a chemical reaction; it is much more like painting a picture or making a piece of music...You must realize that all cannot be done by formulas, or will spoil your work, your students and yourself.

You can argue that, if teaching is an art, who needs a course in educational psychology? Thorndike (1962:63) provided the following observation concerning the profession of teaching:

The efficiency of any profession depends on large measure upon the degree to which it becomes scientific. The profession of teaching will improve (i) proportion as its members direct their daily work by scientific spirit and methods, that is by honest, open-minded consideration of facts, by freedom from superstitions, fancies or unverified guesses and (ii) in proportion as the leaders in education direct their choices of methods by result of scientific investigation, rather than by general opinion.



From these two arguments, we can conclude that teaching is both an art and a science. Teaching calls for more than just the love of learners and a good knowledge of the material to be taught. It also requires a good mastery of techniques, imagination, versatility and an understanding of the diverse and complex characteristics of learners. The main objective of educational psychology is to foster the understanding of this process.

The study of educational psychology has influenced an educational process in many ways. At the centre of educational system is the teaching- and learning process, and at the centre of that process is the teacher regardless of what the educational setting may be. At the centre of the resources geared to help the teacher perform confidently is a body of knowledge known as educational psychology.

Therefore, educational psychology deals with how people learn, including topics such as student outcomes, the instructional process, individual differences in learning, gifted learners, and learning disabilities. It deals with such problems as: How do children or adult people acquire skills? When is learning more effective? What are the factors that influence the learning process? How do we measure the amount of learning? Why do we forget? Can memory be improved? Educational psychology helps the teacher to get answers to aforementioned questions. For example, it tells us that learning becomes more effective if factors like motivation and interest are taken into consideration by every teacher. The knowledge of psychology helps the teacher in modifying his/her approach to the teaching learning process.

Educational psychology has been defined in several ways including:

- (i) The application of psychological findings to the field of education
- (ii) An area of applied psychology whose primary concern is to apply psychological knowledge to problem solving in teaching and learning process
- (iii) The systematic study of the development of an individual within educational settings
- (iv) The study of the human mind and behaviour with relation to teaching and learning process.



Contribution of Educational Psychology

One simple question that may be asked, here, is why educational psychology should be taught to prospective teachers. To this end, we will examine the contribution of educational psychology in education field. Educational psychology helps teachers in the following ways:

To understand learner's developmental characteristics: Children pass through different stages of development, namely, infancy, childhood and adolescence. These developmental stages have their own characteristics and implication on learning process. If the prospective teacher knows characteristics of learners emerging at different stages of development, he/she can utilise these characteristics in designing and imparting instruction as well as moulding their behaviour according to the specified goals of education.

To understand the nature of classroom learning: knowledge of educational psychology provides the teacher with knowledge of learning in particular. It also helps in developing a comprehensive theory of classroom learning. We know from our daily experience in schools that some teachers are more successful in the classroom than others. Some teachers communicate very effectively in the class to students and some fail irrespective of their knowledge of the subject matter. What is the cause of this difference? Definitely, to be successful in the class, a teacher must know something other than the subject. It is the knowledge of science of behaviour which makes the difference. He or she must understand the students he/she teaches, their developmental characteristics, their abilities, and the influence and contribution of heredity and environment in the process of an individual's personality.

To understand individual differences: No two individuals are alike in the world. The teacher may face a class of 30 to 50 students with a great range of individual differences. The teacher with the help of knowledge of the kind of individual differences may adjust his or her teaching to the needs and the requirements of the class. He/she may also study the factors which are responsible for these individual differences. The knowledge may be helpful in creating a conducive environment in the school where the students can develop their inherent potentialities to the maximum.



To understand effective teaching methods: Everyday experience shows that lack of proper methods of teaching sometimes results in failure of communication in the classroom. Educational psychology gives us the knowledge of appropriate methods of teaching. It helps in developing new strategies of teaching. Valid psychological principles not only suggest new techniques of teaching-learning but, also, eliminate many traditional practices which have become obsolete in the present context. Classroom teaching is not dependent on any one theory. It is related and uses several theories of teaching-learning. The teacher must be acquainted with the knowledge of various theories in order to organise his classroom teaching. Educational psychology provides us with the knowledge of different approaches evolved to tackle the problems of teaching-learning at different age levels.

Curriculum construction: psychological principles are also used in formulating curriculum for different stages. Needs of the students; their developmental characteristics; learning patterns; and needs of the society, need to be incorporated in the curriculum. The curriculum in recent years includes the needs of the individual and society so that maximum transfer may occur from school to social situations.

Measurement of learning outcomes: Psychological tools help the teacher to assess the students' learning outcomes. He can also evaluate his teaching methods and in the light of the performance of his students can modify his teaching strategies.

Scope of Educational Psychology

By looking on the above psychology functions, you will learn that Educational Psychology deals the following major elements:

- a) The learner
- b) The learning processes
- c) The learning situation
- d) The teaching situation
- e) Evaluation of learning performance
- f) The teacher

The interrelationships between these elements that make up the scope of educational psychology are presented in Figure 1.

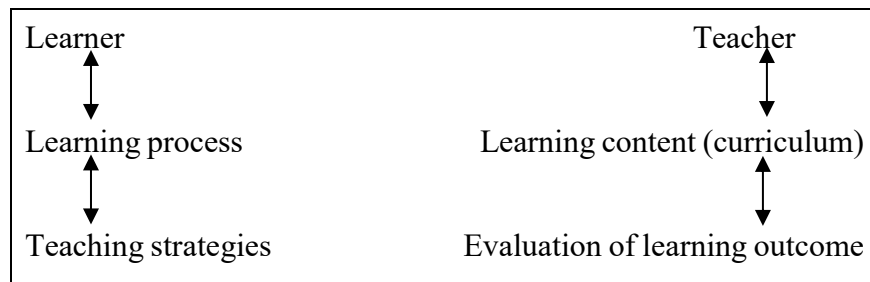


Figure 1: The Interrelationships of the Elements That Make Up the Scope of Educational Psychology

1. (i) The Learner

Educational psychology acquaints us with the knowledge of the learner and deals with the techniques of knowing him or her well. The following are the topics studied and included in it: the innate abilities and capabilities of the individual; individual differences and their measurements; the overt, covert, conscious as well as unconscious behaviours of the learner; the characteristics of his or her growth and development at each stage beginning from childhood to adulthood.

(ii) The learning processes

After knowing the learner and deciding what learning experiences are to be provided, the emerging problem is how to help the learner acquire these learning experiences with ease and confidence. Thus, educational psychology deals with the nature of learning and how it takes place in different contexts. Understanding the nature of the learning process requires that you cover topics such as laws, principles, and theories of learning; remembering and forgetting; perceiving; concept formation; thinking; the reasoning process; problem solving; the transfer of knowledge; and ways and means of effective learning, among others.

(iii) The learning situation

Educational psychology also deals with the environment factors and learning situations that come midway between the learner and the teacher. Topics like classroom climate and group dynamics techniques and aids that facilitate the learning process, evaluation techniques and practices, and guidance and counselling that help in the smooth functioning of the teaching and learning processes



(iv) Teaching Situation

Educational psychology suggests appropriate teaching techniques. It also helps in deciding what learning situation should be provided by the teacher to the learner according to his mental and physical age, his previous knowledge, and his level of interest. By describing the learner's characteristics, educational psychology suggests what teaching aids are appropriate for the particular subject.

(v) Evaluation of Learning Performance

The main objective of education revolves around the development of the learner. Learners' development includes cognitive, affective, and psychomotor aspects of personality. Educational psychology suggests various tools and techniques for assessment and evaluation, such as performance tests, oral tests, and written tests. It does not stop at measurement alone. After the results of the test are analysed, causes for poor performance and backwardness in any aspect of development are corrected.

(vi) The teacher

Educational psychology emphasizes the need to know oneself to enable the teacher to play his or her role properly in the teaching and learning process. It throws light on the essential personality traits, interests, aptitude, and characteristics of effective teaching so as to inspire and help the teacher handle stress and conflict by giving insight into their own personality.

Nature of adult learning

Adult learning is the acquisition of new ideas, skills, attitudes, experiences, and understanding by people whose primary occupation in life is other than learning or studentship.

The adults' needs for learning are current, for practical information, and not for delayed gratification. The non-schooled adult is not always unlearned or uneducated. A large amount of knowledge relating to social and economic life has been learned through word-of-mouth transmission and through modelling. Social roles, agricultural and construction skills, crafts, history, language, and so forth are passed on from generation to generation through an informal but often highly refined system of informal learning. Whether the learning takes place through informal tutoring, supervised on-the-job training and apprenticeship, or by listening to



stories and legends recounted by elders, the informally learned individual is primarily discovery-oriented and is usually operating at a concrete level of mental operations. In other words, the informal learner is exposed to and searches out answers to concrete problems such as those confronted in agriculture, irrigation, hunting, etc. Success, and the consequent reinforcement and retention of learning, is perceived not by abstract rewards such as grades or credentials but by very real and immediate rewards such as physical health, survival, and social well-being. The skills and concepts being learned relate directly and intimately to the concrete reality of the learner's world. Thus, the informally learned person would seem to be more discovery-oriented, a more organic, holistic learner operating at a concrete level of cognitive process.

Where this is the case, it would seem probable that informally learned persons, especially those who have relatively low literacy skills and levels of modernity, would have a natural learning style that is inconsistent with the pedagogical style of the formally constructed educational system. Lacking an educational process that will reach him at his level, the informally learned individual will almost certainly experience a high degree of frustration and failure in the schools and will either opt out of or be shut out of the formally sanctioned schooling system. In effect, he will be excluded from access to social credentials related to personal poverty, powerlessness, and social unproductiveness.

To understand the nature of adult learning, we have to recall the principles of adult learning. In this context, we shall now present the basic principles of adult learning as enumerated by Knowles (1978):

- Adults are motivated to learn as they experience needs and interests that learning will satisfy; therefore, these are the appropriate starting points for organizing adult learning activities. For example, adults will typically pursue formal coursework only when those courses become meaningful, beneficial, or rewarding.
- An adult's orientation to learning is life-centred; therefore, the appropriate units for organizing adult learning are life situations, not subjects. Experience is the richest resource for adults' learning; therefore, the core methodology of adult education is the analysis of experience.
- Adults have a deep need to be self-directed; therefore, the role of the teacher of adults is to engage in a process of mutual inquiry with them rather than to transmit his or her knowledge to them and then evaluate their conformity to it.



Adults desire teachers who will direct or channel their thinking in challenging and creative ways. Individual differences among people increase with age; therefore, adult education must make optimal provisions for differences in style, time, place, and pace of learning.

Unit Reflection

After learning this unit, take time to think about the branches of psychology. Share with your colleague one branch of psychology that deals with the teaching and learning process.

Unit Assignment

1. In your words, what do you understand by the term psychology?
2. What do you understand by psychology of adult?
3. Briefly describe the main branches of psychology.
4. How important is educational psychology to adult education facilitators?
5. Describe the nature of adult learning and its principles.

Unit 2

The Learning Process

Dear learner, welcome to unit two. This unit will expose you to the learning process. A brief discussion of the meaning of learning, its characteristics, and theories will be made. Understanding the learning process is important for adult educators because learning is a complex process that is guided by theories and principles. These theories and principles are, therefore, important for teachers to understand and apply in their daily work.

Learning Outcomes

Upon completion of this unit, you should be able to:

- Define learning;
- Identify factors affecting learning;
- Describe learning theories;
- Describe the major learning theories; and
- Evaluate the application of learning theory in adult learning.



The Learning Process

Learning is considered to be the primary reason for the existence of schools and a means by which socialization takes place. It is difficult to separate a man from learning, for the two are inseparable. Think, for a moment, of the state a man would be in if there were no learning, or if men lacked the capacity to learn. It would mean that without learning, people would not know their names, their parents, where they live, etc. For better or worse, man is a creature of learning.

Learning is a continuous process lasting from the moment a person is born to the end of his life on this planet. It occurs both as a result of deliberate and conscious, as well as subconscious, efforts. It occurs not only at school through the teacher's conscious effort to transmit information but also at home as parents and other siblings interact with each other.

You should note that there are several definitions of learning. The most commonly held view of the definition of learning is that of a change in behaviour as a result of what one has experienced, and this may be shown in the way a person thinks (cognitive), acts

(psychomotor), or feels (affective). More specifically, Hilgard and Bower (1975:17) define learning as:

...the change in a subject's behaviour as a result of what one has experienced in that situation, provided that the behaviour change cannot be explained on the basis of native response tendencies, maturation, or a temporary state of the subject (fatigue, drugs, etc.).

This definition claims that there are certain behaviours that may not be the result of learning but of the normal and natural or biological development of a person, for example, seeing or walking. Other scholars (Mwamwendwa, 2004; Lefrancois, 1997) consider learning as a change in performance due to experience and that it is a process whereby a person's behaviour changes as a result of experience. Moreover, Mangal (1997) defines learning as a relatively permanent change in behaviour following practice or experience of some kind.

Therefore, learning involves acquiring and modifying knowledge, skills, strategies, beliefs, attitudes, and behaviour. People learn cognitive, linguistic, motor, and social skills in varying forms. Hence, adult learning may be defined as a process that brings about a relatively permanent change in the individual's behaviour (personality) as a result of knowledge, practice, or other experiences.

Characteristics of Learning

In spite of numerous theories and contrasting views, psychologists generally agree that there are many characteristics of learning. Knowledge of the general characteristics of learning helps adult educators use them in a learning situation. If learning is a change in behavior as a result of experience, then instruction must include the careful and systematic creation of those experiences that promote learning. This process can be quite complex because, among other things, an individual's background strongly influences the way that person learns. To be effective, the learning situation also should be purposeful, experiential, and multifaceted, with the active involvement of learners. Learning has the following characteristics:

Potential change in behavior

Evidence of learning is found not only in actual but also in potential changes in behaviour. However, not all changes involved in learning are obvious and observable. There may also be other



important changes that are not apparent but are still fundamental to learning.

Disposition

A *disposition* is a quality of character, a habit, a preparation, a state of readiness, or a tendency to act in a specific way that may be learned. For example, there may be an unfortunate change (a reduction) in a learner's eagerness to participate in the class activities following his or her teacher's refusal to allow him or her to do so and also the loud scolding he or she received for the "may I-can I" grammatical error. This change is also an example of learning, but in this case, it involves changes in the learner's disposition. That is, a person's inclination to do or not do something rather than immediately observable changes in actual behaviour.

Capability

A *capability* is the ability to perform or achieve certain actions or outcomes. As it applies to human capital, *capability* represents performing or achieving certain actions or outcomes in terms of the intersection of capacity and ability. Learning involves not only changes in disposition but also changes in *capability*. That is, changes in the skills or knowledge required to do something. To determine whether students' capabilities have changed following an instruction, teachers need to give them an opportunity to engage in the relevant behaviour.

Performance

Performance is how effective something or someone is at doing a good job. Performance is defined in terms of acting, singing, playing an instrument, or otherwise showing a craft to a group of people. Thus, performance refers to actual behaviour. A teacher's instruction affects learners if their behaviour in terms of *performance* after instruction is observably different from that before instruction. Thus, we can conclude that learning has occurred.

Learning Theories and Their Relevance to Adult Learning

Dear learner, you should understand that the roots of contemporary learning theories extend far into the past. Many of the issues



addressed and questions asked by modern researchers are not new but rather reflect a desire of people to understand themselves, others, and the world about them.

Before discussing the theories of learning, it is important to know what a theory is. Generally, a *theory* is a scientifically acceptable set of principles offered to explain a certain phenomenon. Theories provide frameworks for interpreting what we observe in the environment, and they serve as bridges between research and education. Research findings can be organized and systematically linked to theories. Without theories, people could view research findings as disorganized collections of data because researchers and practitioners would have no overarching frameworks to which the data could be linked. Even when researchers obtain findings that do not seem to be directly linked to theories, they still must attempt to make sense of the data and determine whether the data support theoretical predictions.

A learning theory is therefore an attempt to describe how people and animals learn, thereby helping us understand the inherently complex process of learning. According to Hill (2002), learning theories have two main values. First, they provide us with vocabulary and a conceptual framework for interpreting the examples of learning that we observe. Second, theories empower adult educators with strategies to find solutions for practical problems they face in the learning contexts. The theories do not give us solutions, but they do direct our attention to those variables that are crucial in finding solutions.

Learning theories explain how learning takes place. Although educational psychology includes numerous theories, five main schools of thought have been identified: *behaviourism, cognitivism, constructivism, experientialism, and social or contextual learning theories*.

For the purpose of this module, we will focus on four main learning theories. However, as an adult educator, it is important to read and understand more theories from the references listed at the end of this unit. A detailed description of each theory is provided in the following section.

Behavioural Theory

Behavioural theory views learning as a change in the rate, frequency of occurrence, or form of behaviour or response, which occurs primarily as a function of environmental factors. The theory

contends that learning involves the formation of associations between stimuli and responses (S and R). In Skinner's (1953) view, a response to a stimulus is more likely to occur in the future as a function of the consequences of prior responses. Reinforcing consequences makes the response more likely to occur, whereas punishing consequences makes it less likely to occur.

Behaviourism was a powerful force in psychology in the first half of the twentieth century, and older theories of learning are behavioural. These theories explain learning in terms of observable phenomena. Behavioural theorists contend that explanations for learning need not include internal events (such as thoughts, beliefs, and feelings), not because these processes do not exist, but rather because the causes of learning are observable environmental events.

The behavioural view of learning is based on a model of stimulus and response (S-R), which advocates that learning occurs on the basis of associations made between the *stimulus* and the *response* made to such a stimulus, as well as the presence of some form of *reinforcement*. We will discuss four behaviourist theories in this subsection, namely classical conditioning, operant conditioning, connectionism, and social learning theory.

We will discuss the behavioural theories under two broad categories: S-R theories.

- S-R (Stimulus-Response) theory without reinforcement (Pavlov, Classical Conditioning)
- S-R (Stimulus-Response) Theory with Reinforcement:
- L. Thorndike: Trial and Error Theory
- F. Skinner—Operant Conditioning

1. S-R (Stimulus-Response) theory without reinforcement

This is also referred to as *classical conditioning*." Classical conditioning was discovered by accident by Ivan Pavlov (1849–1936), a Russian physiologist, when he noticed that animals often salivated before food was actually placed in their mouths. He was carrying out studies on digestion in animals. The word '*classical*' means of the first type, and seeing that Pavlov's theory is one of the first theories of learning, "*Conditioning*" means learning or modifying behaviour.

Classical conditioning may also be referred to as stimulus substitution because a new stimulus that was originally totally neutral can take the place of a stimulus that elicits a response. For



example, in Pavlov’s experiment, the dog salivated in response to food, but as a result of substitution, it also salivated in response to an originally neutral stimulus—the footsteps or sight of the experimenter. In the absence of food, the footsteps became the new stimulus with an effect similar to that of food on the behaviour of the dog, which is salivating.

It is important to explain some of the technical terms used in classical conditioning. The food presented to the dog is referred to as the *unconditioned stimulus* (US), and the salivation that occurs in response to the presentation of the food is called the *unconditioned response* (UR). The food is referred to as an *unconditioned stimulus* because the dog does not have to learn to respond to food by salivating. Salivating is a natural or instinctive behaviour of dogs. The neutral stimulus (the sound of the bell), which lost its neutrality after conditioning, is referred to as the *conditioned stimulus* (CS), and the salivation, which is a response to the sound of the bell, is called the *conditioned response* (CR).

This theory can be summarized diagrammatically, as shown in Figure 2.

Unconditioned Stimulus (US)	Stimulus with inherent biological important to animal (e.g., food or pain)
Unconditioned Response (UR)	Response automatically elicited by US (e.g., consumption and salivation or withdrawal)
Conditioned Stimulus (CS)	Initially neutral cue (e.g, noise) that acquires significance through conditioning
Conditioned Response (CR)	Response elicited by CS following conditioning

Technical terms used in classical conditioning theory


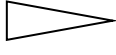
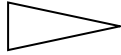
a	Before conditioning		
	US (Unconditioned stimulus) Meat powder in dog's mouth		UR (Unconditioned response) Salivation, chewing, swallowing etc
b	During conditioning		
	CS (Conditioning stimulus) Bell and Meat powder		US (Unconditioned stimulus) Salivation
c	After conditioning		
	CS Bell		CR Salivation

Figure 1: Pavlovian classical conditioning

Learning principles according to classical conditioning

Stimulus generalisation

It involves reacting to a stimulus that is similar to the one to which you have learned to react. For example, Pavlov did not stop with the positive results of his experiment but proceeded to test other aspects of the dog's behaviour. He was interested to know whether what the dog had learned could be applied to a similar situation or if its learning was restricted to what it had gone through during the conditioning process. To determine the extent to which the dog was able to generalise, Pavlov used the sound of a buzzer. Whenever the sound of the buzzer was presented, the dog salivated. It salivated because it associated the sound of the buzzer with the sound of the bell, which in turn it associated with the presentation of food. Thus, it was clear to Pavlov that the dog had not only acquired a new behaviour but was also capable of transferring the newly learned behaviour to a similar situation.

Discrimination

While it is important to generalise what has been learned, it is perhaps equally important to draw a distinction between situations that are similar yet different. Pavlov wished to determine whether the dog was able to detect the difference between the sound of a

bell and the sound of any other object. Pavlov presented the dog with a sound—let us say that of a horn—and the dog’s immediate response was to salivate. Then the dog was presented with the sound of a bell followed by the presentation of food, while the presentation of the sound of the horn was not followed by the presentation of food. This was done repeatedly, and the end result was that the dog realized that the sound of the bell accompanied the presentation of food, while the sound of the horn did not. This led to the dog salivating in response to the sound of the bell alone. The only reason it salivated in response to the sound of the bell was that the sound was followed by the presentation of food, which served as reinforcement.

Extinction

Extinction may be defined as the weakening or total disappearance of a particular behaviour due to a lack of reinforcement. In classical conditioning, this happens when a conditioned stimulus is no longer paired with an unconditioned stimulus.

For example, if the smell of food (the unconditioned stimulus) had been paired with the sound of a whistle (the conditioned stimulus), it would eventually come to evoke the conditioned response of hunger. However, if the unconditioned stimulus (food) were no longer paired with the conditioned stimulus (the bell), eventually the conditioned response (salivating) would disappear.

Spontaneous recovery

Sometimes a learned response can suddenly re-emerge even after a period of extinction. Spontaneous recovery is the reappearance of the conditioned response after a rest period or period of lessened response. For example, imagine that after training a dog to salivate at the sound of a bell, you stop reinforcing the behaviour and the response eventually becomes extinct. After a rest period during which the conditioned stimulus is not presented, you suddenly ring the bell, and the animal spontaneously recovers the previously learned response.

Implications of theories on education

If the teacher’s initial encounter with his or her learners is characterized on his or her part by smiles, greetings, and identifying learners by name, they will be interested in going to school each day. This will further enhance their relationship with their teachers and assist in developing a positive attitude towards



the school curriculum, thus improving their chances of performing successfully.

Lindgren and Suter (1985:139) see a great deal of potential for learning through classical conditioning in schools.

Because stimuli in the school environment are associated with many emotional responses (unconditioned), ranging from fear, anxiety, and discomfort to pleasure, joy, and exhilaration, the potential for learning through classical conditioning is great.

There are numerous reasons why learners absent themselves from school and drop out of school, but it is evident that some of them are the kind of association they make between school and the effect it has on them. To some learners, school is associated with hostility, cruelty, and indifference, and for this reason, many would rather not go to school. On the other hand, if the learners associate school as a friendly place where they are treated with kindness, love, and warmth, there should be no reason why they should not want to be at school as long as it is necessary. Hence, classroom experiences should be pleasant and satisfactory. The teacher should be pleasant, considerate, and kind to learners.

The same principle of association could be related to the various subjects offered, some of which are hated and others are liked. For every effect, there is a cause, and, therefore, learners' attitudes toward school subjects are not inexplicable. How often does a learner pass tests and examinations in a given subject? How does the teacher relate to students in the process of teaching? How do classroom experiences relate to the needs of the learners and associate with their actual life experiences in society? How does the teacher make learners realize the importance of what they are learning? The answers to these questions will determine whether learners like a given subject or not.

One of the factors that was not mentioned when the conditioning of the dog was discussed is that the dog had been deprived of food, and therefore hunger was the motive for subsequent behaviour. Therefore, it is important to find a way of motivating learners if learning is to occur. Motivation can be brought about by treating learners with due respect and ensuring that they always enjoy a certain amount of success in whatever they do in school so that they have a reason to continue their education. A word of praise and encouragement from the teacher provides the much-needed feedback (reward) for the learners to continue learning. This can also be achieved by organising classroom activities in an order of



increasing difficulty so that the learners may progress with confidence and without stagnation.

One of the reasons the dog learned a new behaviour was the reinforcement it received for that behaviour. Reinforcement in the classroom can facilitate learning. Learners can be reinforced by receiving praise for good work, bringing their work to the attention of others, or giving them token awards. Learners can also be reinforced by testing, since this will motivate them to study hard in order to pass.

In Pavlov's experiment, the dog was trained to generalize what it had learned in one situation to a related but different situation. Similarly, the purpose of education is to facilitate the transfer of learning. A teacher should ensure that his or her students are able to apply what they learn to similar situations within the classroom or in real life.

Stimulus-Response (S-R) Theory with Reinforcement

There are two theories in this category that were proposed by Edward L. Thorndike and B. F. Skinner.

Thorndike's theory

Thorndike proposed a theory that is also called *and theory of learning.*" Thorndike was one of the early American psychologists and is credited with having written the first book on educational psychology, *The Psychology of Learning* (1913). He is also referred to as the "father of educational psychology". His ambition was to find an accurate, precise, and quantifiable method of investigating and resolving problems relating to learning. In his book *Animal Intelligence* (1911), he carried out experiments in which he examined how animals went about solving problems. Some animals used for research were cats, dogs, and chickens, which were put in cages within sight of food after having been deprived of food for a while.

Thorndike is associated with the theory of connectionism, or stimulus response (SR), which argues that learning means establishing links or bonds between two or more events. For example, turning off the lights at night means that it is time to go to bed.

In one of his many laboratory experiments, Thorndike placed a cat that had been deprived of food in a cage. Outside the cage was a

piece of fish. It was possible for the cat to open the cage by pulling a loop of string hanging in the cage, but the cat was not aware of this. The cat moved about in the cage and engaged in all sorts of behaviours such as trying to squeeze through the bars, pushing its paws through the bars, and trying to reach the fish. Then the cat began to manipulate the string, and after a couple of attempts, it managed to open the cage and get out.

Thorndike therefore argued that animals learn by trial and error rather than by establishing an understanding of the relationship between different objects in a given situation. This argument was extended to human learning, which Thorndike said is governed by reward and punishment. Thorndike proposed three laws of learning, as described in the ensuing section:

The Law of Readiness

The law of readiness states that learning takes place only when the learner is prepared to learn. There is no amount of effort that can make a child learn if the child is not ready to learn. The dictum that ‘you can lead a horse to water, but you can’t make it drink until it feels thirsty’ goes very well with this law. In other words, if the child is ready to learn, he or she learns more quickly, effectively, and with greater satisfaction than if he or she is not ready to learn. The law is indicative of the learner’s ability to participate in the learning process. According to Thorndike, readiness is preparation for action. Readiness does not come automatically with maturation. It is a law of preparatory adjustment, not a law about growth.

1. The Law of Effect

When a modifiable connection between stimuli and response is made and is accompanied or followed by a satisfying state of affairs, the connection’s strength is increased. When it is made and accompanied or followed by an annoying state of affairs, its strength is decreased.

In other words, learning can be said to have taken place properly when it results in satisfaction and the learner derives pleasure from it. In situations where the learner meets failure or is dissatisfied, the progress of learning is blocked. All pleasant experiences have a lasting influence and are remembered for a long time, while the unpleasant ones are soon forgotten. Therefore, the degree of satisfaction, dissatisfaction, and pleasure resulting from a learning experience determines its effectiveness.

2. The Law of Exercise or Repetition

This law explains the role of practice in learning. According to this law, learning becomes efficient through practice or exercise. The dictum 'Practice makes a perfect teacher' goes very well with this law. This law is further split into two parts: the law of use and the law of disuse. The law of use means that a connection between a stimulus and response is strengthened by its occurrence, exercise, or use. In other words, the use of any response strengthens it and makes it more prompt, easy, and certain. Regarding the law of disuse, it is said that when a modifiable connection is not made between a stimulus and a response over a length of time, the strength of that connection is decreased. This means that any act that is not practiced for some time gradually decays. Anything that is not used, exercised, or practiced for a certain period tends to be forgotten or becomes weak in strength, efficiency, and promptness.

Implications on education

The law of effect clearly states that when a response to a stimulus produces a pleasing effect on the organism, the same response is likely to recur when the same stimulus comes. The connection between stimulus and response (S-R) gets strengthened. In the same manner, when a response to a stimulus produces annoyance in the organism, the same response is not likely to recur when the same stimulus recurs. The connections between that stimulus and response get weakened. Hence, classroom experiences should be pleasant and satisfactory. A proper rapport between the teacher and the learners is an essential pre-requisite for effective classroom work. Learning experiences should be made interesting and meaningful to the learners in the classroom and linked with their actual life experiences in a society.

The law of exercise strengthens the connection through practice: repetition of a learned response strengthens the response. When the same stimulus is given over and over again, eliciting a particular response, the connection between that stimulus and response (S-R) is strengthened. The cat had been repeatedly put in the puzzle box, and it mastered the operation of the mechanism of the box in order to come out. There is no doubt that 'exercise' reinforces a learned response, but it should be employed without the boredom of repetition. Any classroom work repeated monotonously produces a depressing effect and makes learning tiresome. Such repetition produces an adverse reaction from learners.

The law of readiness indicates the learner is willing to make the S-R connection. Thus, learning takes place provided the learner is ready to learn and has learned it willingly. Such a learned response is retained. The cat learned to operate the mechanism because it was ‘hungry’ and the food was available when it came out of the box. When a conduction unit is ready to conduct, stimulation produces satisfaction. Otherwise, any stimulation is bound to cause annoyance. Thus, here, ‘effect’ seems to be important. Unless the learners are ready to learn or they are made ready to learn, learning does not take place. Readiness has two aspects: physical and mental. Physical health affects mental health. Mental readiness is equally important. Learners should be mentally prepared to learn.

1. **Operant (instrumental) conditioning theory (B.F. Skinner, 1904–1990)**

You should recall that in classical conditioning, the primary concern is with responses that are elicited by stimuli that are both specific and identifiable. Skinner (1938) went along with classical conditioning as a plausible theory of learning but went a step further by arguing that not all learning can be explained on the basis of identifiable stimuli. In his view, there are other forms of learning that occur independently of any identifiable stimulus. This led him to develop a new theory called *operant conditioning*, which is the focus of our discussion in this section.

The term operant refers to the fact that an organism, which may be either a person or an animal, works in its given environment and that as it does so, it is responsible for generating consequences. These may be in terms of a good mark in a given course, a good crop for a peasant, a promotion at work, or simply a positive and happy relationship with parents, children, peers, teachers, or a spouse.

Skinner’s Experiment

In developing his theory, Skinner carried out many experiments using animals such as rats and pigeons. In one experiment, a rat is placed in what is called a Skinnerian box as shown in Figure 3.

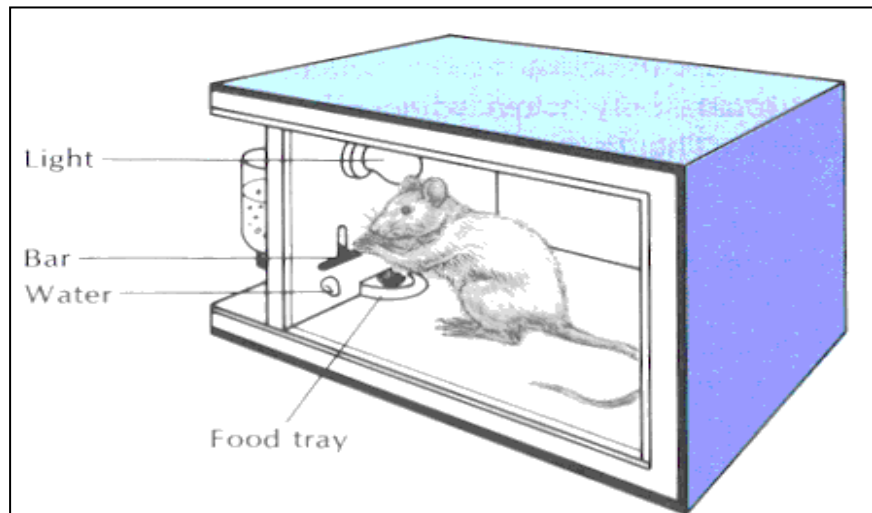


Figure 3: A Skinnerian Box

In human terms, the box can be equated with an environment such as a school, a home, or a town. Within the box, there is a food delivery mechanism with a press bar and some food pellets. However, the rat does not know this. The rat is free to move in any direction it pleases in the box, and as it does, it comes across the food delivery mechanism. Out of curiosity, it presses the bar. The rat makes several more attempts to see whether it will be rewarded, and indeed it is. Therefore, the frequency of bar-pressing increased. The rat continues to roam its environment, and every time it feels the need to eat, it returns to the food delivery mechanism and is rewarded for its bar-pressing.

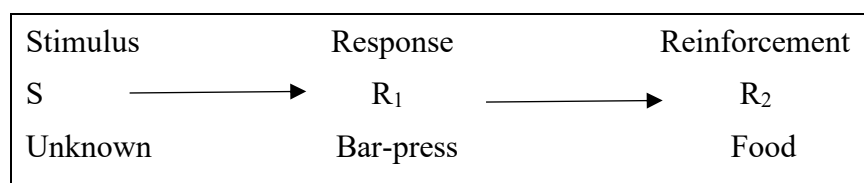


Figure 4: Process of operant conditioning

Explanation

S represents the unknown stimulus condition that made the rat press the bar.

R₁ stands for the behaviour (response) of pressing the bar, which led to the availability of the food. The response occurs while the organism is busy in its environment, and since no known stimulus

can be identified, it occurs spontaneously rather than being elicited as is the case in classical conditioning.

R₂ represents the food that drops out of the food delivery mechanism. Food is a reinforcement element and therefore prompts the rat to engage in frequent bar-pressing.

According to Skinner, what stimulated the bar-pressing behaviour of the rat is not very important. What is significant is that the rat pressed the bar, and as a result, reinforcement took place. Whether or not the rat will repeat the behaviour is determined by the consequences of the behaviour. If the consequences are negative, the chances are that behaviour will be avoided. On the other hand, if the consequences are pleasant, the behaviour will be repeated and sustained for as long as it is reinforced.

Schedule of reinforcement

Dear Learner, looking at operant conditioning, one may see that a person's behavior can be controlled through reinforcement. In order to sustain a particular desirable behaviour, the frequency of reinforcement must be increased, whereas to suppress undesirable behaviour reinforcement must be decreased and finally eliminated altogether.

A reinforcement may be defined as a stimulus that increases the probability of a response recurring. The process whereby certain behaviour are reinforced is referred to as a schedule of reinforcement. There are two major forms of reinforcement, namely continuous and intermittent or partial reinforcement. Continuous reinforcement involves rewarding an organism every time it makes a correct response. This is recommended as being quite effective when an organism is learning new behaviour. Continuous reinforcement facilitates the mastery of behaviour fairly quickly. On the other hand, intermitted reinforcement involves rewarding the organism after it has made more than one correct response. It may be divided into four schedules of reinforcement, namely fixed ratio and variable ratio; fixed interval and variable interval. Fixed ratio and variable ratio refer to the amount of work completed before reinforcement is administered, whereas fixed interval and variable interval schedules refer to the time that elapses before reinforcement is supplied.



Reinforcement and punishment in the classroom

In summary, there are two types of reinforcement: positive reinforcement, which involves presenting a pleasant stimulus (e.g., a reward), and negative reinforcement, which involves removing an aversive stimulus following desirable behaviour.

Positive reinforcement: Examples of positive reinforcement in the classroom are so numerous and obvious that citing any seems platitudinous. Whenever a teacher smiles at students, says something pleasant to them, commends them for their work, or assigns high grades, the teacher is using positive reinforcement.

Negative reinforcement: failure, detention, ridicule, humiliation, and other unpleasant eventualities make up the bulk of the modern, well-equipped teacher's arsenal of aversive stimuli that can be used either as negative reinforcers or as one kind of punishment. When these threats follow unruly, undisciplined, or otherwise unacceptable behaviours, they illustrate the presentation of punishment. But when the threat of any of these possibilities is removed following acceptable behaviour, this provides an example of negative reinforcement. Hence, negative reinforcement is the removal of unpleasant stimuli following the desired behaviour.

Educational implication

According to Skinner's theory of operant conditioning, reinforcement is one of the key factors underlying learning. In school, learners are likely to learn effectively when their responses are rewarded in some way.

There are numerous reasons why learners go to school, some of which are that they want to prepare for a career, their parents have sent them to school, or simply that everyone they know seems to think it is wonderful to be at school. According to Skinner, the stimulus is unknown, so we need not concern ourselves with it. However, we are very concerned with the response they make, which is coming to school. What will determine whether they will sustain their interest at school is the way in which they are treated.

How does the teacher relate to them? How do other learners relate to them? Does no one seem to care about them? What does their work look like? Are their marks so low that they are constantly told that they are not capable of handling school work?

The basic implication of operant conditioning for instructional activities is dependency on observable behavior. For Skinner, reinforcement facilitates learning. Further, he thinks that the most effective control over human learning requires instructional aid. Skinner distinguished between positive and negative reinforcements. Positive reinforcement is a stimulus that increases the probability of a desired response. Positive reinforcement is a positive reward. Praise, a smile, a prize, money, and fun are examples of positive reinforcement. In negative reinforcement, the desired behaviour is more likely to occur if such stimulus reinforcement is removed. For example, we can close windows and doors to avoid hearing loud noise, and a teacher can avoid using abusive language by using acceptable language. Here, noise and abusive language are negative reinforcers.

Cognitive Theory of Learning

In contrast to behavioural theories, *cognitive theories* stress the acquisition of knowledge and skills, the formation of mental structures, and the processing of information and beliefs. From a cognitive perspective, learning is an internal mental phenomenon inferred from what people say and do. A central theme is the mental processing of information: its construction, acquisition, organization, coding, rehearsal, storage in memory, and retrieval or non-retrieval from memory. Although cognitive theorists stress the importance of mental processes in learning, they disagree over which processes are important.

The cognitive view maintains that a learner is capable of controlling his learning activity and organising his field of operation and has an inherent capacity to learn. This section discusses some of these concepts as presented by cognitive psychologists such as Jerome Brunner and David Ausubel.

Discovery learning (by J. Brunner, 1966, 1971)

According to Brunner, discovery learning involves a pupil's discovery of what he is capable of doing and thinking for himself. Discovery does not necessarily mean coming up with knowledge that is unknown to anyone else, but rather coming up with the knowledge by oneself. In Brunner's view, a child is capable of discovering new information independently. For example, a child may be given the following sentence: 'The teacher taught a good lesson'. On the basis of this statement and knowledge, the child will make a similar statement as a discovery. Brunner points out further that a simple object can be presented to learners and used to elicit a



number of responses from them. A hammer is an example. Ask the learners what it is used for. The answer will be, 'Beating in nails. Why? So that the nails will hold the boards together. Why? To make a building steady. Is there any other way? – Yes. - Strings.

To encourage discovery learning, Brunner proposes that it is vital to provide learners with opportunities to engage in thinking, insights, and problem solving as an integral part of their education. This can be done by exposing them to inductive processes that will ultimately lead to the discovery of the principles and concepts underlying whatever they may be studying or investigating.

Instead of revealing to learners the major concepts and principles they are expected to learn from the lesson, a teacher should give learners the opportunity of discovering them by themselves, as was illustrated in the case of the hammer.

To start with, the teacher presents the learners with a problem and, having done so, plays the role of facilitator of an inductive inquiry process starting with information and continuing with step-by-step discovery. This enables the learners to arrive at concepts, learn the process involved in gathering data, and make inferences from such data. Discovery learning calls for active participation on the part of the learners. It is a beneficial approach because learners are able to retain information for a considerable period of time and will be able to transfer it.

Reception learning (by D. Ausubel, 1978)

Ausubel was one of the first modern cognitive psychologists to concentrate on meaningful learning. His theory is of vital importance in that it controls the frequency with which rote learning is used by learners, not only at the primary school and secondary levels but also at the tertiary level. Let us define some of the key words so far.

Reception learning means that learners are presented with all possible information on a given topic in its final form. Ausubel refers to his theory as *verbal learning* because most of what is learned in the classroom is based on the use of language as a means of communication. Learning is seen as meaningful because what is being learned is based on what students already know.

For meaningful learning to occur, two criteria must be met. First, there should be a meaningful learning set within the learner; in other words, the learner must be not only ready but also willing to



relate new experiences to his existing experiences. This can be accomplished by drawing the learner's attention to known related information and telling him that the new information should be learned with this in mind. Second, if meaningful learning is to occur, the new material must be potentially meaningful, which means it should have the potential to be related to what the learner already knows.

Teaching based on meaningful learning

Teaching in terms of Ausubel's theory would necessitate the following strategies:

Assessing readiness: all that can be known about learners with regard to their age, level of capability, etc. Learners can be assessed by observation, by listening to the types of responses they give in class discussion and on their written assignments, and by observation of their performance on tests and examinations.

Selecting material: When preparing a lesson based on what he or she knows about the class, the teacher should concentrate on the major points and present them as clearly as possible. As an introduction, he should start with what is concrete and part of the pupil's experience, making it as interesting and stimulating as possible.

Identifying organizing principles: the major concepts to be presented must be determined since they will serve as the foundation upon which detailed information to be remembered can be built. Once the major principles of the lesson have been identified, they should be given special emphasis in the introduction, body, and conclusion of the lesson.

Advance organizers: **Advance organizers** are previews or introductions (usually brief written passages) that the student reads before studying the main body of the new material. Hence, before new information is taught, the teacher should implement advance organizers linking the new and the old.

Self-Directed Learning (SDL)

In the 1970s, Knowles and other educators such as Carl Rogers were beginning to promote the idea that education needed to move away from being a teacher-centred field in which directed learning was pervasive and toward learner-centredness or facilitated learning. Supporters of this approach suggested that education



should adjust to the needs and wants of learners rather than the other way around. From their perspective, teachers need to move from the role of "sage on the stage" to that of "guide on the side," in which learning becomes more of a collaborative affair between the teacher and students. Students are encouraged to become more involved or self-directed in their learning. The notion of self-directed learning is based on a humanist philosophy, whose underlying assumption is that education should focus on the individual's development.

In self-directed learning, the goal of education becomes more about process (development of critical thinking skills, maturation as a person and citizen) than content (acquisition of subject-based knowledge and skills). As Barer-Stein and Draper (1988) suggest:

This approach focused on encouraging people to explore the depths of their feelings, build their self-concept, and value human life. The goal was to maximize human potential, building on the innate goodness of the individual, with the support of empathetic teachers as facilitators and partners in learning. This philosophy is especially evident in adult education programs today, which value learning as a process and encourage discussion and self-discovery (p. 61).

Thus, from a humanist perspective, learners are seen quite differently from the notion of "empty vessels waiting to be filled with knowledge" held by more traditional educators. Goldgrab (in Draper & Taylor, 1992, pp. 240–241) captures the essence of humanism in the musings of a tutor: "We see learners for what they have to give, their ideas as individuals, and for their life experience and common sense. It breaks down stereotypes of what a learner is in your mind.

The benefit of SDL is that learning can be easily incorporated into daily routines and occur both at the learner's convenience and according to his or her learning preferences. It can involve the learner in isolated activities, such as researching information on the Internet; it also can involve the learner in communication with experts and peers, as in a traditional classroom.

SDL can be difficult for adults with low-level literacy skills who may lack independence, confidence, internal motivation, or resources. Brookfield (1985) suggests that not all learners prefer the self-directed option and that many adults who engage in SDL also engage in more formal educational programmes, such as teacher-directed courses. Within the adult education setting, the



teacher can augment traditional classroom instruction with a variety of techniques to foster SDL for individuals or small groups of learners who are ready and willing to embark on independent, self-directed learning experiences. Self-direction is a critical component of persistence in adult education, helping learners recognize how and when to engage in self-study when they find they must drop out of formal education.

Tips for facilitators:

Learning is facilitated when learners can assess their own learning needs and select their own learning goals and directions for change. If this is not possible, then learners should have a complete understanding of the objectives that have been established by others, be able to accept them, and be willing to commit themselves to the selected direction for change. (MacKeracher, 1999, p. 41)

Transformative Learning

This theory, developed by Jack Mezirow in 1978, is concerned with the ability to use learning to transform the way that the learner views the world. In this theory, Jack Mezirow suggests that the goal of adult facilitators must be to guide learners to transform, that is, to grow and mature intellectually and, in turn, change as a person through critical reflection on one's assumptions, beliefs, and values. The notion that learning results in varying degrees of change is not a problem for most adult educators. That adult education should strive to directly effect change at a personal level was a significant departure from traditional education, in which such change was an indirect result of learning.

In transformational learning, "learners are encouraged to challenge, defend, and explain their beliefs, to assess evidence and reasons for these beliefs, and to judge arguments" (Grabove, 1997, p. 91), the ultimate goal of which is personal growth, independence, and independent thinking. As Mezirow (1997, p. 8) writes, "the educator's responsibility is to help learners reach their objectives in such a way that they will function as more autonomous and socially responsible thinkers. This theory posits that through a teacher introducing new concepts, challenging assumptions, and disrupting perspectives, a learner:

- Can shift their worldview in significant ways, resulting in a completely new frame of reference.

- will face a "disorienting dilemma," information that challenges their perspective in such a foundational manner that they rethink their existing standpoint and use critical thinking to adjust their beliefs.
- Will have an easier time remembering the concepts taught, as the transformation includes behaviour, thoughts, and beliefs.

Tips for Facilitators:

Instructors of adults can facilitate transformative learning by encouraging dialogue groups that help build relationships where tension and dissent can be explored safely. Teachers can also work to prepare themselves to teach from a transformative perspective through critical self-examination as well as sensitivity to others.

Unit Reflection



Dear learner, after completing this unit, try to imagine the possibility that even animals like dogs can learn just like human beings. What is your opinion?

Unit Assignment



Attempt the following question

- Provide as many different meanings of the term "learning" as you can.
- What are the characteristics of learning?
- Discuss the relevance of behavioural learning theories in the adult education classroom.
- Describe the schedule of reinforcement and its place in the learning process.
- Where do behavioural learning theories differ from cognitive learning theories?



Unit 3

Human Development and Learning

Introduction

Dear learner, welcome to unit three of our interesting module. This unit will expose you to human development and the learning process. Specifically, the unit will explore the meanings of human development, growth, maturation, and learning, as well as the dimensions of human development. It is important to note that understanding human development principles and their implications for the learning process is very significant for teachers.

Learning Outcomes

Dear learner, after the completion of this unit you should be able to:



- a) define human development, growth, maturation, and learning;
- b) explain the implications of studying human development in education.
- c) describe the principles of human development;
- d) describe the dimensions of human development;
- e) analyse environmental factors affecting human development, and
- f) discuss the contribution of biological factors to human development.

Human Development

- To begin with, let me ask a simple question: 'Why should a teacher study growth and development?' The answer to this question is that a teacher has to deal with learners of different socio-economic and cultural backgrounds who have a wide variety of individual differences among themselves at different age levels. The teacher, as an agent of society, is responsible for bringing about desirable changes in the behaviour of students so that they may shoulder the responsibilities of a good citizen in accelerating the process of national development. The other



reason to study human development is that its continuity from the past to the present can be understood in terms of its past history.

Prior to coming to school, a child has accumulated enormous experiences in his home and neighbourhood environment, which are very useful to start formal education in an effective way. Individual differences among learners play an important role in education. The teacher must know the potential and capacities of each and every child in his or her class so that he or she may exploit them to the maximum for the individual's and society's benefit. The teacher must know the basic principles of growth and development and the characteristics that emerge at different age levels in various developmental dimensions to provide effective guidance for the harmonious development of learners.

Development is a process of change and adaptation. It involves growth, maturation, and learning.

Growth refers to physical changes such as increases in height and weight. The changes are quantitative rather than qualitative; that is, they are changes in quantity or amount rather than transformations that result in different qualities.

Maturation, a somewhat less precise term than growth, describes changes that are relatively independent of the environment. Maturation changes are closely related to the influences of heredity and environment. For example, learning to walk depends on the maturation of certain muscle groups, increasing control over movements (maturation), and the opportunity to practice the various skills involved (the effects of experience and learning). Maturation is clearly illustrated by the changes occurring in early adolescence that lead to sexual maturity (puberty) -- changes collectively labelled pubescence.

Learning is defined in terms of actual or potential changes in behaviour as a result of experience. Thus, all relatively permanent changes in behaviour are examples of learning unless they are the result of maturation or of external factors, the effects of which are unrelated to environment (such as the temporary effects of drugs or fatigue).



Implications of Studying Human Development in Education

There are a number of reasons why the study of human growth and development is important to us as teachers. First, the study of developmental psychology is interesting in and of itself. Man is interested in finding out more about himself and satisfies this curiosity through investigation and research. Second, as a result of studying human growth and development, we are able to understand more about the psychological processes involved in perception, learning, and socialization. Thus, we are able to understand the behaviour of learners, adolescents, and adults.

On the basis of this knowledge, we are able to predict the effects of certain conditions on later behaviour; come up with ways and means of fostering desirable behaviour and controlling undesirable behaviour; and reconstruct the conditions that resulted in such behaviour.

Furthermore, information obtained from the study of human development can be used to determine whether a particular learner is growing at roughly the same rate as other learners and whether his health may be considered satisfactory. An example is the weight of an infant, which normally should double within six months of birth. If this does not happen, there is reason to investigate the cause of the delay. In other words, the information available can be used to predict the growth of other learners and to determine approximately when they should be due to move from one stage to another. If we have a sound knowledge of development, we will be in a better position to provide remedial programmes, should development fail to take its normal course.

Finally, a study of growth and development enables a teacher to plan his lessons to suit the developmental level of learners. A competent teacher needs to adapt ways of teaching to the characteristics of the learners in his or her educational setting. One major part of those characteristics is represented by the developmental level of the learners whom he or she teaches.

Principles of Human Development

The following are the fundamental principles of human development:

Nature and nurture

It is clear that environment is influenced by both heredity (nature) and nurture (or experience). We know, for example, that our genes are responsible for many of our physical characteristics, such as our hair and eye color, our facial features, and to some extent our height and weight. We know, too, that experience affects not only what we learn (a Sukuma child may learn first to speak Kisukuma rather than Kiswahili, for example), but it can also affect our physical growth. Thus, although some physical characteristics (for instance, hair and eye color) appear to be entirely under the control of our genes, other characteristics (for instance, height and weight) are influenced by environmental factors (such as what and how much we eat).

Development follows an orderly sequence.

Individuals differ in rate of growth and development, but even then, the development follows an orderly sequence in all individuals and shows a high degree of similarity in the order in which various developments appear. Psychologists have reported several directional trends in the development, as discussed in the following section.

- **Cephalo-caudal:** development starts from the head and proceeds toward the heel. As an illustration, the fetus' head is well developed before its legs assume their final form, and even after birth, the head develops in advance of the lower parts of the body.
- **Proximodigital:** development starts from the centre line of the body to the outer parts, which are farther from it. The infant uses the shoulders and elbows to reach for an object before he uses the wrists and fingers. An infant exhibits gross arm and forearm movements before he moves his wrists and fingers.
- **Locomotion:** This develops in a sequential manner in all infants of different cultures around the world. The sequence is creeping, crawling, and walking. The timing may vary in the development of locomotion, but every infant pass through these stages.



Development is a continuous process.

Development is a continuous process that begins at the time of conception in the womb of the mother and continues till death. But it should be kept in mind that it is not always smooth and gradual. There are spurts in physical growth and psychological functioning as evidenced by increases in height and weight; a sharp rise in vocabulary during the pre-school years; and a sudden improvement in problem-solving abilities during adolescence.

trend from bilateral to unilateral

The newly born infant is essentially a symmetrical organism, anatomically, physiologically, and functionally. This function symmetry is revealed in the early stages of motor development. The infant up to the age of 2.5 years uses both hands with equal ease. The hand preference starts after the age of two and a half years.

Different aspects of development are interrelated.

Different aspects of development are interrelated and interdependent. A child's early social behaviour is interrelated with his physical development. If the child is physically handicapped, then his social behaviour will be retarded. The motor development of walking has a positive effect on the intellectual development of children. Thus, we see that different types of developments are interdependent and help each other.

Development is an individualized process.

All individuals develop in their own ways. Each child has his own rate of physical, mental, emotional, and social development. If we observe six-year-old children, we find great differences in their height, weight, social, emotional, and learning readiness. Even at different ages, children have different rates of development. The rate of growth is very high in infancy, and then it slows down and continues throughout one's life. Growth occurs in fits and starts, meaning that the rate of growth changes at different stages of a child's development. For example, a child's growth in height may be almost complete between the ages of 8 and 10 years of age.

Development is cumulative.

Development is a cumulative process. Certain changes impress the observer with their dramatic suddenness, but actually these changes do not emerge all of a sudden. The child's first word and first step are the result of cumulative progress, for the child has continuously been preparing for these functions. Each change is the culmination of his prior growth and experience.

Development proceeds from the general to the specific.

In all types of developments, we find the principles of mass differentiation and integration. The world at the time of birth is buzzing with confusion for the child. Out of mass and undifferentiated behaviour, behaviour becomes more differentiated, refined, and goal-directed. We can take any development and find that this principle applies; for example, language development of the child begins from the birth cry as a mass response. Out of this mass response, differentiation starts, and gradually the child acquires a vocabulary of many words and consequently the skill of communication. Emotions emerge from a general excitement at the time of birth.

There are predictable differences between the sexes.

There are systematic and predictable differences in the development of boys and girls. From birth until early adolescence, boys are both taller and heavier than girls. But by about 11, girls average weight surpasses that of boys, and by age 11.5, the average girl is taller than the average boy. At about 14 years of age, boys catch up and surpass girls, remaining taller and heavier for the rest of their lives (on average).

The temporary height and weight advantage that girls have over boys in early adolescence reflects the fact that girls mature sexually (reach puberty) earlier than boys. On average, girls undergo the dramatic growth spurt of early adolescence, one of the first of the changes of pubescence (changes that lead to sexual maturity), about two years earlier than boys. These changes are accompanied by important hormonal changes that are evident not only in



physical developments but also in changing interests and awakening sexuality.

At about age 12, the average adolescent girl has her first menstrual period, called menarche, which is usually taken as a signal of puberty; the average boy reaches puberty at about age 14. But individuals are not average; they are unique. For some girls, the changes of pubescence can begin as early as age 7 or quite a bit later.

Dimensions of Human Development

To understand the similarities and differences in development, we need to look at different domains of human development. The domains can be categorized under three major directions, such as:

- a) Physical development (organized as motor development, posture, and large movements);
- b) cognitive development; and
- c) Psycho-social development.

The progress in motor development is the result of an ongoing bi-directional interaction between maturation and experience, which results in a continuously self-organizing dynamic system.

The influences of motor development

Biologically dependent neural maturation consists of:

- a) maturing muscle tone and muscle strength;
- b) Improving balance and coordination; and
- c) Developing information processing abilities

Experience: The ongoing action perception cycle consists of:

- a) perceiving possibilities and self-capabilities;
- b) Interaction with other domains such as motivation, social, and cognitive development; and
- c) Specific and flexible learning

Conditions that influence the rate of motor development



- a) Genetic constitution, which includes body build and intellectual level;
- b) Favorable prenatal conditions, e.g., maternal nutrition ;
- c) Intellectual level;
- d) Stimulation;
- e) firstborn before others (parental encouragement); and
- f) Sex, race, and socio-economic differences

Phases of Motor Development

Birth-4 months	Primitive reflex movements
4 months -one year	<ul style="list-style-type: none">• Inhibition of primitive reflexes by 6 months.• Improving muscle tone with reducing flexor muscle tone in the limbs and improving extensor tone in the trunk.• Improving postural control and balance.• Movements become differentiated and functional, such as reaching, grasping, sitting, walking.
1-2 years	<ul style="list-style-type: none">• Better differentiated and more precise movements.• Improving stability and power.
2-7 years	<ul style="list-style-type: none">• Maturing functional movements such as running, jumping, catching, throwing, writing, cutting.• Improved rhythm, sequences, integration and flow to achieve efficient, co-ordinated and controlled performance in day to day activities.



7 years and above	<ul style="list-style-type: none">• Applying motor skills to specialized activities of sports and work.
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Moral development

Morality has to do with human interactions that give rise to questions of ethics, values, trust, and right. There are four steps involved in behaving morally, according to Carroll and Rest (1982). First, we need to recognize the moral problem. Second, the person must make a judgment about what ought to be done, about what is right or wrong. Third is the need to decide what to do. Finally, a plan of action must be put into effect.

Note that Carroll and Rest's view of morality is clearly based on the individual's cognition (understanding) of a situation. In this view, behaving morally or immorally is largely a matter of decision-making and also involves acting on decisions. In other words, morality is not simply a matter of innate goodness or badness as some sort of deeply seated personality trait. In the view of many psychologists (Piaget and Kohlberg, for example), morality develops just as language and intellect do.

Piaget's two-stage view

Many decades ago, Piaget (1932) questioned children to find out what they knew about rules and laws, right and wrong, good and evil. He found that very young children do not behave according to abstract concepts of right and wrong but instead respond in terms of the immediate personal consequences of their behaviour. In effect, the morality of young children is governed by the principles of pain and pleasure. Young children consider to be good, those behaviours that have pleasant consequences (or at least do not have unpleasant consequences), and bad behaviours are those that have unpleasant consequences. Piaget's label for this initial stage of moral development is heteronomy. During this stage, the child responds primarily to outside authority, which is the main source of rewards and punishment. The morality of heteronomy is a morality of punishment and obedience.

This initial stage is followed by the appearance of more personal and independent moral judgments. Stilwel *et al.* (1998) point out that, as children develop, they gradually begin to associate moral behaviour with volition (will). As a result, they become less



obedience-oriented in their judgments of what is good or evil but rather more autonomous—hence Piaget’s label: autonomy. As autonomy replaces heteronomy, behaviour is guided more and more by internalized ideals.

Educational implications of moral development

Knowing how children develop morally can be valuable for teachers in several ways. First, knowing how and why children judge things to be morally right or wrong relates directly to the types of rationalizations teachers might use when trying to convince students to ‘behave’ and not to ‘misbehave’. There is evidence, for example, that rationalizations that stress the object—the toy might break—are more effective for younger children than those abstract rationalizations: "you should not play with toys that belong to other children".

Cognitive and Social Development

Of the theories that have been used to explain human development, those that look at the growth of the mind are among the most important for teachers. In this unit, we will learn one theory, the Piaget Theory, and consider its educational implications. We shall also learn about the development and significance of gender roles according to Erickson’s description of personality change throughout childhood.

Cognitive Development

Cognition, says my dictionary, is "the art or faculty of knowing". Hence, cognitive theorists are concerned with how we obtain, process, and use information. Cognitive development refers to the stages and processes involved in a child’s intellectual development.

Dear learner, In the remainder of this unit, we look at cognitive development, paying particular attention to the theory of the Swiss psychologist, Jean Piaget, a theory that is easily the most influential child development theory of the 20th century. Piaget’s approach examines how a child’s interaction with the environment leads to cognitive development.

Piaget’s most basic ideas



Piaget conceives human development as a process of adaptation, and the highest form of human adaptation is cognition, i.e., knowing. Piaget's views on what permits adaptation and how development can be classified as complex and detailed but can be simplified as follows:

Assimilation and accommodation

Assimilation involves making a response that has already been acquired, while accommodating means changing a response. Put another way, to assimilate is to respond in terms of pre-existing information using previously learned behaviors, which often involves ignoring some aspects of the situation to make the response fit, and to accommodate is to change behaviour in response to a given situation. As a result, according to Piaget, assimilation involves little change in the child's cognitive system because old learning and old behaviours are being used and practiced, but accommodation involves changes in the mental system because old behaviour and old learning are now being modified.

Assimilation and accommodation are the processes that make adaptation possible throughout life. However, these are not separate and independent processes. Every activity, Piaget maintains, involves both assimilation and accommodation.

Equilibration, as one of the governing principles of mental activity, explains Piaget, is a tendency to maintain a balance between assimilation and accommodation. He labels the process of maintaining this balance as 'equilibration'. At one extreme, if the infant always assimilated stimulation to previous learning and responses, there would be no new learning since everything would simply be sucked, looked at, or grasped in the same way as always. This is a state of disequilibrium that would lead to little cognitive change and, hence, little learning. On the other hand, if everything were always accommodated, behaviour would be in a constant state of flux, i.e., forever changing, and again, it would be in an extreme state of disequilibrium, resulting in little new learning.

Stages of cognitive development

Piaget has identified four sequential stages through which every individual progress in cognitive development. Each stage has an age range with distinctive learning capabilities. This would be helpful in framing the curriculum, and understanding this developmental sequence is indispensable for parents as well as

teachers because it influences a great deal during infancy, childhood, and adolescence. The four developmental stages are discussed below.

i) Sensory Motor Stage

This stage begins at birth and lasts until the child is about 2 years old. It is called the sensory-motor stage because children's thinking involves seeing, hearing, moving, touching, testing, and so on. This stage marks the transition of a person from a biological to a psychological being. In the first few weeks of life, the baby's behaviour consists simply of reflex responses, such as suckling, stepping, and grasping. Later, the reflex disappears, and the baby chooses what and when to grasp. The child's capacity to organise results in adaptive behaviour involving both assimilation and accommodation, which may be described respectively as the process whereby the child either modifies his environment or adjusts to a new environment. In the case of assimilation, new experiences are perceived or interpreted in terms of existing knowledge or experience. For example, a baby tends to suckle anything placed in its mouth on account of its experience at its mother's breast. Accommodation refers to the child's tendency to change his or her pre-existing experience or knowledge to fit a new situation or experience. For example, if solid food were placed in its mouth, the child would adapt its sucking behaviour to chewing.

Apart from the ability to organise and adapt, Piaget identifies a number of characteristics typical of a child at the sensorimotor stage. For example, the child operates on the basis of reflex behaviour, which consists of suckling, grasping, visual accommodation, eye movements, and behaviour related to hearing and phonation.

During this period, the infants attain the concept of object permanence. This refers to the understanding that objects and events continue to exist even when they cannot be directly seen, heard, or touched. Until this kind of understanding is achieved, an object that is out of sight remains out of mind and therefore becomes non-existent.

A second major accomplishment in the sensorimotor period is learning to reverse actions. E.g., we give a child a toy that has ten detachable parts. We detach all parts. Through trial and error, the child gradually learns to attach all the parts of the toy.



ii) Pre-operational Stage (2–7 Years)

This stage is called pre-operational because the child has not yet mastered the ability to perform mental operations. Children's thinking during this stage is governed more by what is seen than by logical principles. The following are the accomplishments of the pre-operational stage:

1. Semantic function. During this stage, the child develops the ability to think using symbols and signs. Symbols represent something or someone else; for example, a doll may symbolize a baby, a child, or an adult.
2. This stage is characterized by egocentrism. Children believe that their way of thinking is the only way to think.
3. A pre-operational child has difficulty seeing more than one dimension or aspect of a situation. It is called decentring.
4. Here, children tend to refer to inanimate objects as if they have lifelike qualities and are capable of acting.
5. In this stage, children lack the ability of classification or grouping objects into categories.
6. It is when a child gains the understanding that certain properties of an object remain the same despite a change in their appearance.

iii) Concrete Operational Stage (7–11 years)

At this stage, a child is concerned with the integration and stability of his or her cognitive systems. He or she learns to add, subtract, multiply, and divide. He is in a position to classify concrete objects. In short, children develop the abilities of rational thinking, but their thinking is tied to concrete objects.

iv) Formal Operational Stage (11 and above)

This stage is characterized by the emergence of logical thinking and reasoning. Other important cognitive attainments during this period are the ability to think about hypothetical possibilities and to solve problems through logical deductions and in a systematic manner.

Educational implications of Piaget's theory

Piaget's theory emphasizes that meaningful learning and development result from a highly active process in which learners construct knowledge. This view, labelled 'constructivism, is apparent in discovery-oriented and cooperative approaches to



teaching. One of its main tenets is that knowledge is not so much given to' as constructed by learners. It reflects Piaget's belief that, through continued interaction with the social and physical world, children build up or construct a representation and an understanding of the world and invent a set of rules that permit them to deal with it.

Providing opportunities for physical and mental activity, says Piaget, is fundamental to building concepts and understanding the world. For example, children's ability to deal with classes, relations, and numbers results from the activities of combining, separating, and setting up correspondences among real objects during the pre-operational stage. Internalized mental activities, Piaget's phrase for concepts or thinking, are constructed from the actual physical activities. It follows, then, that teachers should provide children with many opportunities to engage in meaningful activities for mental activity or thinking.

Providing optimally difficult cognitive growth, says Piaget, arises from a tendency toward equilibration, that is, maintaining a balance between assimilation and accommodation. Recall that assimilation and accommodation are children's two ways of interacting with the world; every activity involves modification or change. On the one hand, assimilation requires that a situation be somewhat familiar, while on the other, accommodation will only take place if the situation is also somewhat different.

If the schools are to encourage equilibration, an optimal discrepancy between new material and old learning is required. Learners need to be provided with experiences that are familiar enough that they can understand or assimilate them; they also need to be challenging enough that they will be forced to accommodate. The result, ideally, will be the construction of new understanding, i.e., accommodation, on the back of old learning and assimilation.

One of the chief factors in making thought more objective, claims Piaget, is social interaction. The egocentric point of view of the young child is essentially one that does not recognize the views of others. Children become aware of the ideas and opinions of peers and adults largely through social interaction. Piaget contends that the socialization of thought, the development of moral rules and game rules, and even the development of logical thought processes are highly dependent on verbal interaction. One implication for teaching is that instructional methods should provide for learner-learner as well as teacher-learner interaction.



Social Development

Erikson's theory of psychosocial development (1950, 1982) covers eight stages across the life span. According to Erikson, each stage involves a "crisis" in personality that is important at that time and will remain an issue to some degree throughout the rest of life. In each stage, there is a balance between a positive tendency and a corresponding negative one. Initiative vs. guilt is a conflict children face between their urge to form and carry out goals. When they fail to reach their goals, they feel guilty. A sense of right and wrong morality emerges as a result of identification with the parents.

Stage I: A Sense of Trust versus Mistrust

This stage begins from birth and is continued to twelve months of age. The first and formal task of an infant is to develop a basic sense of trust in himself and his environment. For the fulfilment of his basic needs, he completely depends on others. Due to dissatisfaction with his needs, he gradually loses his sense of faith in the world around him. The sense of faith may lay low during this period.

Stage II: A Sense of Autonomy versus a Sense of Shame

In this stage, a child develops a sense of autonomy. He does not want help from others. He likes to do things in his own way. Parents should be careful about their autonomy. They should have a balance between firmness and permissiveness to foster a healthy sense of autonomy.

Stage III: A Sense of Initiative versus Guilt

The third stage of psycho-social development between three and six years of age is characterized by the crisis of initiative versus guilt. Equipped with a sense of trust and autonomy, the child now begins to take initiative in interacting with his or her environment. Therefore, there is a need to resolve the crisis of initiative vs. guilt at this stage of psycho-social development. This can be accomplished if we allow the child to experiment with his or her initiative by properly supervising and guiding his or her activities and encouraging him or her to develop a habit of self-evaluation of the results of his or her initiative.

Stage IV: Period of Industry versus Inferiority



Generally, by this age, children begin to attend school, where they are made to learn various skills, and the teachers, as well as the school environment, generate pressure on them to work hard in order to perform well. Parents also now begin to make demands upon the children to lend a hand with household duties or, in some cases, engage them in occupational responsibilities. Therefore, the teachers and the school environment play a very significant role in helping the child out of the industry versus inferiority crisis.

Stage V: The Period of Identity versus Role Confusion

This stage, beginning with the advent of puberty, is marked by the crisis of identity versus role confusion. Adolescents begin to search for their own personal identity, equipped with a sense of trust, initiative, and industry. The sudden changes in their bodies and mental functioning and the altered demands of society compel them to ask themselves questions like, who am I? What have I become? Am I the same person I used to be? What am I supposed to do, and in what manner am I to behave? There are, in turn, heterosexual interests. Adolescents are concerned about their future roles and status.

Stage VI: Intimacy versus Isolation

This is the stage of early adulthood. Erikson considers that social interaction has a fundamental and unavoidable influence on personality development. Therefore, during this stage, the individual tends to develop a sense of intimacy or commitment with another person. The opposite of intimacy is isolation. When one fails to develop an adequate sense of intimacy by using one's identity with that of another person or when a relationship deteriorates for one reason or another, one tends to develop a sense of isolation—a pulling away from relationships and breaking off of ties.

Stage VII: The Period of Creativity versus Stagnation

This stage is called 'middle adulthood'. In this stage, he or she tries to establish himself or herself in a professional career. He/she wants to satisfy his/her needs for generativity, a concern to establish and guide the next generation. This is realized through nurturing his own children, guiding and directing other young people, and by engaging in some kind of creative, productive, or fruitful activity that may prove beneficial to society. Opposed to the sense of generativity, there is a tendency for the individual to



become egoistic and selfish. This leads to stagnation and personal impoverishment.

Stage VIII: Integrity versus Despair

This is old age. The person reflects on the life lived and, sometimes, integrates even death into the pattern. During this last stage of psycho-social development, one is confronted with the final crisis of one's life span, termed ego-integrity versus despair. Ego-integrity refers to the integration or culmination of the successful resolutions of all seven previous crises in the course of one's life.

Unit Reflection



After learning this unit, take time to think about the effects of nature and nurture on human development. Do you think that have they any contribution in our today life?

Unit Assignment



Attempt the following questions:

- Define human development.
- Describe at least five principles of human development.
- Describe five dimensions of human development.
- Discuss how human development affects learning.



References

- Bernstein, A. D. (1988). *Psychology*. Dallas, TX: Houghton Company.
- Campbell, C.Y. (2002). *Psychology*. Chicago, IL: Rand McNally.
- Dweck, C.K. (2002). *Social learning: A psychological perspective*. San Diego, CA: McGraw-Hill.
- Knowles, M. (1978). *The Adult Learner: A Neglected Species* (Pd Edition). Huston: Gulf Publishing.
- Lahey, B. (1998). *Psychology: An introduction*. New York, NY: McGraw-Hill.
- Lema, V. I. (2004). *General psychology*. Dar es Salaam, Tanzania: The Open University of Tanzania.
- Perrin, L. (1986). *Understanding psychology* (4th ed.). New York, NY: McGraw Hill.
- Santrock, W. J. (2011). *Educational psychology*. New York, NY: The McGraw-Hill.
- Twining, K. (2001). *Success in psychology*. London, England: John Murray Publishers.