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COURSE TITLE: PSYCHOLOGY OF ADULT LEARNING

Psychology of Adult Learning

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Course Code: ODL 701

Module 1

Unit 1 Concept of Psychology of Adult Learning

Unit 2 Learning theories and Learning Principles related to Adult Learning

Unit 3 Transfer of Learning

Unit 1 Title: Psychology of Adult Learning

CONTENTS

1.0 Introduction

In EDU 601 and EDU 621 Psychology of Learning, you have learnt the concept of learning, theories of learning, motivation, some factors affecting learning, and theories of retention in Learning, transfer of learning and how these principles and theories are applied to teaching and learning situations. In this unit we shall be studying how these theories and principles apply to adult learning. Today's adult learners differ from traditional college-age students. Adult learners tend to be practical problem solvers, transferring their theoretical knowledge into practical real life situations. Adult learners' life experiences make them autonomous, self-directed, and goal- and relevancy-oriented. They need to know the rationale for what they are learning. They are motivated by professional advancement, external expectations, the need to better serve others, social relationships, escape or stimulation, and pure interest in the subject. Their demands include time and scheduling, money, and long-term commitment constraints. They also tend to feel insecure about their ability to succeed in Distance Learning, find instruction that matches their learning style, and have sufficient instructor contact, support services, and technology training (Diaz, 2002).

2.0 Objectives

At the completion of this unit, the learners will be able to:

I. Express an overview of Adult learning
II. Explain the concept of Andragogy;
III. Identify the characteristics of Adult learners
IV. Apply of the Principles of Andragogy to teaching and learning
V. Identify variables affecting Adult Learning

3.0 Main Content

3.1 Overview of Adult Learning

We shall be discussing this unit in concert with our experience as adult learner. From our experience we can correctly describe typical adult learning theories to encompass the basic concepts of behavioural change and experience. Up until the 1950's basic definitions of learning were built around the idea of change in behaviour (Merriam and Caffarella, 1999), after this point, more complexities were introduced "such as whether one needs to perform in order for learning to have occurred or whether all human behaviour is learned " (Merriam and Caffarella, 1999, p. 249).

Jean Piaget cited by Merriam & Caffarella, (1999, p. 139) states that there are "four invariant stages of cognitive development that are age related" According to the authors, Piaget contends that normal children will reach the final stage of development, which is the stage of

formal operations, between the age of twelve and fifteen. As cited by Merriam and Caffarella (1999), Arlin (1975, 1984), established from the work of Gruber (1973) on the development of **creative thought** in adults, has attempted to identify a fifth stage of development, in addition to Piaget's formal operations. Arlin (1975, 1984 p. 141) contends that formal thought actually consists of two distinct stages, not one, as Piaget proposed" Arlin (1975) proposes that Piaget's fourth stage, formal operations, be renamed the **problem-solving stage**. According to Merriam and Caffarella (1999), Arlin's hypothesized fifth stage was the ***problem-finding stage***. This stage focuses on **problem discovery**. Though Arlin's proposed fifth stage produced more questions than answers, it opens the door to understanding the learning needs of adults; to be approached as thinkers (Merriam and Caffarella, 1999)

According to a literature review by Ross (2002), humanism, personal responsibility orientation, behaviourism, neo-behaviourism, critical perspectives, and constructivism are all important facets of, and perspectives on adult learning theory. The most common researched areas of **self-directed adult learning are learning projects, qualitative studies, and quantitative measures.** Collins (1991) explores adult learning as the **interactive relationship of theory and practice**. In basic terms, the adult learner studies a particular theory and then puts it into practice when presented with the opportunity to do so. Thus, the understanding of an adult learning theory can prompt practice and practice can prompt adult learning theory revision

There is very little consensus amongst the theorists of adult learning. There is great debate on an actual determined amount of theories that are even possible, as well as labelling those theories into groups. Overall it seems that the theory of adult learning could be broken into two groups; 1) **a process that creates change within the individual**, and 2) **a process to infuse change into the organization.** Adult learning may be defined as a process, which brings about a **relatively permanent change in the individual's behaviour** (personality) **as a result of knowledge, practice or other experience.** There are many theories of learning based on many kinds of learning (Reddy, 2005). The main theories such as **Learning by Association**, **Learning by Conditioning, Learning by Doing and Learning by Insight** are considered to be very relevant to adult learning which would been discussed in the next units. For the purpose of discussing adult learning the unit will focus on the Concept of Andragogy

In text question
Explain the differences between an Adult learner and School age learner

3.2. Concept of Andragogy

Malcolm Knowles might well be considered the founding father of adult learning. He contrasted the "concept of andragogy, meaning **"the art and science of helping adults learn,"…**with pedagogy, **the art and science of helping children learn**" (Merriam & Caffarella, 1999, p. 272). Knowles' original studies and writings arose from the assumption that there are significant, identifiable differences between adult learners and learners under the age of eighteen. Primarily, the differences, according to Knowles, relate to **an adult learner being more self-directing, having a repertoire of experience, and being internally motivated to learn subject**

matter that can be applied immediately – learning that is especially "closely related to the developmental tasks of his or her social role" (p. 272). Knowles labelled andragogy as an emerging technology which facilitates the development and implementation of learning activities for adults. This emerging technology is based on five andragogical assumptions of the adult learner:

CHARACTERISTICS OF ADULT LEARNERS

- Adults are *autonomous* and *self-directed.*
- Adults have accumulated a foundation of *life experiences* and *knowledge* that may include work-related activities, family responsibilities, and previous education. They need to connect learning to this knowledge/experience base.
- Adults are *goal-oriented*.
- Adults are *relevancy-oriented*.
- Adults are *practical*, focusing on the aspects of a lesson most useful to them in their work.
- Adults need to be shown *respect*" (Lieb, 1991).

.A more current summary of distinguishing characteristics (adult learners v. younger learners) is provided in "Teaching in the Lifelong Learning Sector":

- Adult learners need to know why they are learning particular things.
- Adult self-concept – they need to perceive themselves as self-directed and responsible for their own decisions.
- Adult learners have a wide variety of experience which represents a rich resource for learners and teachers. They do, however, need to recognize bias and subjectivity in their opinions and experiences.
- Adults have readiness to learn those things which will help them to deal with real-life situations.
- Adults are motivated to learn things which are of interest or important to them. This, and their readiness to learn, implies that adults have intrinsic motivations to learn. (Scales, 2008, p. 81).

There are four critical elements of learning that must be addressed to ensure that participants learn. These elements are: **motivation, reinforcement, retention, and transference**" (Lieb, 1991

3.3 Principles of Andragogy and Applications

1. Self-Concept: As a person matures, he or she moves from dependency to self-directness.
2. Experience: Adults draw upon their experiences to aid their learning.
3. Readiness: The learning readiness of adults is closely related to the assumption of new social roles.

4. Orientation: As a person learns new knowledge, he or she wants to apply it immediately in problem solving.
5. Motivation (Later added): As a person matures, he or she receives their motivation to learn from internal factors.

These five assumptions dovetail with the thoughts and other theories of learning. Merriam and Caffarella (1999) point to three keys to transformational learning: **experience, critical reflection and development.** The aspect of experience (the second assumption to andragogy) seems like an important consideration in creating an effective learning opportunity for adults. The learning opportunity needs to be relevant and applicable to a person's set of experiences.

Knowles used these principles to propose a program for the design, implementation and evaluation of adult learning. Since the development of his theory, Knowles has acknowledged that the principles he outlined did not apply solely to adult education. The development of the theory simply illustrates that the designer "**should involve learners in as many aspects of their education as possible and in the creation of a climate in which they can most fruitfully learn"** (Merriam, 2001, p.7). Knowles' main focus with the development of andragogy was the notion of the **material being very learner centred and the learner being very self-directed**.

In text question

What are the characteristics of adult learners that differentiate them from college aged students?

Application of the principles of Andragogy

(Theory by Malcolm Knowles)

- "Adults need to be involved in the planning and evaluation of their instruction
- Experience (including mistakes) provides the basis for learning activities
- Adults are most interested in learning about subjects that have immediate relevance to their job or personal life
- Adult learning is problem-centred rather than content-oriented" (Conlan, Grabowski, & Smith, 2003, p. 1).

Andragogy assumes the following about the design of learning:

1. Adults have the need to know why they are learning something.
2. Adults learn through doing.
3. Adults are problem-solvers.
4. Adults learn best when the subject is of immediate use.

According to Knowles (1984,) an example used to apply the principles to personal computer training:

1. Explain why certain skills are taught (functions, commands).
2. Task oriented instead of memorizing. Tasks should be common tasks.
3. Take diversity into play. Acknowledge different learning levels and experience.
4. Allow adults to learn on their own and from their mistakes.

In applying these principles in learning situations adults are told what they are going to learn and more importantly, why they are learning specific operations (functions, etc.). The learners are given task-oriented instruction as well as real-world assignments to test their skills such as creating a basic resume or a to-do list. The instructor will take into account the wide range of backgrounds of learners. The learning materials and activities should allow for different levels/types of previous experience with the subject matter. Attention will be paid to individual levels and goals. The instructor's role is as facilitator and expert to present the tasks and assist the learners if mistakes are made or help is requested.

Advantages/Strengths:

- Andragogy is very self-directed and allows the learner to take control of his or her learning
- Andragogy is very broad based and the method can be implemented in a variety of educational situations

Disadvantages/Weaknesses:

- Although the principles behind andragogy are very applicable in most adult learning situations it is not necessarily limited to implementation within adult learning
- Historically, andragogy has been hard to classify. It has been referred to as "a theory of adult education, theory of adult learning, theory of technology of adult learning, method of adult education, technique of adult education, and a set of assumptions."

Some would contend that Knowles only introduced a theory of teaching rather than a theory of adult learning. In commenting on this thought, Merriam and Caffarella (1999) referring to Hartree suggest, "that it is not clear whether Knowles had presented a theory of learning or a theory of teaching, whether adult learning was different from child learning, and whether there was a theory at all-perhaps these were just principles of good practice" (p. 273). It is further contended that Knowles did not establish a proven theory; rather he introduced a "set of well-grounded principles of good practice" (Brookfirle, 1986, p. 98).

Within companies, instructional methods are designed for improving adult learners' knowledge and skills. It is important to distinguish the unique attributes of adult learners so as to be better able to incorporate the principles of adult learning in the design of instruction" (Yi, 2005, p. 34). Within this context, adult learning is aimed at not only improving individual knowledge and

skill, but ultimately it is the goal to improve the organizational performance by transfer of learning directly to work applications. Yi suggest three methods to **foster learning** in adult organizations:

I. **Problem-Based** learning which seeks to increase **problem-solving** and critical **thinking skills**;
II. Cooperative Learning, which builds communication and interpersonal skills; and
III. Situated Learning, which targets specific technical skills that can be directly related to the field of work (Yi, 2005).

Each of these methods support the assumptions about how adults learn; specifically they are more self-directed, have a need for direct application to their work, and are able to contribute more to collaborative learning through their experience

3.4 Variables affecting Adult Learning

Learning opportunities for adults exist in a variety of settings ranging from a formal institution to a place of employment. It is important to acknowledge prior knowledge and experiences of learners, including their ability to recognize their own skills as lifelong learners. (Merriam, 1999). Considerations for adult development and learning include biological and psychological development (including deterioration and disease processes that may occur) and socio-cultural and integrative perspectives on development (Merriam, 1999). While the most common reason for adults to place themselves in a learning environment is a life-changing event, once in that environment there are many factors that affect the learning experience. The most significant is referred to here as the briefcase brought with them.

Experiential briefcase may include:

- Life experience (including life altering events that affect cognitive abilities)
- Work experience (including development of thinking patterns based on this experience)
- Positive/negative previous adult learning experiences
- Performance effectors, including cognitive abilities
- Time between learning interactions
- Aging factors

4.0 Conclusion

This unit introduces you to the knowledge of Psychology of adult learning, the concept of andragogy, characteristics of adult learners, motivating factors for adult learning, principles of andragogy of teaching and learning and identification of variables affecting adult learning thereby exposing you to the rudiment of the subject matter.

5. 0 Summary

In this unit, the authors treated the Concept of Andragogy, characteristics of adult learners, principles of Andragogy of teaching and learning and identification of variables affecting Adult Learning

6.0 Tutor- Marked Assignment

i. Identify the differences between Andragogy and pedagogy?
ii. Identify and explain the characteristics of Adult Learners.
iii. Explain how the Principles of Andragogy can be applied in the teaching and learning in distance education
iv. Identify and explain different variable that affect Adult Learning

7.0 Reference/Further Reading

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UNIT 2

Unit Title: **Learning theories and Learning Principles related to Adult Learning**

3.0 CONTENTS

1.0 Introduction

In Unit 1 you have learnt about Adult learning, concept of Andragogy, the characteristics of Adult learners, Principles of Andragogy to teaching and learning and variables affecting Adult Learning. In this current unit, the authors discuss learning theories are significantly related to Adult Learning. These are Action Learning, Experiential Learning, Self-Directed Learning, Project-Based Learning and transformation/Constructivism. In each section, brief introduction and pros and cons of each theory would be explained

2.0 Objective

At the time you have completed studying this unit, you will be able to explain the following learning theories and principles and relate them to Adult Learning: These are Action Learning, Experiential Learning, Self-Directed Learning/or Learning by insight, Project-Based Learning,

Transformational/Constructivism. Also the implications of Constructivism to application of computer technology to teaching and learning in Adult Education and variables affecting Adult Learning have been explained in this unit

3.0 Main Content:

Learning theories and Learning Principles related to Adult Learning

3 .1 Action Learning

Action learning is defined as an approach to working with, and developing people, which uses work on a real project or problem as the way to learn. Participants work in small groups or teams to take action to solve their project or problem, and learn how to learn from that action. A learning coach works with the group in order to help them learn how to balance their work, with the learning from that work (O'Neil, 2000, p.44)."

Action learning is a commonly used term in many discussions regarding adult learning in a variety of business settings. It holds many similarities to learning communities. If it is to be distinguished, action learning is basically the small components that create the main team involved in a learning community. Action learning has been compared with **project work**, learning communities and various forms of simulation used in management development. It has been more widely used recently for organizational problems (Yorks, 2000).

Components of Action Learning:

- The first part of action learning is creating action groups based on programmed learning, "the expert knowledge" and learning or real world experiences. These are small groups, generally consisting of 3 or 4 people.
- Emphasis is placed on diversifying these small groups so that each group is best equipped to contribute to the learning community.
- A learning coach is designated for each group. Together, the learning coaches also form a group.
- From there, a project group leader is chosen. Both the project group leader and the learning coaches act as organizers, facilitators and overall motivators for the action groups (O'Neil, 2000).
- Action learning involves learning from experience through reflection and action with the support group.
- It is important that the groups remain constant and have duration, meaning the opportunity to establish themselves over a solid time period (Wade, 1999).

The action group fellow these steps by 1) setting objectives, 2) creating an action group, 3) assigning a learning coach, 4) presenting the challenge, 5) defining the problem, 6) identifying actions, 7) testing out the actions, 8) discussing the results, 9) setting the action plan, 10) and drawing a conclusion.

Advantages/Strengths:

- Process used in forming groups
- Balanced and diverse groups enhance the learning process and allow significant contributions to the learning community
- Utilization of group dynamics

Disadvantages/Weaknesses:

- Struggle constantly with the balance between accomplishing their task and learning from it
- Difficult to ensure consistency across groups and across sessions of any program
- Challenge of group dynamics

3.2 Experiential Learning

"Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand." Confucius, circa 450 BC

Experiential learning is a learning theory that is learner-centred and operates on the premise that individuals learn best by experience. A good way to describe this theory is **"learning by doing".** Experiential learning thus has the learner directly involved with the material being studied instead of just thinking and talking about that material.

Experiential learning:

- Is a cyclic process involving setting goals, thinking, planning, experimenting and making decisions, and finally action, followed by observing, reflecting and reviewing
- Uses participants' own experience and their own reflection about that experience, rather than lecture as the primary approach to learning. Experiential learning theory allows for the generation of understanding and allows for the transfer of skills and knowledge.
- Involves doing something and discovering what it is like, how it made the learner feel, what it meant to the learner, i.e. experiential learning is their experience and no one else's.
- Is, therefore, particularly effective in adult education as it addresses the cognitive, emotional and the physical aspect of the learner

Advantages/Strengths:

- Experiential learning theory builds on experience. This is especially important in adult learning because simply by living, adults bring a wealth of experience to every learning situation they face.
- Experiential learning theory is a holistic learning approach
- Experiential learning theory is most effective when the learning has intrinsic motivation which is a common characteristic in adult learning

Disadvantages/Weaknesses:

- Experiential learning theory does not take into account differences in cultural experiences or conditions
- It is less clear where elements of learning such as goals, purpose and intentions fit into experiential learning theory
- It may not help us understand and explain change and new experiences (Conlan, Grabowski & Smith, 2003)

3.3 Project Based Learning

In Project Based Learning, students work in groups to solve challenging problems that are authentic and often interdisciplinary. Learners decide how to approach a problem and what activities to pursue. **(Brain storming)**

- The learners gather information from a variety of sources and synthesize, analyze, and derive knowledge from it.
- The learning is inherently valuable because it is connected to something real and involves adult skills such as collaboration and reflection.
- At the end, the learners demonstrate their newly-acquired knowledge and are judged by how much they have learned and how well they communicate it.

- Throughout this process, the teacher's role is to guide and advise, rather than to direct and manage student work. (Conlan, Grabowski & Smith, 2003)

NOTE; Their first step was to discuss and write about the problem in Brain storming session. They brain storm about the issues. The students take turns stating their own view about the problems. Through group discussion the list was narrowed down the most pressing problems. The class then put together a survey to get input from other sources outside the group on these topics. This group work helped the students develop not only literacy but also social skills. The class compared the answers from other sources, looking for the biggest issues.

Advantages/Strengths:

- PBL gives the learner a chance to work on real-life scenarios that would be implausible on a real scale. (i.e. management training in restructuring corporations)

- It allows for cooperative learning situations which build teamwork and collaboration skills important in many adult learning situations. (Conlan, Grabowski & Smith, 2003).

Disadvantages/Weaknesses:

- PBL might not always be the best learning method when dealing with many different cultures and backgrounds because problem solving methods vary from culture to culture(Conlan, Grabowski & Smith, 2003).

3.4 Self-Directed Learning or learning by insight

Informal and incidental learning is at the heart of adult education because of its learner-centred focus and the lessons that can be learned from life experience (Marsick, 2001, p.25)." Self-directed learning is an example of informal learning. It is defined as the process in which individuals take on the responsibility for their own learning process by diagnosing their personal learning needs, setting goals, identifying resources, implementing strategies and evaluating the outcomes. In 1999, more than 95% of adults participated in self-directed learning. Typical learners spend an average of 15 hours per week on a self-directed learning project (Rager, 2003).

There are three categories involved with self-directed learning: **the goals, the process**, and **the learner.** In an adult learning context, the goals are generally self-determined, as is the process. Self-directed learning can be enhanced with facilitation, particularly through providing resources. Motivation is key to a successful self-directed learning experience. This is very similar to the motivation that takes place in children during a self-regulated learning experience

Adult Learners are motivated by the opportunity to:

- Gain new skills, knowledge, and attitudes to improve their work performance
- Improve family life and health, enjoy the arts and physical recreation, participate in a hobby, or simply increase their intellectual capital

For many, self-directed learning becomes a means to learn about their issues through consulting various resources to obtain an insight the problems. Resources obtained, support groups, libraries and the Internet facilitate their learning. From this information, the learners gain a sense of control and direction over their own well-being, and are able to make informed decisions about treatment options.

In psychology the term 'insight' connotes the apprehension of a principle, of a task, puzzle, etc. In the same way 'insight learning' means direct learning without a process of blind trial and error. 'Insight' refers to the power of seeing into and understanding things, enlightenment and an awareness of one's own mental condition. While classical conditioning and operant conditioning (trial and error) belong to the stimulus response theories of learning (Association Theories), insight learning belongs to the cognitive learning theories (Field Theories). The cognitive learning theories give importance to cognition (perception) in learning. Cognitive theorists have investigated and shown that people learn by perceiving comprehending and conceptualizing the problem. The comprehension of concepts and rules, etc., is transferable to the solution of new problems. The cognitivists argue that people grasp things as a whole, and therefore, oppose the behaviourist approach to teaching which employed drills to memorise the information. They believe that learning is both a question of 'insight' formation and successful problem-solving, and not a mechanical sequence of stimulus and response. And so, teaching, according to cognitivists, should encourage understanding based on 'problem-solving' and insight formation.

The Gestalt psychologist, Wolfgang Kohler (1929) conducted a series of experiments on Chimpanzees, the first cousin of man. The cognitive field theorists regard teaching as a process of developing understanding or insight in the learner. Learning is the organisation of the perceptual field. It is the restructuring of the cognitive field. The individual goals of the learners should decide the learning experiences and the learners should be encouraged to discover relationships. Insight learning is 'molar' in character. (Molar view - the whole is not merely the sum of its parts; the whole has its own properties and the whole is important). We perceive the 'meaningful wholes' which are different from and more than a bundle of sensations, images or ideas. Consequently learning does not mean mere formation of S-R connections, which is 'molecular' in approach. (Molecular view – mere parts are perceived and the whole is nothing but a sum of the parts -emphasis on elements or parts). Insight learning is seeing new patterns and organising them into a meaningful whole in the total situation. This sudden restructuring of the pattern, the quick change in our perception is called 'insight'. The psychological field is made up of the individual and his environment.

Advantages/Strengths:

- Integrated with daily routines
- Triggered by an internal or external motivation
- An inductive process of reflection and action

- Linked to learning of others (Conlan, Grabowski & Smith, 2003)

Disadvantages/Weaknesses:

- Learners are self-directed depending on the situation. They will not necessarily be self-directed in all situations.

- Not all adults prefer the self-directed option, and even the adults who practice self-directed learning also engage in more formal educational experiences such as teacher-directed courses.
- Because it is unstructured, learners can easily be distracted by their own needs, assumptions, values, and misperceptions.
- Research has shown that some adults are unable to engage in self-directed learning because they lack independence, confidence, or resources.

In recent years, less research has been conducted on self-directed learning (Conlan, Grabowski & Smith, 2003)

The major emphasis of this theory is on how to design educational activities to promote cognitive learning. We describe below the major educational implications of this theory. Intelligence plays an important role in getting insight. Therefore the problems given to The learners should be relevant to their life situation.

Experience has an equal share in providing insight. Problem well within the experience of learners can be solved by insight and enrich the experiences of the learners. Insight learning is possible only by the individual's unceasing endeavour. The learners should be encouraged to strive to reach the goal. For that the subject matter should be properly structured and organised. Sufficient time should be given to the learners to survey the whole situation, and when all essential clues are in their perceptual field the learners get the 'insight' for solving the problem. It emphasises the study of learner characteristics which can be used by the teacher to expand the quality and quantity of student's insights

3 5 Transformational /Constructivism Learning and Its Implication to Computer Application

Mezirow defined his theory of transformative learning as stages in cognitive restructuring and integration of experience, action, and reflection. Mezirow's theory of transformative learning focuses on the individual as a reflective learner. In addition, the principles of **constructivist** learning are important, because knowledge and meaning are built as a result of experience and are dependent upon socio-cultural contexts" (Stansberry & Kymes, 2007, p. 489).

Transformative, or transformational, learning occurs when the individual is forced to encounter an event or situation that is inconsistent with his or her existing perspective. This shift in perspective can be gradual or sudden, and the individual moves through a series of stages in the cognitive restructuring and reconciliation of experience and action" (Stansberry & Kymes, 2007, p. 489)

Principles of Transformative Learning (Jack Mezirow)

- "Adult exhibit two kinds of learning: instrumental (e.g., cause/effect)) and communicative (e.g., feelings)

- Learning involves change to meaning structures (perspectives and schemes).
- Change to meaning structures occurs through reflection about content, process or premises.
- Learning can involve: refining/elaborating meaning schemes, learning new schemes, transforming schemes, or transforming perspectives" (Conlan, et al., 2003, p. 1).

Educational Implications of Constructivist –focused on teaching and learning.

Open and distance education is technological driven in both content and design. The use of computer in teaching and learning copies a prominent position in Open and Distance Learning. The concept of using computer for teaching and learning in akin to constructivism theory of learning

Online Learning aka eLearning (formal and/or informal) utilizing Course Management Systems (CMS) and/or virtual worlds such as the AET Zone ("Emerging," 2002). "Virtual worlds allow opportunities for students and instructors to interact synchronously, providing a richer social interaction for learning" ("Emerging, 2002, p. 1).

Online teaching involves interactive learning, collaborative learning, facilitating learning, authentic learning, learner-cantered learning, and high quality learning" ("Emerging," 2002, p. 1). For example, "students may enter into either synchronous or asynchronous discussions throughout the course via chats, blogs, wikis, threaded discussions, or email. This collaboration leads to shared knowledge and higher critical thinking skills. The instructor's role is to facilitate learning, support learners, monitor their learning, and to provide directions and guidelines for learners" ("Emerging," 2002, p. 1).

CSILE (or Computer-Supported Intentional Learning Environment aka Knowledge Forum) is one example of software that supports a networked, multimedia environment in which students collaborate on learning activities. They do this by creating 'notes' to express their ideas or integrate outside information about a topic. Then they read and respond to the notes of others, all of which builds a communal database producing shared knowledge about the topic or problem. CSILE also facilitates connections between schools and the scientific community, allowing practicing scientists to serve as mentors to students. Other projects, such as Kids as Global Scientists, also bring students and various experts together in virtual communities through Internet links. Such a dialogue-based approach to learning creates a rich intellectual context, with ample opportunities for participants to improve their understanding and become more personally involved in explaining scientific phenomena" (Driscoll, 2002, p. 1).
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3. 6 Need for professional Training for Instructional Designers and Facilitators of Adult Learning

Much of adult learning occurs in a corporate environment involving a variety of training processes. In addition to applying the various learning styles, trainers/facilitators in such environments need to have a working skill set to meet the demands of fast-paced, changing environments. New trends involve instructional designers and facilitators becoming long-term assets to training departments. Expectations are for trainers to arrive not only with delivery skills, but also with design experience and application of learning theories in a variety of settings (Meyer, 2003).

The most significant trend that continues to make an impact on facilitators is the demand for the incorporation of technology into the content and delivery of professional development (King, 2003).

The professional development toolkit for trainers should include:

- The basics of design and delivery - needs assessment, developing objectives, creating an agenda, selecting appropriate activities, providing for transfer, and designing and conducting evaluation activities
- An understanding of diverse clients and their different learning styles
- The ability to read the context, assess needs, and select or create appropriate mini-learning sessions that are often delivered as just in time learning
- The use of reflective practice skills to make sense of their situation, tailoring learning solutions to their own and other local learning needs, developing and nurturing collaborative communities of practice
- The ability to coordinate university-based, certificate, and in-service programs designed as learning laboratories
- The ability to develop activities that increasingly involve active experiential learning and debriefings
- The ability to use more than one delivery system, particularly online and eLearning
- The use of learner-centred instruction, especially self-directed learning, means trainers will need to create better ways to include opportunities for reflection, clarification, and guidance

Professional development of facilitators of adults should promote dialogue, reflection, and quality. The integrative approach to professional development involves key elements (Lawler, 2003).

Training is critical in five areas today (Riddle, 2000). These areas - stimulating creativity, assessing innovation options, focusing on the customer, designing new services, and implementing change - require a broad range of skills on the part of the trainer. Development of trainers should include demonstrating multiple approaches to delivering the same information

Table 1. *Learning Theories Related to Adult Learning - table created by Mandy McEntyre and Jenn Pahl (2006).*

Theory Smmary	Pros of the Theory	Cons of the Theory	Theory in Practice
Action Learning	Small groups learn by solving real world problem Participants work in small groups on a real project/problem and learn how to learn from that activity. Group members benefit from learning coaches who act as organizers, facilitators, and overall motivators.	Challenges imposed by group dynamics Diverse group dynamics includes members with expert knowledge which allows each member to significantly contribute Difficulty ensuring consistency across groups and maintaining groups across sessions in a learning program. Difficulty balancing accomplishing the work with learning from the work	Researchers for an information services company undergo training to help them increase their data acquisition numbers Small groups are formed and an outside consultant/ learning coach assists them in brainstorming and developing new techniques for gathering data from industry sources. As the techniques are developed the groups test them on their sources and refine them. Every four weeks the groups convene to discuss their progress and what they have learned. The end result is a new set of improved data gathering techniques and an overall group understanding of how to use them.
Experiential Learning	A holistic learning approach in which the learner utilizes his/her experiences and learning strengths in the process of constructing knowledge. More commonly referred to	Learning takes place through direct involvement and reflection Learners may bring differing cultural experiences or perspectives to the learning experience	Time and resource intensive for student and instructor An audio/visual equipment company recently hired several sales representatives, all of whom have sales experience in other

	as “learning by doing”. Learners bring their own life experience to the learning situation. “Hands-on” aspect increases motivation and material retention	Theory does not aid in understanding or explaining change and new experiences	industries. As part of their training, each new sales representative is paired with a mentor who is a veteran with the A/V company The A/V mentors take the new sales reps to assist on sales calls. This allows the new sales reps to learn the industry by interacting with customers during the sales process It also assists the new sales reps in determining how they can use their previous sales experience to advance themselves in their new positions.
Project Based Learning	Participants work in small groups to solve a challenging, interdisciplinary problem using group chosen strategies and activities. Participants are able to participate in learning scenarios directly applicable to the real-world.	Allows for participants to participate in cooperative learning activities which help to build teamwork and collaboration skills. Problem solving skills may differ among cultures, causing problems among group members during PBL activities PBL activities may prove to be time consuming in terms of both planning and applying	A city has recently been awarded a government grant to build a park. The city has charged a class at a local community college with the job of creating a plan that efficiently uses available space and funds. In groups the students search out possible plans for the park through surveys, studies, etc. Each group then presents their plan to the council for a vote to

			decide upon a plan for the park
Self Directed Learning	An informal learning process in which an individual takes on the responsibility for his/her learning process by identifying their learning needs, setting goals, finding resources, implementing strategies, and evaluating their results. Can be easily implemented in daily activities Students are motivated by internal/ external motivation Self-Directed Learning is a reflective and action-oriented process. Learning can be linked with other students	Some situations lend themselves to self-directed learning better than others. Self-Directed Learning needs to be combined with other learning methods for content to be fully learned	Bob would like to buy a new car. He wants to ensure that he gets the best car for his budget, so he begins to conduct research on cars, their gas mileage, size, and financing plans. By searching for information online, visiting numerous dealerships and obtaining brochures, Bob is able to expand his knowledge and make an educated decision as to which car he will purchase. Since Self-Directed Learning is unstructured and independent, it is easy for students to become unproductive.

- **This table was created by Mandy McEntyre and Jenn Pahl (2006).**

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4. 0 Conclusions

This unit expose you to a multitude of theories applicable to adult learning. For each theory, there are many independent factors brought to the environment by the learner. Based on the research by the authors, the theories listed in this unit were found to be the most relevant for current trends in adult learning. However, all theories should be taken under consideration by facilitators and learners

5. 0 Summary

In this unit, the authors discussed, Action Learning, Experiential Learning, Project Based Learning, Self-Directed Learning Transformational/Insight Learning and how these learning theories and could be applied to Adult Education and the use of technology in teaching and learning'

Tutor- Marked Assignment

Explain any two of the following learning theories and apply them to teaching and learning of your subject area of specialisation.

a) Action Learning;
b) Experiential Learning;
c) Self-Directed Learning;
d) Project-Based Learning and;
e) Transformational Constructivism

7.0 Reference/Further Reading

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Unit 3
TRANSFER OF LEARNING

CONTENTS

1.0 INTRODUCTION

The ability of the individual to apply the previous experience on the new related experience is what we call transfer of learning. Except students are able to transfer prior skills and knowledge on new ones, the continuity of learning will be difficult. Adults have readiness to learn those things which will help them to deal with real-life situations. This unit will explain how adult learners transfer learning from classroom situation to real life situation. You will know what the tutorial facilitator needs to do in order to facilitate transfer of experiences among his/her students.

2.0 OBJECTIVES

By the end of this study, you should be able to:

i. Explain transfer of learning
ii. Discuss the three theories of transfer of learning
iii. Enumerate adult learning implications of transfer of learning.

3.0 MAIN CONTENT

3.1 Concept of Transfer of Learning

The essence of learning to adults is to learn those things which will help them to deal with real-life situations. Transfer of learning therefore means a previously learnt fact should be linked with a present experience. This is because human beings are dynamic and that the prior experience will make them to develop the new skills and knowledge. The influence the past experience has on the succeeding experience is called transfer of learning. Cormier and Hagman, (1987) define transfer of learning as the application of skills and knowledge learned in one context being applied in another context. Oladele (1998) defines transfer of learning as the effect of prior learning on the present. For example, if a learned experienced seizes to aid the new learning, the goal of training has seized to be accomplished. In the case of learning at distance, the distance learner learns some subjects in order that the experience gained in those subjects could be transferred into another life situation.

Transfer of learning is the study of the dependency of human conduct, learning, or performance on prior experience. The notion was originally introduced as *transfer of practice* by Edward Thorndike and Robert S. Woodworth Robert (1901a). They explored how individuals would transfer learning in one context to another context that shared similar characteristics – or more formally how "improvement in one mental function" could influence another related one. Their theory implied that transfer of learning depends on the proportion to which the learning task and the transfer task are similar, or where "identical elements are concerned in the influencing and influenced function", now known as *identical element theory*. However, there remains considerable controversy about how transfer of learning should be conceptualized and explained, what its probability occurrence is, what its relation is to learning in general, or whether it may be said to exist at all.

Most discussions of transfer to date can be developed from a common operational definition, describing it as the process and the effective extent to which past experiences (also referred to as the transfer source) affect learning and performance in a current novel situation (the transfer target) (Ellis, 1965; Woodworth, 1938) There are a wide variety of viewpoints and theoretical frameworks apparent in the literature. For our purpose we shall looking at transfer of learning from education science perspective.

3.2 Transfer of Learning in Education: Teaching for transfer

There are a nearly unlimited number of research fields that share some applied interest into the study of transfer, as it pertains to learning in general. Three fields that contributed in most substantial ways to the progress of transfer research, both from a conception and empirical point of view, are the fields of education science, linguistics, and human-computer interaction (HCI).. In fact, most transfer research has been conducted in reference to one of these applied settings, rather than in basic cognitive psychological laboratory conditions

Due to their core concern with learning, educational science and practice are the classic fields of interest regarding transfer research, and probably the prime target for the application of theories. Transfer of learning represents much of the very basis of the educational purpose itself. What is learned in one learning situation about a certain subject should aid in the attainment of related goals in other learning settings, and beyond that it should be applicable to the learner's developmental tasks outside the school; the need for transfer becomes more accentuated. The major focus in educational transfer studies has, therefore, been on what kind of initial learning enables subsequent transfer: *teaching for transfer*. Research on learning and transfer has identified key characteristics with implications for educational practice.

3. 2. 0 Educational transfer paradigms

Educational transfer paradigms have been changing quite radically over the last one hundred years. With the turn of the 20th century, learning, and therefore transfer of learning, was increasingly captured in behavioural and empiricist terms, as in the Connectionist and Associationist theories of Thorndike (e.g., 1932), Guthrie (e.g., 1935), Hull (e.g., 1943), and Skinner (e.g., 1938). Thorndike (1923, 1924a and b) attacked the Formal Discipline empirically and theoretically and introduced the theory of "identical elements", which is probably still today the most influential conception about transfer (Thorndike, 1906; Thorndike & Woodworth, 1901a, b and c). Thorndike's belief that transfer of learning occurs when learning source and learning target share common stimulus-response elements prompted calls for a hierarchical curricular structure in education. "Lower" and specific skills should be learned before more complex skills, which were presumed to consist largely of configuration of basic skills. This small-to-large learning, also referred to as part-to-whole or vertical transfer, has been popular with theories of learning hierarchies (Gagné, 1968).

It has later been challenged from conceptualistic point of views, which argue that learning is not just an accumulation of pieces of knowledge (i.e., rote memorization), but rather a process and product of active construction of cognitive knowledge structures (Bruner, 1986; Bruner, Goodnow & Austin, 1956). Knowledge, from a constructivist perspective, was no more believed to be a simple transfer by generalization to all kinds of situations and tasks that contain similar components (i.e., stimulus-response patterns; see also Logan, 1988; Meyers & Fisk, 1987; Osgood, 1949; Pavlov, 1927).

The critical issue was the identification of similarities in general principles and concepts behind the facades of two dissimilar problems; i.e., transfer by insight. This idea became popular in the Gestaltists' view on transfer (e.g., Katona, 1940), and, in combination with growing interest in learners as self activated problem-solvers (Bruner, 1986), encouraged the search for abstract problem-solving methods and mental schemata, which serve as analogy-enhancing transfer-bridges between different task situations.

Emerging from these developments, a new theme started to dominate educationalists' research in transfer: meta-cognition (Brown, 1978; Brown & Campione, 1981; Campione & Brown, 1987; Flavell, 1976). In contrast to classical knowledge forms like declarative and

procedural knowledge, different types of meta-knowledge and meta-cognitive skills such as strategic knowledge, heuristics, self-monitoring skills, and self-regulation quickly became the road to learning and transfer. Characterized as self-conscious management and organization of acquired knowledge (Brown, 1987) it is evident that meta-cognitive awareness of task features, problem structures, and solution methods makes relations between different situations cognitively salient: only an individual who learns from learning, learns for future learning. Soini (1999) developed on the same core ideas an examination of the preconditions for active transfer. Her emphasis is on the active and self-reflected management of knowledge to increase its accessibility. To some researchers, meta-cognition and transfer have become so entangled that the argument was generated that only the measurement of positive transfer effects truly supports inferences that meta-cognitive learning has taken place (e.g. MacLeod, Butler & Syer, 1996) Transfer of learning as applied to adult learning involves meta-knowledge and meta-cognitive skills such as strategic knowledge, heuristics, self-monitoring skills, self-regulation, self- conscious management and organisation of acquired knowledge.

3.2.1 Learning and transfer: implications for educational practice

A modern view of transfer in the context of educational practice shows little need to distinguish between the general and specific paradigms, recognizing the role of both identical elements and meta-cognition. In this view, the work of Bransford, Brown and Cocking (1999) identified four key characteristics of learning as applied to transfer. They are:

1. The necessity of initial learning;
2. The importance of abstract and contextual knowledge;
3. The conception of learning as an active and dynamic process; and
4. The notion that all learning is transfer.

First, the necessity of initial learning for transfer specifies that mere exposure or memorization is not learning; there must be understanding. Learning as understanding takes time, such that expertise with deep, organized knowledge improves transfer. Teaching that emphasizes how to use knowledge or that improves motivation should enhance transfer.

Second, while knowledge anchored in context is important for initial learning, it is also inflexible without some level of abstraction that goes beyond the context. Practices to improve transfer include having students specify connections across multiple contexts or having them develop general solutions and strategies that would apply beyond a single-context case i.e. adults apply what they have learnt in the classroom to real life situations or the world of work..

Third, learning should be considered an active and dynamic process, not a static product. Instead of one-shot tests that follow learning tasks, students can improve transfer by engaging in assessments that extend beyond current abilities. Improving transfer in this way requires instructor can help learners develop meta-cognitive skills without prompting..

3.3. Transfer of Learning Theories

Apart from the effect-based distinction between negative and positive transfer, taxonomies have largely been constructed along two, mostly tacit, dimensions. One concerns the predicted relationship between the primary and secondary learning situation in terms of the categorical overlap of features and knowledge specificity constraints. The other concerns general assumptions about how transfer relationships are established, in terms of mental effort and cognitive process Starting by looking at the effect side of transfer – in terms of the common performance criteria, speed and accuracy – transfer theories distinguish between two broad classes that underlie all other classifications: *negative* and *positive* transfer.

3.3. 0. Negative versus Positive Transfer of Learning

Negative transfer refers to the impairment of current learning and performance due to the application of non-adaptive or inappropriate information or behaviour. Therefore, negative transfer is a type of interference effect of prior experience causing a slow-down in learning, completion or solving of a new task when compared to the performance of a hypothetical control group with no respective prior experience. Positive transfer, in contrast, emphasizes the beneficial effects of prior experience on current thinking and action. It is important to understand that the positive and negative effects of transfer are not mutually exclusive and therefore real-life transfer effects are probably mostly a mixture of both. Positive transfer: transfer of learning or training is said to be positive when the learning or training carried out in one situation proves helpful to learning in another situation. Examples of such transfer are: 1. the knowledge and skills related to school mathematics help in the learning of statistical computation. 2. The knowledge and skills acquired in terms of addition and subtraction in mathematics in school may help a child in the acquisition of knowledge and skills regarding multiplication and division. 3. Learning to play badminton may help an individual to ping pong (table tennis) and lawn tennis

3.3.2 The situation perspective: specific vs. general, near vs. far transfer

The situation-driven perspective on transfer taxonomies is concerned with describing the relation between transfer source (i.e., the prior experience) and transfer target (i.e., the novel situation). In other words, the notion of novelty of the target situation per se is worthless without specifying the degree of novelty in relation to something that existed before. Butterfield and Nelson (1991), for example, distinguish between *within-task*, *across-task*, and *inventive* transfer. A similar classification approach reappears in many situation-driven transfer taxonomies (e.g., *similar* vs. *different* situations, *example-to-principle* and vice versa, *simple-to-complex* and vice versa) and can be noted as distinctions made along the *specific vs. general* dimension. Mayer and Wittrock (1996, pp. 49.) discuss transfer under the labels of general "transfer of general skill" (e.g., "Formal Discipline", Binet, 1899), "specific transfer of specific skill" (e.g., Thorndike's, 1924a, b, "identical elements" theory), "specific transfer of general skill" (e.g., Gestaltists' transfer theory, see origins with Judd, 1908), and "meta-cognitive control of

general and specific skills" as a sort of combination of the previous three views (see, e.g., Brown, 1989).

Haskell's (2001) taxonomy proposes a more gradual scheme of similarity between tasks and situations. It distinguishes between non-specific transfer (i.e., the constructivist idea that all learning builds on present knowledge), application transfer (i.e., the retrieval and use of knowledge on a previously learned task), context transfer (actually meaning context-free transfer between similar tasks), near vs. far transfer, and finally displacement or creative transfer (i.e., an inventive or analytic type of transfer that refers to the creation of a new solution during problem solving as a result of a synthesis of past and current learning experiences). Both **near and far transfer** is widely used terms in the literature. The former refers to transfer of learning when task and/or context change slightly but remain largely similar, the latter to the application of learning experiences to related but largely dissimilar problems.

The *specific vs. general* dimension applies not just to the focus on the relation between source and target, i.e., from where to where is transferred, but also to the question about the transfer process itself, i.e., what is transferred and how. ***Reproductive* vs. *productive* transfer** (see Robertson, 2001) are good examples of this type of distinction, whereas reproductive transfer refers to the simple application of knowledge to a novel task, productive transfer implies adaptation; i.e. mutation and enhancement of retained information.

A similar dichotomous distinction is the one between ***knowledge* transfer and *problem-solving* transfer (Mayer** & Wittrock, 1996). Knowledge transfer takes place when knowing something after learning task *A* facilitates or interferes with the learning process or performance in task *B*. Knowledge used is referred to by many different terms, such as declarative or procedural types (Anderson, 1976), but it means that there are representational elements that suit *A* and *B*. Problem solving transfer, on the other hand, is described as somewhat more "fluid knowledge" transfer, so that experience in solving a problem *A* helps finding a solution to problem *B*. This can mean that the two problems share little in terms of specific declarative knowledge entities or procedures, but call for a similar approach, or solution search strategies (e.g., heuristics and problem solving methods).

The issues discussed in problem-solving transfer literature are also closely related to the concepts of ***strategic* and *theoretic* transfer** (Haskell, 2001, p. 31), and cognitive research on analogical reasoning, rule-based thinking and meta-cognition. Indeed, far transfer can be considered as the prototypical type of transfer, and it is closely related to the study of analogical reasoning (see also Barnett & Ceci, 2002, for a taxonomy of far transfer). Within the problem-solving literature the distinction between specific and general methods is made mostly with reference to Newell and Simon's (1972) strong vs. weak problem solving methods (Chi, Glaser & Farr, 1988; Ericsson & Smith, 1991; Singley & Anderson, 1989; Sternberg & Frensch, 1991).

3.3.3 High versus Low- road Transfer

Another concern that is frequently addressed in transfer taxonomies is the question of conscious effort. *High-road* vs. *low-road* transfer (Mayer & Wittrock, 1996; Salomon & Perkins, 1989) expresses a distinction between such instances of transfer where active retrieval, mapping, and inference processes take place, as opposed to those instances that occur rather spontaneously or automatically. Hence, low-road transfer concerns frequently employed mental representations and automated, procedural knowledge, and occurs preferably in near transfer settings. In contrast, high-road transfer is more conception-driven, and requires cognitive and meta-cognitive effort.

3.3.4 Building New Learning on Previous Learning

Finally, the fourth characteristic defines all learning as transfer. New learning builds on previous learning, which implies that teachers can facilitate transfer by activating what students know and by making their thinking visible. This includes addressing student misconceptions and recognizing cultural behaviours that students bring to learning situations.

A student-learning centred view of transfer embodies these four characteristics. With this conception, teachers can help students transfer learning not just between contexts in academics, but also to common home, work, or community environments.

To prompt transfer of learning in learners, the tutors must let the adult learners know why they are learning particular things.

To facilitate transfer of learning the tutor must cultivate positive self-concept in the adults – there is need for adult learners to perceive themselves as self-directed and responsible for their own decisions.

The tutors must recognise the fact that adult learners have a wide variety of experience which represents a rich resource that can be transfer to the current learning. The adult learners should be made to know that there are, however, need to recognize bias and subjectivity in their opinions and experiences.

To facilitate transfer of learning the tutors in the course of teaching must cite real life examples and also carry adult learner along by encouraging their readiness to learn those things which will help them to deal with real-life situations.

The facilitate transfer of learning in adults, the tutors must recognised the fact that adult are motivated to learn things which are of interest or important to them and enhancing insight learning, self motivated and organised learning. This, and their readiness to learn, implies that adults have intrinsic motivations to learn.

"Transference is most likely to occur in the following situations:

- "Association — participants can associate the new information with something that they already know. For a transfer of learning to take place, the should always emphasize the relationship that exists between one subject-matter and another
- Similarity — the information is similar to material that participants already know; that is, it revisits a logical framework or pattern. The tutor should know that transfer of learning will not take place when both the old and new are unrelated. Hence, the teacher should endeavour to teach his/her subject-matter in a more meaningful and detailed way rather than by rote
- Degree of original learning — participant's degree of original learning was high. The teacher should provide the opportunity for his/her students to practice a subject-matter being discussed along with him/her and reflect real life situations. When the learners are allowed to take active part in teaching- learning activities, they will be able to repeat the task at another time
- Critical attribute element — the information learned contains elements that are extremely beneficial (critical) on the job" The teacher should endeavour to develop positive attitudes towards a learning task so that the students can be motivated to like the task rather avoiding it
- It is believed that what students see, touch, feel or manipulate will be better remembered than the one they are not familiar with. Hence, for a meaningful transfer of learning to take place,
- the teacher should incorporate exercises that task the various senses of learners in the learning process and reflect real life situation

SELF ASSESSMENT EXERCISE

1) List six ways of enhancing transfer of learning in adult learners
2) Why do you consider Transfer of Learning a very important aspect in teaching adults
3) Write short notes on:
   I. Positive vs negative transfer
   II. Specify vs general:
   III. ,Near vs far transfer

4.0 CONCLUSION

The relevance of transfer of learning has been stressed in this unit. It will help the teachers on the action programmes that can facilitate learning transfer.

5.0 SUMMARY

In this unit, you have learnt about the meaning of transfer of learning, theories of transfer of learning and Implications of transfer of learning to teaching and learning in Adult

6 TUTOR-MARKED ASSIGNMENT

I. What is transfer of learning
II. Discuss the three theories of transfer of learning
III. What are the implications of transfer of learning on pedagogical activities?

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MODULE 2

Unit 1 Concept of Motivation for Adult Learning

Unit 2 Theories of Motivation

I. Incentive theory
II. Drive- Reduction theory
III. Goal setting
IV. Arousal
V. Need Hierarchy

Unit 3 Theories of Motivation continues

i. Maslow's Theory of Self Actualization
ii. Achievement Motivation
iii. Physiological Theory of Motivation
iv. Approaches to Motivation of Adult Learners

Unit 1 Concept of Motivation for Adult Learning

CONTENTS

3.2. MOTIVATION FOR ADULT LEARNING

1.0 Introduction

After studying this section, you would be able to explain and discuss the concept, functions, types, theories of motivation and apply motivation in a learning situation.

3.0 Main Content

3.1 Concept of Motivation

The word motivation has come from the Latin word 'movere' which means 'to move'. According to the Dictionary of Education are reasons or a reason one has for acting or behaving in certain manners or driving force behind human behaviour. It can also be defined as the general desire or willingness of someone to do something. Motivation is synonymous with motive- incentive- stimulus and impulse It involves the biological, emotional, social and cognitive forces that activate behaviour. Motivation is **an** integral factor that arouses, directs, integrates and sustains behaviour towards a goal (IGNOU2009). Motivation is a general term for conditions that cause one to begin an activity and pursue it with vigour and persistence. In everyday usage the term 'motivation' refers to 'why' of behaviour. Motivation in a learning situation simply means an urge to learn and also the 'royal road to learning'(IGNOU 2009). Note that by this definition, motivation not only instigates behaviour but also operates to reinforce ongoing behaviour.

Functions of Motivation

The functions of motivation include the following: Motivation energises the behaviour and interest of the learner. It sustains the interest and behaviour for longer time. It directs and regulates our behaviour. Motivated state is often described as guided, directed and goal oriented (IGNOU 2009). It is directed towards a selective goal which the individual sets for himself/herself. The motive is terminated by the achievement of goal (Behaviour is selective) Efficiency and adequacy are increased in motivated state of behaviour. Motivation initiates action or behaviour (Indira Gandhi National Open University, 2009).

3.2 Types of Motivation

There are two broad types: of motivation, intrinsic (internal) and extrinsic (external) motivation

3.2.0. Intrinsic motivation refers to motivation that is driven by an interest or enjoyment in the task itself, and exists within the individual rather than relying on any external pressure. Intrinsic Motivation is based on taking pleasure in an activity rather than working towards an external reward. Adult learners who are intrinsically motivated are more likely to engage in the task willingly as well as work to improve their skills, which will increase their capabilities. . Intrinsic motivation is related to 'psychological' rewards such as the opportunity to use one's ability, a sense of challenge and achievement, receiving appreciation, positive recognition and being treated in a caring and considerate manner. Adult learners are likely to be intrinsically motivated if they:

- attribute their educational results to factors under their own control, also known as autonomy,
- believe they have the skill that will allow them to be effective agents in reaching desired goals (i.e. the results are not determined by luck),
- are interested in mastering a topic, rather than just rote-learning to achieve good grades(From Wikipedia, the free encyclopaedia 2012)

3.2 1. Extrinsic motivation on the other hand, refers to the performance of an activity in order to attain an outcome, which then contradicts intrinsic motivation. Extrinsic motivation is related to tangible rewards such as salary and fringe benefits, security, promotion, contract of service, the work environment and conditions of work It is widely believed that motivation performs two main functions. First, is often referred to the energetic activation component of the motivation construct while the second, is directed at a specific behaviour and makes reference to the orientation directional component. Motives can be divided into two types: external and internal. Internal motives are considered as the needs that every human being experience, while external indicate the presence of specific situations where these needs arise.

In summary, intrinsic and extrinsic motivation can be described as follow:

a) **Intrinsic Motivation**: If the individual recognises an activity as self rewarding and takes it up then it is called 'intrinsic' motivation. The individual takes up the activity because it gives him pleasure or satisfaction. Here, the urge to take up the activity springs from within the individual and not from any external force.
b) **Extrinsic Motivation:** If the motivating force is outside the activity and also outside the person then the motivation is said to be 'extrinsic'. Engaging in activities for material rewards that they bring is extrinsic motivation. Incentive

Self determination Theory proposes that extrinsic motivation can be internalised by the individual if the task fits with their values and beliefs and therefore helps to fulfil their basic

psychological needs. .From this perspective, extrinsic motivation can be seen at one end fluidly flow into intrinsic motivation at the end of the continuum. There is not clear demarcation between the two types of motivation since with one metamorphosing into another in one situation or the other.

Extrinsic Motivation ⟷ Intrinsic Motivation

3.2.3 Applying motivation to adult education

Motivation is a commonly used word in adult continuing education. In the context of adult learning, motivation means creation of desire or interest in the adult to learn. Motivation for literacy can be defined as that process which would induce in the illiterate persons a desire to act for acquiring the skills of reading, writing and arithmetic (IGNOU 2009). Applied to the classroom, motivation is what pushes a student to try to learn or to expand his/her energies in a particular direction. In the traditional language of the teacher, 'to motivate' means to get the student to apply himself/herself to the learning at hand. Even more basic than getting students to apply themselves is getting them to want to learn (IGNOU, 2009). With a desire to learn, there is almost no limit to what a teacher and learners can accomplish. Without motivation, the effort of a teacher providing opportunities for new experience and understanding, all to no avail.

4.0 Conclusion

In this unit, the authors explained and discussed the concept, functions, types, theories of motivation and apply motivation in a learning situation. It is hoped that by the time you have read and studied this unit, you would have been able explain in your own words the concept, functions, types, theories of motivation and apply motivation in a learning situation.

5.0 Summary

This Unit explained the functions, types, theories of motivation and application of motivation in learning situations. The authors posed some pertinent questions for the students to answer as to test their understanding of the subject matters

6.0 Tutor-Marked Assignment

i. Define and explain the functions of motivation
ii. Identify two broad types and explain their implications to adult learning
iii. Explain how you have applied motivation to your study in NOUN

7.0 References/Further ReadingsReferences and Suggested Readings

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Unit 2 Title: Theories of Motivation

3. 0 CONTENTS

1.0 Introduction

In the previous unit, you were tutored on concepts and definitions of motivation, two broad types of motivation, and functions of motivation in adult learning. In this unit, we shall be discussing different theories of motivation:- Incentive Theory, Drive-Reduction, Arousal Theory and Need Hierarchy Theory.

2.0 Objectives

After this discussion, you are expected to explain in your own words the different theories of motivation:- Incentive Theory, Drive-Reduction, Arousal Theory and Need Hierarchy Theory and answer the assignment questions below.

3.0 Content

3.1. Theory of Motivation

We shall be looking at some of the theories of motivation in the section**.** The latest approach in developing a broad integrative theory of motivation is Temporal Motivation Theory (TMT) integrating theories of motivation (Steel & Konig 2006). Introduced in a 2007 *Academy of Management Review* article, synthesizes into a single formulation the primary aspects of several other major motivational theories, including **Incentive Theory**, **Drive Theory, Need Theory, Self-Efficacy and Goal Setting**. The original researchers note that, in an effort to keep the theory simple, existing theories to integrate were selected based on their shared attributes, and that these theories are still of value, as TMT does not contain the same depth of detail as each individual theory. Http://ebapps2.ucalgary.cal~steel/images/integrating.PDF The main theories of motivation are: (a) **Psycho-analytic Theory, (b) Maslow's Theory of Self-actualisation, (c) Physiological Theory and (d) Achievement - Motivation Theory**. As stated above, this unit will be discussing Incentive Theory, Drive Theory, Need Theory, Self-Efficacy, Goal Setting and Achievement

We first all look at incentive theory.

3.2. Incentive theory

The incentive theory suggests that people are motivated to do things because of external rewards. For example, you might be motivated to enrol for a degree programme because you are looking for a job, or a degree is one of the conditions for promotion at your working place etc. and possible for the monetary reward that will follow. Behavioural learning concepts such as association and reinforcement play an important role in this theory of motivation. A reward, tangible or intangible, is presented after the occurrence of an action (i.e. behaviour) with the intent to cause the behaviour to occur again. This is done by associating positive meaning to the

behaviour. Studies show that if the person receives the reward immediately, the effect is greater, and decreases as duration lengthens. Repetitive action-reward combination can cause the action to become habit. Motivation comes from two sources: **oneself, and other people.** These two sources are called intrinsic motivation and extrinsic motivation, respectively (Wikipedia, 2012)

Reinforcers and reinforcement principles of behaviour differ from the hypothetical construct of reward. A reinforcer is any stimulus change following a response that increases the future frequency or magnitude of that response, therefore the cognitive approach is certainly the way forward as in 1973 Maslow described it as being the golden pineapple. Positive reinforcement is demonstrated by an increase in the future frequency or magnitude of a response due to in the past being followed contingently by a reinforcing stimulus. Negative reinforcement involves stimulus change consisting of the removal of an aversive stimulus following a response. Positive reinforcement involves a stimulus change consisting of the presentation or magnification of an appetitive stimulus following a response. From this perspective, motivation is mediated by environmental events, and the concept of distinguishing between intrinsic and extrinsic forces is irrelevant.

Incentive theory in psychology treats motivation and behaviour of the individual as they are influenced by beliefs such as engaging in activities that are expected to be profitable. Incentive theory is promoted by behavioural psychologists, such as B.F. Skinner and literalized by behaviourists, especially by Skinner in his philosophy of Radical behaviourism, to mean that a person's actions always have social ramifications: and if actions are positively received people are more likely to act in this manner, or if negatively received people are less likely to act in this manner.

In terms of behaviourism, *incentive theory* involves positive reinforcement: the stimulus has been conditioned to make the person happier. For instance, a person knows that eating food, drinking water, or gaining social capital will make them happier. As opposed to in *drive theory*, which involves negative reinforcement: a stimulus has been associated with the removal of the punishment-- the lack of homeostasis in the body? For example, a person has come to know that if they eat when hungry, it will eliminate that negative feeling of hunger, or if they drink when thirsty, it will eliminate that negative feeling of thirst (Wikipedia, 2012).

3.3. Drive-reduction theory

According to the drive theory of motivation, people are motivated to take certain actions in order to reduce the internal tension that is caused by unmet needs. For example, you might be motivated to drink a glass of water in order to reduce the internal state of thirst. This theory is

useful in explaining behaviours that have a strong biological component, such as hunger or thirst. The problem with the drive theory of motivation is that these behaviours are not always motivated purely by physiological needs. For example, people often eat even when they are not really hungry

There are a number of drive theories. The **Drive Reduction Theory** grows out of the concept that we have certain biological drives, such as hunger. As time passes, the strength of the drive increases if it is not satisfied (in this case by eating). Upon satisfying a drive the drive's strength is reduced. The theory is based on diverse ideas from the theories of Freud to the ideas of feedback control systems, such as a thermostat.

Drive theory has some intuitive or folk validity. For instance when preparing food, the drive model appears to be compatible with sensations of rising hunger as the food is prepared, and, after the food has been consumed, a decrease in subjective hunger. There are several problems, however, that leave the validity of drive reduction open for debate. The first problem is that it does not explain how secondary reinforcers reduce drive. For example, money satisfies no biological or psychological needs, but a paid cheque appears to reduce drive through second-order conditioning. Secondly, a drive, such as hunger, is viewed as having a "desire" to eat, making the drive a homunculus being—a feature criticized as simply moving the fundamental problem behind this "small man" and his desires.

In addition, it is clear that drive reduction theory cannot be a complete theory of behaviour, or a hungry human could not prepare a meal without eating the food before he finished cooking it. The ability of drive theory to cope with all kinds of behaviour, from not satisfying a drive (by adding on other traits such as restraint), or adding additional drives for "tasty" food, which combine with drives for "food" in order to explain cooking render it hard to test.

3.4. Goal-setting theory

Goal-setting theory is based on the notion that individuals sometimes have a drive to reach a clearly defined end state. Often, this end state is a reward in itself. A goal's efficiency is affected by three features: proximity, difficulty and specificity. Good goal setting incorporates the SMART criteria, in which goals are: **specific, measurable, accurate, realistic, and timely**. An ideal goal should present a situation where the time between the initiation of behaviour and the end state is close. This explains why some children are more motivated to learn how to ride a bike than to master algebra. A goal should be moderate, not too hard or too easy to complete. In both cases, most people are not optimally motivated, as many want a challenge (which assumes some kind of insecurity of success). At the same time people want to feel that there is a substantial probability that they will succeed. Specificity concerns the description of

the goal in their class. The goal should be objectively defined and intelligible for the individual. A classic example of a poorly specified goal is to get the highest possible grade. Most children have no idea how much effort they need to reach that goal.

3.5. Arousal Theory of Motivation

The arousal theory of motivation suggests that people take certain actions to either decrease or increase levels of arousal. When arousal levels get too low, for example, a person might watch and exciting movie or go for a jog. When arousal levels get too high, on the other hand, a person would probably look for ways to relax such as meditating or reading a book. According to this theory, we are motivated to maintain an optimal level of arousal, although this level can vary based on the individual or the situation.

3.6. Need Hierarchy Theory

Humanistic theories of motivation are based on the idea that people also have strong cognitive reasons to perform various actions. This is famously illustrated in Abraham Maslow's hierarchy of needs, which presents different motivations at different levels. First, people are motivated to fulfil basic biological needs for food and shelter, as well as those of safety, love and esteem. Once the lower level needs have been met, the primary motivator becomes the need for self-actualization, or the desire to fulfil one's individual potential.

The Content Theory includes the hierarchy of needs from Abraham Maslow's theory is one of the most widely discussed theories of motivation. The American motivation psychologist Abraham H. Maslow developed the Hierarchy of needs consistent of five hierarchic classes. According to him, people are motivated by unsatisfied needs. The lower level needs such as Physiological and Safety needs will have to be satisfied before higher level needs are to be addressed. We can relate Maslow's Hierarchy of Needs theory with employee motivation. For example, if a manager is trying to motivate his employees by satisfying their needs; according to Maslow, he should try to satisfy the lower level needs before he tries to satisfy the upper level needs or the employees will not be motivated. Also he has to remember that not everyone will be satisfied by the same needs. A good manager will try to figure out which levels of needs are active for a certain individual or employee. The basic requirements build the first step in his pyramid. If there is any deficit on this level, the whole behaviour of a human will be oriented to satisfy this deficit. Subsequently we do have the second level, which awake a need for security. Basically it is oriented on a future need for security. After securing those two levels, the motives shift in the social sphere, which form the third stage. Psychological requirements consist in the fourth level, while the top of the hierarchy comprise the self-realization so theory can be summarized as follows:

- Human beings have wants and desires which influence their behaviour. Only unsatisfied needs influence behaviour, satisfied needs do not.
- Since needs are many, they are arranged in order of importance, from the basic to the complex.
- The person advances to the next level of needs only after the lower level need is at least minimally satisfied.
- The further the progress up the hierarchy, the more individuality, humanness and psychological health a person will show.

The needs, listed from basic (lowest-earliest) to most complexes (highest-latest) are as follows:

- Physiology (hunger, thirst, sleep, etc.)
- Safety/Security/Shelter/Health
- Belongingness/Love/Friendship
- Self-esteem/Recognition/Achievement
- Self actualization

4.0 Conclusion

In this Unit the author discussed with you different theories of motivation:- Incentive Theory, Drive-Reduction, Arousal Theory and Need Hierarchy Theory and followed by assignment questions

5.0 Summary

The discussions were on different theories of motivation:- Incentive Theory, Drive-Reduction, Arousal Theory and Need Hierarchy Theory in this unit. Also conclusion and summary were drawn and assignment questions were posed for the students to answer.

6.0 Tutor-Marked Assignment

i. Identify four different theories of learning and explain one of them using your own examples
ii. Differentiate between Arousal and Need Hierarchy theories of learning
iii. Explain how Incentive Theory can be applied to Adult Learning

7.0 References and Suggested Readings

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Unit 3

Unit Title: Theories of Motivation

CONTENTS

1.0 Introduction

In the forgone Unit 3, we discussed different theories of motivation:- Incentive Theory, Drive-Reduction, Arousal Theory and Need Hierarchy. In this unit we shall continue with our discussion on more of theories of motivation:- Maslow's Theory of Self-Actualisation, Unconscious Theory of Motivation, Physiological Theory of Motivation and application of these theories to adult learning.

2.0 Objective

The objective of this unit is that by the time you have studied this unit 3 you should be able to explain the different theories of motivation in speech or writing :- Maslow's Theory of Self-Actualisation, Unconscious Theory, Physiological Theory and how these theories can be applied to adult learning.

3.0 Main Content

3.1. Maslow's Theory of Self-Actualisation

This theory is based on human needs and their satisfaction. Maslow (1998) has arranged man's basic needs in a hierarchy, i.e. some needs are strong or more important than others. According to him the five basic needs, progressing from physiological needs through safety needs, love, esteem needs and the need for self-actualisation. These basic needs are described hereunder:

3.1.0 Physiological needs:

Maslow states that physiological needs are undoubtedly the most powerful of all needs. Examples are the needs for food, sleep or rest. Until the biological needs are met, an individual may lack awareness of other needs. When a person is gratified he/she is released and higher needs can emerge. Some potential adult learners from low-economic background actually have unmet physiological needs, such as hunger, which prevent them from learning. An old person may not be able to see or hear well and he might not be open to satisfying other needs.

3.1.1 Safety Needs:

When physiological needs are satisfied, safety needs emerge, such as need for security, for physical safety, for stability in one's life. Safety needs are seen when a person prefers the familiar over the unfamiliar. An adult would rather go to a meeting in a building with which he is familiar than in a building new to him.

3.1.2 Love or Belongingness:

If both the physiological and safety needs are gratified, the needs for love, affection and belongingness emerge. Love needs involve both giving and receiving love. They involve the

feeling of being wanted. The person who does not feel he belongs, no matter what the reason, probably will not continue with the group and discontinue his participation in adult education programme. The teacher should be affectionate towards adult learners and develop a group spirit among learners.

3.1.3. Esteem:

All people in our society have a need, a desire, for self-respect or self- esteem and for the esteem of others. There are two types: The desire for achievement and the desire for prestige or recognition from others. Satisfaction of the need for self-esteem leads to feelings of self-confidence and of being useful to the society. Thwarting of these needs produce feelings of inferiority or weakness. Fear or failure or lack of self-esteem' might prevent an adult from participating in educational activities.

3. 1 4. Self-Actualisation:

Even after the earlier needs are satisfied a person might still feel restless unless he becomes everything he is capable of becoming. This is called self-fulfilment or self actualisation. The specific form of this need varies from person to person. One person might desire to be an ideal mother or an ideal leader.

3.1.5 Implications for Adult Learning:

Before starting the adult education class, the basic needs of the learners should be studied. It may be possible that due to poverty and less per capita income, the basic biological needs of the learners may not be fulfilled. Then the main aim of adult education should be to provide regular income to the learners. This can be done by starting various income generating projects. The educators should also help by marketing of such products produced by the learners. The officials connected with adult education should take steps to start such programmes. This will make the classes more interesting to the learners. The teacher needs to strengthen the group spirit among learners and should identify himself/herself with the group. The learning experiences in the centres should promote the talents, attitudes, capacities and potentialities of adults.

3.2. Achievement-Motivation Theory is an integrative perspective based on the premise that performance motivation results from the way broad components of personality are directed towards performance. As a result, it includes a range of dimensions that are relevant to success at work but which are not conventionally regarded as being part of performance motivation. Especially it integrates formerly separated approaches as Need for Achievement with, for example, social motives like dominance. The Achievement Motivation Inventory is based on this

theory and assesses three factors (in 17 separated scales) relevant to vocational and professional success.

This theory has been developed by Mc Clelland (1985). According to this theory all human behaviour is intended to reduce tension and reach a state of physiological and psychological equilibrium. It is a desire to do better, to achieve unique accomplishment, to compete with a standard of excellence and to involve oneself with long term achievement goals. It can be identified on the basis of individual expectation of success. It applies only when the individual knows that his/her performance will be evaluated by himself or by others in terms of excellence, and that the consequences of his action will either succeed or fail.

Implications for Adult Education

The adult education trainer has to allow the learners to do better in their areas of interests and achieve knowledge and relevant skills. Achievement of the learners should be made known to them since this knowledge will influence them through feedback.

3.3. Unconscious Theory of Motivation (Psycho-Analytic Theory)

Some psychologists believe that a significant portion of human behaviour is energized and directed by unconscious motives. According to this theory, motivation gives the vital life forces which are the prime mover of life and its activities. 'It is will power that motivates a person',i.e. 'no will power - no activity'. All these versions agree on one point i.e.,'building ego of man'According to Maslow, "Psychoanalysis has often demonstrated that the relationship between a conscious desire and the ultimate unconscious aim that underlies it need not be at all direct."

Implications for Adult The adult educator should try to judge the area of interest of each adult learner. He/she should try to exploit their potential in the particular areas of interest/potential where they can show their efficiency and capability to the maximum. When their latent talents are exploited, they will have a sense of achievement which will satisfy their ego. It will give them a feeling of importance and will encourage them. The growth urge is also a very important motivating factor. This urge continues to operate throughout life. Even in old age there is apparently a need to keep growing, it is especially a strong motivation for learning **(IGNOU 2009).**

3.4. Physiological Theory of Motivation

This theory has been developed by Clifford Morgan and William James. According to this theory the body determines attitudes and interests and explains activities and behaviour of people.

Implications for Adult Education: Participation in physical activities decrease with age so also interests change as a person becomes older. Many physical limitations affect the amount of

time an adult has for educational activities. After working all day at a job, some adults are too tired to participate in educational activity, such people can be motivated giving them work which gives them relaxation. It is envisaged that hearing and vision also decrease with age. The ages of the group members will determine the size of letters that a teacher writes on a black board, the colour of the chalk used, the size of the articles he holds for the adults to see, and how loudly and distinctly he speaks. The size, type and quality of handout material are also important.

3.5. APPROACHES TO MOTIVATION OF ADULT LEARNERS

According to Reddy, (2005a), psychologically approved methods of child motivation or child teaching will not work with adults. Any approach to adult motivation must focus on the adult's individuality, interests, needs and problems in order to help in motivating the adults. As revealed by IGNOU (2009) from the Theoretical data, the following approaches are relevant for motivating adults for learning

a) Need-based Approach: The functional literacy concept emphasises "felt need" approach by which the learners could be motivated to understand the ways of fulfilling their needs in socio-economic improvement, health, nutrition, family planning etc. Therefore, adults can be motivated through need based approaches. The needs of adults (learners) must be recognised, understood and met. For this purpose, some relevant programmes must be introduced (IGNOU, 2009)

Friendly Approach: A friendly approach is the best approach in adult continuing education. Equality of treatment irrespective of status, caste, creed and community, and addressing adults as elders and relatives will make the adult learner feel at ease. His initial reluctance and hesitation should be removed by cordial and assuring conversations about his welfare, children and family and gestures in a pleasant atmosphere. Only then the adult learner will come out of his shell of shyness and express his needs and thoughts.

Individual Contact Approach: In this approach, the adults are contacted either in their home or farm to explain about the importance of education and learning so as to create motivation among them. Its success depends upon adequate finances, sound and sensible planning, organisational efficiency and follow-up. In these aspects, the individual contact can be effective, although time consuming (IGNOU, 2009).

Participatory Approach: The learners can be motivated to participate in the various stages of organising education programmes. They can be encouraged and enthused to get involved in the programmes by assigning them leadership positions, allocating responsibilities, giving higher status and recognition to them and associating them with the organisation at various levels (IGNOU, 2009).

Achievement Approach: Recognition could be given to the learners by award of certificates, medals and books. Achievement motivation is of special value in that it emphasises a desire for excellence in order to attain a sense of personal accomplishment (IGNOU, 2009).

Realistic Approach: Another way to motivate the learners is to help them realise their own expectations and aspirations. It is necessary for the adult educator to direct the expectations of the adult learners on a realistic basis so that every expectation turns out to be an achievement which in turn would provide motivation for sustaining the activity towards the goal. The learning experiences should be such that they help in solving their actual problems and help them achieve the goals which they have set for themselves. Incorporating some income generation activities in continuing education courses can motivate adult learners of low-income groups. It will not only motivate the learners but also sustain their interest. They should also be made to see the relationship between continuing education and their work.

Creative Approaches: Learners can be motivated if the courses include creative activities. We know that the ability to solve problems, and think creatively improves with age. Therefore, to motivate adults to attend the courses, some programmes which require creative thinking should be included.

Primary Motivating Factors for Adult Learners

According to Lib (1991), the primary motivating factors for Adult learners include**:**

- "Social relationships: to make new friends, to meet a need for associations and friendships.
- External expectations: to comply with instructions from someone else; to fulfil the expectations or recommendations of someone with formal authority.
- Social welfare: to improve ability to serve mankind, prepare for service to the community, and improve ability to participate in community work.
- Personal advancement: to achieve higher status in a job, secure professional advancement, and stay abreast of competitors.
- Escape/Stimulation: to relieve boredom, provide a break in the routine of home or work, and provide a contrast to other exacting details of life.
- Cognitive interest: to learn for the sake of learning, seek knowledge for its own sake, and to satisfy an inquiring mind" (Lieb, 1991).

4.0. Conclusion

The relationship between the two types of motivation, intrinsic and extrinsic motivation can be likened to relationship between the individual and environment but intrinsic motive seems to produce better learning because it is related to interest. The learner pursues the activity in which he has interest without waiting for any external pressure. When the learner does not show any adequate intrinsic motivation or interest in learning we have to resort to extrinsic

motivation by the use of 'incentives'-whether financial or non-financial (monetary or non-monetary) - such as rewards, awards, prizes, competitions, praise, etc.

In-built Motivation: Another type of motivation is called in-built motivation. Whatever may be the type of motivation, it should be an in-built component of the whole programme of education training. Right type of trainers, attractive and need-based reading materials, supportive training methodologies, and constant awareness of the new dimensions of the programme will facilitate motivation in an in-built manner **(IGNOU 2009).**

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MODULE 3: MEMORY AND FORGETTING

Unit 1: The concept of memory

Unit 2: The concept of forgetting

Unit 3: Cognitive theory of learning

Unit 1: Title – The concept of memory

CONTENTS

1.0 Introduction

In this unit, efforts are made to discuss the meaning of memory, types of memory, methods of improving memory, and factors affecting memory.

2.0 Objectives.

At the end of the unit therefore, the learners should be able to:

1. Define the term, memory.
2. Identify the types of memory.
3. Differentiate clearly between short term memory and long term memory.
4. Discuss various forms of improving memory especially at adult stage of human development.

3.0 Main content

3.1: The Concept of Memory

Today, significant interest has been lavished on learning as a human endeavour with greater emphasis on how knowledge is represented in the mind and how it is remembered and recalled when needed. Every human being is endowed with the ability to encode or express an idea and retrieve or pick the idea or information from where it was stored. Woolfolk (1995) likens human mental activity to the computer which involves processing information taken; performing operations on it to change its form and content; storing the information processed; retrieving it when needed; and generating responses to it. Memory is therefore seen as the mental capability of an individual where information is stored for retrieval when needed. An individual's memory system is his active, systematic and organized interpreter of information. The processes of memory are in three phases as encoding, storage, and retrieval.

Encoding: This is the process of gathering and representing facts or ideas (information) through visual, auditory and semantic modes.

Storage: This process involves holding facts or ideas within a confined status.

Retrieval: This action of the memory is the ability to pick information or facts from the store (memory) when needed.

3.2: Types of Memory

Like the processes of memory, there are also three types of memory that are premised on the amount of time that it takes materials to be received, stored and retrieved.

1. **Sensory Memory**: This is the sensory information store or sensory register where every sensation in an individual's memory is stored. Cermak (1975) brands this as iconic memory (IM) where information is recalled milliseconds after presentation. It is an action that provides no room for rehearsal as materials are presented in brief interval. Information storage here is powered by environmental stimuli like sights, sounds, smells, etc. that constantly bombard our receptors (Woolfolk, 1995).
2. **Short term Memory**: Eggen and Kauchak (1997) tag this type of memory as working memory where information filters very fast in a limited capacity. It is a temporary storage of information received from the sensory register. Information here is meant to be stored tenaciously as it is fragile and can easily be lost or forgotten. To retain information in the working memory, efforts should be made to constantly rehearse and activate information in the sensory stage. This could also be done through mental reception of information in the mind/memory.
3. **Long term Memory**: This type of memory entails permanent retention of information through concerted effort and time. Retrieval of information in the long term memory depends on representation and organization of information in the brain. Long term memory holds information that is well learned or rehearsed such as the list of the names of the members of the Federal Executive Council (FEC) of the federation. In all, the durability of information in the long term memory is quite high and sustaining.

Table 2: Differences between short term and long term memories

Short term Memory	Long term Memory
1. Information filters into the memory very fast. 2. The capacity to hold information is limited. 3. There is temporary retention of information.	1. It requires more time to be stored as the [process is relatively slow. 2. The capacity to hold information is unlimited. 3. There is permanent retention of information.

4. Access to information is immediate with less effort. 5. The contents of memory include words, images, ideas, and sentences. 6. There is immediate retrieval of information when needed.	4. Access to information requires enough time and effort. 5. The contents of memory include propositional networks, episodes and productions. 6. Retrieval of information depends on representation of facts.

3.3 Improvement of Memory

The activation of information in the long term memory in order to sustain the mental work and processing through elaboration, organization and easy accessibility is called memory improvement. With this, new information can be stored permanently in long term memory. Confusion ensues when newer memories interfere with or obscure older memories or vice versa or when a schema is used on several different occasions. In effect, there is absolute need to nourish memory positively instead of giving room for confusion and loss of information stored in the memory.

Woolfolk (1995) provides such measures that can improve memory as the ability to separate essential information from non-essential and focus on the most important information. There should also be genuine connections between new information and what is already known. Thirdly, there is need for repetition and review of information constantly. Fourthly, materials for learning or new information should be presented in a clear, organized and systematic way. Finally, attention should be focused on meaning of information and not mere memorization of facts.

Rathus (1996) has some solutions to memory loss as a means of improving memory. According to the expert, the first approach is through drilling and practice. Here, repetition or rote maintenance rehearsal helps to transfer information from short term memory to long term memory. This is very common among young learners who keep on repeating some information like spellings or counting of numbers over and over to enable them remember. Another way of improving memory is by relating new information to what already exists. In this elaborative rehearsal, knowledge base is expanded by relating unknown to known such as Tiger and Cat or dolphins as small whales. Also used to commit and sustain information into the mind is unusual or exaggerated association. This can be in form of dressing like an adolescent to remember the characteristics of adolescents. The use of mediation by linking two things with a third that ties them together is also a means of improving memory. Cermak (1975) identifies organization by mediation to retrieve information especially where it is aided by cues that are extrinsic to the material itself. According to him, mediation makes use of natural language associations to link stimulus to

its response in P-A learning, and to link two or more stimuli as serial learning. For illustration, this could be done by using bank teller to remember names like Tella and Stella.

Rathus (1996) also suggested the use of mnemonics to improve memory. This involves the formation of new meaningful or meaningless words from existing ones to enable the learner remember the information contained therein. For instance, the word ECOWAS is an acronym formed from the first letter of the Economic Community of West African States which could be used to remember the name of the sub-regional grouping.

Clustering is yet another way of improving memory where items are grouped under a common label. This increases a subject's ability to retain and retrieve information (Cermak, 1975). He maintains that subjects use categories to cluster words during presentation and then aid themselves during retrieval. A good example is grouping sixty nouns into different categories like animals, vegetables, professionals and names of human beings.

Organization in semantic memory also improves memory. This involves the use of an individual's knowledge of his language, the meanings of words, relations between words, and rules about symbols as well as relationship with previously learned information. A learner in this case is made to understand that certain words are pointers to other words stored in the memory and could be retrieved easily if the main word is mentioned. For instance, the word fish is a pointer to features of a fish like fins, swimming, gills and proteins.

Through the organization of imagery, memory can also be improved. This is where a learner forms a mental picture of the information he wishes to retain in his memory. The assumption is that since imagery is visual, it can easily be presented and retained. For instance, one can form a mental image of an object or stimulus like elephant or shark registered in his memory as a huge animal.

In all, efforts should be made to ensure that materials that attain long term memory status do not push away previously stored information out of long term memory. The decay theory which states that forgetting represents a fading of information over time should be properly guarded. In addition, interference as a state of competition among stored information which accounts for memory loss from long term memory (LTM) should be properly avoided too to ensure sincere and sustained maintenance of memory.

4.0 Conclusion

Memory is a mental action which entails how information could be represented in the mind, remembered and recalled when necessary. It therefore entails encoding, storage and retrieval of information or learned materials which are the processes involved in any human mental activity. Memory is of three main types: sensory, short term and long term

memories. Human memory can be refreshed and improved upon through clustering, mnemonics, mediation, drilling and practice, organization in semantic memory and imagery, among other variables.

5.0 Summary

In this unit, efforts were made to explain the meaning of memory, processes of memory, types of memory and ways of improving ailing memory.

6.0 Tutor marked assignment

1. Give a brief definition of memory.
2. Differentiate clearly between short term and long term memories.

7.0 References

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Unit 2: Title - Concept of forgetting

CONTENTS

1.0 Introduction

In every human endeavour, brain work is always at work. To sustain this, there is need for continuity. This phenomenon called continuity is in turn sustained by man's ability to remember what happened in the past with little or no loss of information. In learning as a human endeavour, learners are plagued by the frequent problem of forgetting which often results to failure in academic assessment. Types of forgetting and factors responsible for forgetting are hereby highlighted in this unit in order to allow learners understand the concept and avoid issues that can lead to that so that they can maximize their learning at any time.

2.0 Objectives

It is expected that at the end of this unit, the learners should be able to:

*understand the meaning of forgetting;

*discuss the types of forgetting;

*highlight the factors that lead to forgetting; and

*discuss the relationship between memory and forgetting.

3.0 Main content

3.1 Meaning of forgetting

According to Rathus (1996), when we do not attend to, encode, and rehearse sensory input, we may forget through the decay of the trace of the image. He refers to this situation as the theory of interference which states that we forget materials in short term and long term memories because newly learned materials interfere with them. There are retroactive interference, proactive interference and repressions which collectively or individually aid forgetting. In retroactive interference, new learning interferes with the retrieval of old learning whereas the proactive interference is the process whereby older information in the memory interferes with the capacity and ability to retrieve more recently learned material. Repression is the ability to willingly forget what is threatening an individual's capability and ability to learn new things or to forget unacceptable information. Repression is automatic

defensive mechanism introduced when something we cannot cope comes up and we push it aside.

Eggen & Kauchak (1997) see forgetting as a state of interference or loss of information due to occurrence of learned material either before or after a learning process. They also see forgetting as a retrieval failure where information is pulled out from the long term memory into short term memory or working memory again for further processing. Forgetting is therefore a psychological connotation that involves an individual's inability to figure out or retrieve stored information in long term memory of his brain for use when required.

3.2 Types of Forgetting

Forgetting is a psychological problem occasioned by both genetic and environmental variables. It is a memory problem at the retrieval stage in memory or inability to retrieve stored information in the long term memory. There are various types of forgetting based on the amount of information allowed to be received, stored and retrieved when the need arises. Connerton (2008) identifies seven types of forgetting as:

*repressive forgetting,

*prescriptive forgetting,

*constitutive forgetting,

*structured amnesia,

*annulment forgetting,

*planned obsolescence forgetting, and

*humiliated silence forgetting.

Generally, the above types of forgetting and many more others are collapsed into six main types for the purpose of this course material as:

1. **Repressive Forgetting**: This occurs as a result of repression of unfriendly or unpleasant information earlier stored in the long term memory. This intentional or motivated forgetting could be as a result of traumatic experience which motivates an individual to forget.
2. **Interference forgetting**: Interference theory states that competition among stored information or traces accounts for forgetting in the long term memory. Woolfolk (1995) asserts that newer memories or information may interfere with or obscure older

memories and older memories may interfere with memory for new material. Interference therefore occurs when the same schema or script is used on several different occasions and elements of the different situations get confused as reported by Shunk in Woolfolk (1995). This confusion often leads to the type of forgetting called interference forgetting. Eggen & Kauchak (1997) see interference as the process of losing information due to occurrence of learned material either before or after an encoding process. Interference could be retroactive or proactive. Retroactive interference is the loss of recall of earlier information in the memory through interference from later learning. Proactive interference on the other hand is the inability to recall newly learned materials due to the interference or presence of old information in the memory.

3. **Cue-dependent forgetting**: This type of forgetting is also called retrieval failure which is inability to recall to memory due to missing variables. These missing variables are stimuli or cues that were present at the time the memory was encoded or when the information was stored in the long term memory.
4. **Tip of the tongue forgetting**: This is the inability of an individual to find the right cue to locate the memory. There is the problem of looking for something to jog the memory in order to remember what is known.
5. **Annulment forgetting**: This is the type of forgetting that could be observed in the growth of archives and computers where old information is replaced by new and improved information. As human beings become old, memories become distorted and can only be improved upon through the introduction of fresh and environment friendly stimuli. Here, there is conscious and deliberate effort to curtail one's thoughts and memories through suppression.
6. **Directed forgetting**: This type of forgetting is initiated by a conscious goal to forget. It is an intentional forgetting towards achieving a target which could also be an aspect of suppression.

3.3 Factors of Forgetting

Human beings loose some information before such information is attached to the long term memory or such information never gets to the long term memory at all. Whichever is the case, forgetting as the removal of stored content, access problems, availability problems, or amnesia due to accident is primarily due to:

1. **Distraction during encoding:** A slight distraction or introduction of unwanted information during the process of gathering and representing information in the memory leads to inability of the information to be fixed in the long term memory.

Storage of such information will be haphazard and easily lost as there was inhibition during the process.

2. **Decay of information**: When information is not used for an extended period of time, it becomes difficult for it to be relevant in the memory. This theory of forgetting posits that due to lack of use for a long time, there becomes a fading of information over time which makes it impossible for an individual to recall it. Hence, information consciously or unconsciously kept in view and rarely discussed over a period of time tends to be forgotten along the line.
3. **Error of association:** Inability to relate new information with what already exists through elaborative rehearsal leads to forgetting. Wrong mediation or linking of items wrongly equally results to poor retrieval of information from long term memory.
4. **Interference**: As earlier discussed, when there are inhibitions or obstacles in a learning situation, the ability to recall that material or skill will vanish (Ukwueze, 2011). This obviously leads to forgetting as materials or situations get confused when several different elements are introduced during a learning process.
5. **Organic causes:** Through physiological damage or dilapidation of the brain, there could be loss of information encoded already in the brain which can also lead to difficulty in encoding new information.
6. **Prolonged ailment:** Diseases that disorganize or weaken the brain lead to forgetting of information stored in the long term memory. For instance, severe and prolonged sexually transmitted diseases including the HIV/AIDS can cause memory loss.
7. **Psychological disorder:** Hallucination and hebephrenic conditions affect the way an individual thinks and encodes information. Likewise, depression or dejection as a result of one problem or the other can easily make someone to forget information stored in his brain.
8. **High blood pressure:** This is a health related issue that is caused by stress, overthinking and over reaction to negative stimuli which leads to memory loss (Ukwueze, 2011). Severe high blood pressure leads to stroke (apoplexy) due to broken or blocked blood vessel in the brain. These conditions weaken the brain and render an individual useless or incapable of retaining and recalling learnt material.

3.4 Relationship between memory and forgetting

It is evident from the foregoing that there is no conclusive discussion of memory without a reasonable consideration of forgetting. As a matter of fact, forgetting is summarized as the loss of or inability to retrieve information from memory. According to Shunk in Woolfolk (1995), information lost from short term memory (STM) truly disappears and no effort can be made to bring it back. However, information in long term memory (LTM) may be available for retrieval given the right cues. What is stored, how it is stored

and how the integration and retrieval of information is operated in the memory of an individual is a key factor in determining how such information could be utilized without forgetting the whole thing or an aspect of the information.

Rathus (1996) states that when sensory input is not attended to, encoded and rehearsed, individuals may forget it through decay of the trace of the image. He stated further that materials in sensory or iconic memory can be lost or forgotten through decay or non-rehearsal. In most cases, forgetting occurs mainly in the short term memory and long term memory especially when newly learned material interferes with it.

Efforts are often made to reduce the workload of the short term memory and ensure that forgetting is checkmated through mnemonics, use of metaphors, rehearsal strategy and analogies to emphasize meaning of new skills in the memory. Memory and forgetting are therefore two concepts that are significantly interwoven in knowledge acquisition. A stain in memory leads to forgetting while a practical measure to checkmate forgetting is through memory improvement.

3.5 Implications of memory and forgetting for adult learning

Age is an important factor in learning as it affects human memory. Older people suffer greatly from memory loss but the ability to recall in growing children increases with age if other factors are checked up to certain stage of life (Ukwueze, 2011). What the adult learner needs is to study constantly to keep the memory fresh and avoid decay. Rote maintenance rehearsal helps learners to transfer information from short term memory to long term memory which adult learners can exploit through drill and practice repetition. Besides, the cognitive environment of adult learners and indeed every learner must be in a quiet environment as a skill learnt in a noisy environment is often forgotten easily due to interference and distractions during encoding. The efficient processing strategies for learners to acquire and retain information are mnemonic devices to reduce forgetting; use of metaphors and analogies to relate meaning of new information to prior knowledge; and rehearsal strategy to maintain information in their memories. Adult memories can also be revived or kept afresh through mediation where items are tied or linked; and elaboration where meaning to a new concept is connected to an already existing knowledge like hills and plateau as highlands.

Educators of adult learners can as well engage in several strategies to improve memory and discourage forgetting among adult learners. This could be achieved through unusual and exaggerated associations during facilitation such as dressing like an adolescent while teaching adolescent characteristics. Unusual actions like dancing or short funny story before commencing a class keep learners at alert and facilitate appropriate encoding of

information. The use of illustrations, pleasant and rewarding environment, popular theories of laws of association and positive interpersonal relationships encourages retention and discourages forgetting among learners of any age.

Adults are more susceptible to high blood pressure, depression, stress, lack of interest, and severe psychological disorders which can affect their rate of assimilation, retention and recall of information in a teaching-learning situation. Adult learners therefore need counselling like the normal and regular or younger learners in schools to assist them in sorting out their problems which could be as a result of marital crisis, financial problem, unemployment, prolonged ailment or inferiority complex or a combination of two or more of these intervening variables.

4.0 Conclusion

In all, we learnt that every human being is capable of encoding his memory in a different form, store the information and recall it when needed. However, man can forget information stored in the long term memory (LTM) due to interference, poor coding of information, memory decay and poor cognitive environment among others. We also learnt that memory can be improved significantly to reduce forgetting. Finally, we learnt that adult learners can use rote maintenance rehearsal and mnemonics to transfer information from short term memory to long term memory.

5.0 Summary

In this unit, we discussed forgetting under the following headings:

a. Definitions and types of forgetting.
b. Factors that trigger off forgetting.
c. Relationship between memory and forgetting.
d. Implications of memory and forgetting for adult learning.

6.0 TUTOR MARKED ASSESSMENT

1. Write short notes on forgetting.
2. Discuss factors that can lead to forgetting of learned materials in a school setting.
3. Highlight the classroom implications of memory loss for adult learners.

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Unit 3: COGNITIVE THEORY OF LEARNING

CONTENTS

1.0 Introduction

In the previous units, discussions were made on memory and forgetting. In this unit, discussion is focused on the meaning and overview of cognitive theory, some cognitive theories, reinforcement and punishment as well as their implications for adult learning.

2.0 Objectives

The main thrust of this unit is to enrich the learners with relevant information about knowledge-oriented theories of learning. In specific terms, at the end of this unit, the learners should be able to:

1. State in clear terms, the meaning and overview of cognitive theory of learning.
2. Discuss some cognitive learning theories in relation to adult learning.
3. Explain the meaning of reinforcement and punishment in relation to adult learning.

3.0 Main content

3.1 Meaning and overview of cognitive theories

Cognition is the mental process that is involved in knowing, learning and understanding of concepts. Omebe (2005) sees cognition as a perception in learning where teaching is a process of developing understanding or insight in the learner. Knowledge as the outcome of learning is more than the end product of previous learning although it guides new learning. Woolfolk (1995) is of the opinion that knowledge is the core of cognition with five main groupings as:

a. **General knowledge:** This is a situation where different situations form a single whole in learning. It includes how to read, spell, use a word, etc.
b. **Domain specific knowledge:** This is about a particular task or subject that is known. It involves knowing that something causes another thing. The difference between general and domain specific knowledge is not however very clear as both of them are mutually related.
c. **Declarative knowledge:** This is the ability to know or understand that something is a fact. It is the common sense use of belief, fact, theory and opinion about the existence of a task.
d. **Procedural knowledge:** This is the ability to understand how to perform a task. It could be the ability to know how to divide or multiply fractions in mathematics.

e. **Conditional knowledge:** This involves knowing when and why something occurs. It involves knowing when to apply one form of knowledge or the other.

As knowledge based concept of human endeavour, cognitive processes are attention, perception, rehearsal, encoding and retrieval of more information from one store to the next (Eggen & Kauchak, 1997). These processes are integrated through metacognition in order to be used strategically. Metacognition directs somebody's perception by making to be aware of the possibility of misperceiving an object and consciously, reserving judgment until additional information is demonstrated as an awareness of and control over the perception.

In view of the above, cognitive psychologists incorporated mental structure and process into their learning theories through hypothetic-deductive scientific inquiry in formulating learning theories that guide learning. According to Eggen & kauchak (1997), emphasis here is on internal process and structures inferred through the observation of behaviour or the internal mechanism of human thought and the process of knowing.

The history of cognitivism dates back to the 1960s when it replaced behaviourism as the predominant learning research theory (Atherton, 2011). In his own contribution, Woolfolk (1995) states that the cognitivists see people as active learners who initiate experiences, seek out information to solve problems and recognize what they already know to achieve new insights. They study a wide range of learning situations focusing on individual and developmental differences in cognition. Atherton (2011) however believes that there is no single cognitive model or theory of learning that represents the entire field as the cognitive psychologists have not sought general laws of learning.

Marshal (1984) is of the opinion that the S-R theorists regard learning as the acquisition of habits while cognitive theorists see learning as a matter of cognitive structuring with the brain as a controlling variable in learning. Sincero (2011) identifies cognitive learning theory (CLT) as an approach that explains why the brain is the most incredible network of information processing and interpretation in the body as we learn new things.

Several experts (Marshal, 1984; Omebe, 2005; and Sincero, 2011) believe that cognitive learning theory originated from the Gestalt psychology and popularized by Tolman, Lewin, Wertheimer, Kohler, Koffka, Piaget, Bruner and Bandura. Sincero maintains that cognitive learning theory is used to explain mental processes as they are influenced by both intrinsic and extrinsic factors which eventually bring about learning in an individual. He went further to say that with effective cognitive processes, learning is easier and new information can be stored in the memory for a long time while ineffective cognitive processes result to learning difficulties that can be seen any time during the lifetime of an individual.

3.2 Types of cognitive learning theory

There are two broad divisions of cognitive learning theory as identified by Sincero (2011) based on the works of notable cognitivists. These are social cognitive theory and cognitive behavioural theory

Social Cognitive Theory (SCT)

This aspect of cognitive theory prescribes that variables like behavioural indices, environmental factors (extrinsic) and personal factors (intrinsic) which are interrelated with each other cause learning to occur. It states that for effective and positive learning to occur, an individual should have positive personal characteristics, exhibit behaviour and stay in a supportive environment where new experiences are analyzed alongside past experiences with the same determinants. Learning is therefore as a result of a thorough evaluation of the present experiences versus the past. Social cognitive theory is based on some basic concepts that manifest not only in adults but also in infants, children and adolescents. These basic concepts are:

a. Observational learning: This is the process of learning from other people by means of observing them. This is an effective way of gaining knowledge and altering behaviour.
b. Reproduction: This is where there is an aim to effectively increase the repeating of a behavior by means of putting the individual learner in a comfortable environment with readily accessible materials to motivate him to retain the new knowledge and behaviour learned and to practice them.
c. Self-efficacy: This is where the learner improves his newly acquired knowledge or behaviour by putting into practice.
d. Emotional coping: This basic concept stresses that effective learning especially among adult learners is through good coping strategies against stressful environment and negative personal characteristics.
e. Self-regulatory capacity: This is the ability of a learner to control behaviour even within an unfavourable environment.

Cognitive Behavioural Theory (CBT)

This second group of cognitive learning theory describes the role of cognition (knowing) in determining and predicting the behavioural pattern of an individual learner. According to Sincero (2011), this theory was developed by Aaron Beck who states that individuals tend to form self-concepts that affect the behaviour they exhibit which can be either positive or negative depending on the learner's environment. Human behaviour and learning also depend

on the self, the world (environment) and the future of the learners. Generally, these triads are responsible for the three areas that cognitive theory is interested in. They include the aptitude and capacity of the learners to learn; and constructivism which emphasizes the role of the learners in constructing their own views of the materials and what helps with that.

The Gestalt Cognitive Theory of Learning

This is otherwise called the theory of insight (Omebe, 2005) which is associated with Max Wertheimer, Kurt Koffka, and WolfgangKohler of Germany through their emphasis on the importance of meaningfulness of a whole pattern. They proposed the law of perception that connotes meaningfulness, completeness, relative simplicity and good pattern which assert that a learner structures his perceptual field in as simple and clear a manner as possible to give meaning to it. There is therefore the ability on the part of the learner to survey a problematic situation and exhibit some relational or structural features in different context to find solutions.

Implications for adult learning

Adult learners by their stage of development have gone beyond mere fantasy and always seek for knowledge that is purposeful and meaningful through investigations. They work hard based on their intrinsically motivated factors to achieve some goals in life. Instructions should be directed towards finding purpose or order in learning new principles. Efforts should be made to explain "whole" through discovery method of facilitation using projects, assignments and field trips. Through these approaches, attention will be focused on elements and relationships that make up the whole as a correct purpose.

Piaget's Theory of Cognitive Development

Jean Piaget was a developmental cognitive theorist who hypothesized that individuals were born with reflexes, ability to assimilate and to accommodate facts which are used throughout their lives to learn and to adapt to their environments. Assimilation is the process of incorporating one's surroundings into his earlier cognitive beliefs. On the other hand, accommodation is the process of altering one's cognitive structure to accept new idea into his brain. There is also the equilibrium stage which is the master developmental process that encompasses both assimilation and accommodation.

Piaget has four stages of cognitive development which include:

Sensory-motor stage or infancy (0-2years); Pre-operational or early child hood stage (2-6years); Concrete operational or elementary school stage (7-11years); and Formal operational or adolescent to adulthood stage (12years and above).

These four stages progress from one stage to the other by the construction of new operational structures which constitute fundamental instrument of intelligence. The last stage which is the formal operational stage and the major concern of this course or unit begins at approximately age twelve through adolescence to adulthood when people develop the ability to think about abstract concepts. Individuals here become logical in thinking, deductive in reasoning and systematic in planning their things.

Implications for adult learning

This period is when individuals understand the expressions of adult thinking due to adult level of maturity from adolescent type of thinking. Adult learners should therefore be exposed to various challenges that can enable them think in abstract terms. Assignments should be in form of problem solving to arouse their interest and abstract thinking mentality bearing in mind that not all adults reach the stage of normal operations even in situations that demand this type of reasoning (Marshal, 1984).

Bruner's Cognitive Theory

Jerome Bruner theorized three modes of representation to demonstrate how learning can be developed. These modes are enactive, iconic, and symbolic representations. Enactive representation is action-based information that creates memory like shaking a rattle. Iconic representation is about visual images that aid learning such as diagrams or illustrations. Symbolic representation is a process of learning a concept of symbols or language. The idea that there is a name that goes with things and the name is arbitrary is generally taken as the essence of symbolization. The symbol is not the image but the language which is very important in adding meaning to new information through its connection with already existing knowledge using the concept of elaboration. Hence, the central notion of Bruner's theory (representation) is how an individual represents the environment to himself at different stages of development.

Like Piaget, Bruner maintains that cognitive development is influenced by the culture in which an individual is reared and that different cultures provide different influences at different times in an individual's life. Hence, uniformities in human culture account for uniformities in development (Marshal, 1984). This shows that human beings have common features that are shown by their cultural differences which invariably affect their learning.

Implications for adult learning

Memory fades with age which suggests that symbolic representation where images are recognized or represented by their names for quick recall is an excellent cognitive process. Besides, learners in the tropics should be bothered about high temperature in both dry and wet seasons instead of bothering them with winter cold and snow falls. Some adults think like

children when they are well advanced in age which must compel adult education providers or instructors to emphasize enactive, iconic and symbolic representations of learning. Assignments should be practical and thought provoking to ensure positive cognitive competence among adult learners.

Bandura's Social Cognitive Theory

According to this theory, learning is done through the observation of peoples' behaviours, attitudes and consequences of behaviours, imitation and modelling of other people. It is therefore a bridge between the behavioural and cognitive learning theories that focuses on the importance of the learner's attention memory and motivation. Learners acquire knowledge through reciprocal interaction between their cultural environment, behavioural and cognitive influences. In other words, the theory posits that personal factors like cognitive processes and social factors (behaviour) as well as a person's environments collectively shape his learning. The importance of a learner's own self-efficacy and opinions about his capability to learn something new which is shaped by his efforts and persistence is the hallmark of Bandura's theory.

Implications for adult learning

Adult learners are by themselves role models depending on their personality dispositions and cultural milieu. Among themselves, they can observe each other, imitate the right behaviour and jettison the societally unapproved traits of their colleagues. Adult education providers or facilitators should also endeavour to emphasize on learners' self-beliefs, capabilities and spirit of persistence.

3.3 Reinforcement and Punishment

Reinforcement is defined by Shukla (2005) as an act of providing rewards so as to obtain a desired behaviour. It is used in psychology to mean any action or stimulus that strengthens, sustains or increases the probability of a desired response. Reinforcement can equally be seen as a consequence that follows an operant response that increases or attempts to increase the likelihood of a response in future. For illustration, offering a child an ice cream when urged to come top in his class and he does so is a process of reinforcement. Likewise, telling your spouse how nice he or she looks when dressed up increases the probability that that same response will be repeated when next he/she is going out.

A pleasurable variable or consequence that sustains or increases a response is called a reinforcer. There are four types of reinforcer as:

a. Positive reinforcer: This is an appetitive action whose occurrence follows an operant response.
b. Negative reinforcer: This is an aversive event whose removal follows an operant response. The negative reinforcer increases the likelihood of that behaviour occurring again under the same circumstances.
c. Primary reinforcer: Biologically pre-established to act as reinforcement. Examples are food, water and sex which satisfy biological desires.
d. Conditioned reinforcer: If the neutral stimulus is paired with a primary reinforcer, it acquires the same reinforcement properties associated with the primary reinforcer. For example, money is a conditioned reinforcer to acquire food, water and shelter (primary reinforcers).

Types of reinforcement

Based on the nature and varying forms of reinforcers, there are basically four types of reinforcement. They are:

1. **Positive reinforcement**: This is a situation where something is added to a situation in order to increase a response. For instance, praising a child will increase the chances of his/her doing well in his/her studies. Praise and rewards are therefore positive reinforcements. Positive reinforcement is experienced by people as both givers and receivers.
2. **Negative reinforcement**: This is a process of taking something negative away in order to increase a response. A good example is the case of a nagging mother to her child who always refused to sweep the compound before going to school. The child never liked sweeping but did it one day and her mother did not talk or nag. The solution to this negative stimulus is reinforcing and will most likely increase the chances that the child will continue to sweep the compound.
3. **Punishment**: This is a process of adding something aversive or unpleasant in order to decrease behaviour. For shouting at a child who does not like shouting or beating and to avoid any of them therefore, he/she will stop his inappropriate behaviour.
4. **Extinction**: This is the act of removing something pleasurable to somebody from him in order to decrease a negative behaviour. Something is taken away so that a response is decreased or eliminated. For instance, a man whose son always rides his bicycle at the expense of his studies can take away the bicycle and charge him to face his studies and do well in his examination for him to have access to the bicycle during the holidays as a form of reinforcement. The child will see this as a challenge and endeavour to perform well in his studies in order to have access to the bicycle.

Of the four types of reinforcement, positive reinforcement is the most powerful as it allows both parties to be focused on the positive aspects of the situation at hand. When reinforcements are wrongly applied in a regular pattern, they become variable schedules. These schedules are grouped into two as:

a. **Variable ratio**: This is the introduction of a reinforcer after a variable number of responses like in a pool betting. It is a reward for a variable number of responses.
b. **Variable interval**: This is the case of reinforcing somebody after a variable amount of time has elapsed. It is a reward after a variable interval of time.

   Application of reinforcement in continuous schedules is often referred to as variable schedule approach. Continuous schedules are of two types thus: Fixed ratio and fixed interval ratio. Fixed ratio is where reinforcement is applied after a specific number of behaviours. It is a reward for a fixed number of responses. An example is asking a child to cut grasses if you have to correct him twice to do so. However, the operant response seems not to change until the number of interval is present. Fixed interval on the other hand is where the reinforcement is applied after a specific amount of time. This is a reward given after a fixed interval of times. An example is getting promoted in office every three years for satisfactory performance of duties during the period.

The concept of punishment

Punishment is the act of causing psychological or physical pain to somebody with the aim of changing the person's future behaviour (Shukla, 2005). It is the practice of imposing unpleasant condition on a person as a consequence of some undesirable or immoral behavior or disobedience displayed by the person. People are often punished in order to decrease the likelihood of the occurrence of a particular response occurring in future. Punishment can be positive or negative.

Positive punishment is an attempt to decrease the likelihood of a behaviour occurring by presenting an aversive stimulus. Negative punishment on the other hand is an attempt to decrease behaviour through the removal of an appetitive stimulus. The removal of bicycle to enable a child concentrate and face his studies as earlier explained is a negative punishment. Punishment can be physical or non-aversive. Physical punishment is termed corporal punishment where the intension is to cause pain through flogging/canning or any other physical means. The non-aversive or psychological punishment involves the use of words or verbal instructions to authoritatively impose unpleasant condition on a person, animal or organization in response to a behaviour deemed unacceptable.

Experts believe that punishment is not the same thing with discipline and cannot be used to instil discipline or change maladaptive behavioUr. According to Marshal (1984), punishment is the least effective way of dealing with unwanted behaviour because it only teaches avoidance of the bad behaviour that is punished. She maintains that punishment does

not teach a pupil how to behave as the negative reinforcement situation does but teaches him how not to behave.

Punishment can produce unrealistic submission or obedience, rebellion or revenge, and confusion. Punishment can also invoke other negative responses such as anger and resentment, hardening of children with unacceptable behaviour, avoidance, disappearance, etc. However, punishment when applied immediately following the negative behaviour can be effective but may result in extinction when it is not applied consistently. The only lasting discipline is self-discipline which can be taught with the aid of selective reinforcement not punishment.

Implications for adult learning

Adult learners need self-discipline to achieve their goals and avoid sanctions of any sort from adult learning providers. Besides, it is insulting for an adult to allow himself to be subjected to any form of punishment by his fellow adult for not showing appropriate behaviour. Facilitators on their part should always endeavour to understand the type and schedule of reinforcement when handling adult learners.

4.0 CONCLUSION

Cognitive theory of learning is an approach that emphasises cognition in the process of teaching and learning either as an independent learner or in an organized learning situation. In this regard, several cognitive theorists or authors postulated several theories about how knowledge is acquired. Some of such experts are Jean Piaget of Developmental cognitive theory, Bruner's cognitive theory, Bandura's cognitive theory the Gestalt theorists and a host of others. The implication of cognitive theories of learning to adult learners is that this category of learners when armed with the theories can see themselves as potential experts who can engage in learning when their mind is appropriately fine-tuned in line with their personality traits and ability to engage in learning.

5.0 SUMMARY

In this unit, cognitive theories of learning were exhaustibly discussed as they affect adult learners. Two broad types of cognitive theory as social cognitive theory and cognitive behavioural theory were highlighted. Reinforcement and punishment were also discussed in this unit. Types of punishment as discussed here include positive, negative, punishment and extinction reinforcements. Punishment as a measure of decreasing unwanted behaviour can be positive or negative depending on what is desired.

6.0 ASSESSMENT

1. Explain the following with illustrations:
   a. Fixed ratio
   b. Fixed interval
   c. Variable ratio
   d. Variable interval
2. Reinforcement and punishment are vital tools of behaviour modification. Discuss.
3. Briefly explain either Piaget's cognitive theory or Bandura's social cognitive theory and state its relevance in adult learning.

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MODULE 4: LEARNING THEORIES – BEHAVIOURISM

Unit 1: Classical Conditioning – Ivan Pavlov

Unit 2: Thorndike's Connectionism

Unit 3: Operant Conditioning – B.F Skinner

UNIT 1: CLASSICAL CONDITIONING – IVAN PAVLOV

CONTENT

1.0 INTRODUCTION

From the work done in the previous unit, you can define what is learning is all about. In this unit, you will get to know about behavioural learning theory of Ivan Pavlov known as classical conditioning. You will also get to know about its implications to classroom situation.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- define learning theories
- discuss the classical conditioning theory of Ivan Pavlov
- explain the educational implications of classical conditioning theory
- list the Stimulus – Response (S-R) theories with reinforcement and those without reinforcement.

3.0 MAIN CONTENT

3.1 Learning Theories

A theory is based upon a hypothesis and backed by evidence. A theory presents a concept or idea that is testable. It provides general explanation for observations made over time. What goes on in the process of learning? How does an individual learn a set of knowledge, skills, habits, interests, attitudes and similar other things in life? Such questions have always been a subject of enquiry and investigation before psychologists and as a result a number of theories have come into being.

Learning theories are therefore conceptual frameworks that describe how information is absorbed, processed and retained during learning. In the broad sense, these theories may be classified into two major groups: Behaviourist theories and cognitive theories.

3.1.1 Behaviourist Learning Theories

Behaviourist learning theories belong to the school of behaviourism. Behaviourists believe that learning occurs through interaction with the environment. They interpret learning in terms of association between stimulus and response. They believe that our responses to environmental stimuli shape our behaviours. Behaviourist learning theories can be grouped into two namely:

(i) Stimulus – Response (S – R) theories with reinforcement

E.L. Thorndike's theory of Connectionism

B.F. Skinner's theory of Operant Condition

Clark L. Hull theory

(ii) Stimulus – Response (S – R) theories without reinforcement.

Ivan Pavlov conditioning theory

John B. Watson learning theory

Contiguity theory by E.R. Guthrie

SELF-ASSESSMENT EXERCISE 1

Outline the basic assumptions of behaviourists.

3.2 CLASSICAL CONDITIONING THEORY – Ivan Pavlov (1949 – 1936)

Pavlov was a Russian physiologist cum psychologist. He was well known for the classical conditioning experiments and findings. Classical conditioning is also known as Respondent Conditioning. The term respondent implies that the learned response is elicited involuntarily from the organism rather than produced by the organism in a voluntary (or operant) manner. Classical conditioning is a learning process that occurs through association between environmental stimulus and a naturally occurring stimulus. For example, if a student frequently encounters unpleasant stimuli in mathematics class such as unfriendly teachers, difficult questions, and a lot of homework, he may learn to dislike mathematics.

Pavlov was interested in the digestive system of dogs. He used a hungry dog which he immobilized in a sound proof cage (rendering the dog captive and inactive) several times when merely bell was rung, no salivation was noticed in the dog. Neutral Stimulus (NS) – No Response (NS)

The next thing Pavlov did was to present meat powder which is neutral stimulus or unconditioned stimulus (UCS) and the dog salivated which was an unconditioned response (UCR). Next, he paired the ringing of the bell and meat powder to the dog and the dog salivated. NS + UCS = UCR.

After some time, Pavlov then withdrew the meat powder and presented the bell alone. The dog salivated which is Conditioned Response (CR). However after some time, Pavlov observed that the quantity of saliva was reducing progressively as the number of presentation increased. At a point, salivation stopped. This is called Extinction. This suggest that there is a limit to which unconditioned response can be manipulated. To make the dog recover from extinction, it must be presented with Conditioned Response (CR)

Steps in the Process of Classical Conditioning

Step 1: Before conditioning

Before conditioning, the bell is a neutral stimulus. Neutral Stimulus (NS) is a stimulus that before conditioning does not naturally bring about the response of interest.

NS (bell) - No salivation

UCS (meat) - UCR (salivation)

Step 2: During Conditioning Procedure

During the conditioning procedure, the neutral stimulus (NS) is presented. It is immediately followed by the unconditioned stimulus (UCS) to produce unconditioned response (UCR).

Step 3: Test of Conditioning

After the classical conditioning procedures, the neutral stimulus (NS) becomes a conditioned stimulus (CS). It alone can produce salivation. At this point, the production of salivation is known as the conditioned response (CR).

NS (bell) $\rightarrow$ CR (salivation)

3.3 Educational Implication of Pavlov's Theory

Classical conditioning primarily influences emotional behaviour. Things that make us happy, sad, angry etc. become associated with neutral stimuli that gain our attention. For example, if a particular teacher produces emotional feelings in you, those emotions are probably a result of classical conditioning.

For instance, because of threatening tests, a student will feel a great deal of fear or anxiety. And when he experiences the fear, he gets associated with other things in the situation. Thus, the student's fear gets tied up with taking tests, with certain teachers and in extreme cases, with school itself.

Similarly, when people experience positive effect, that emotion gets conditioned to other factors in the situation. And then whenever those other factors are present, the positive emotion can be triggered.

4.0 CONCLUSION

In this unit, we have seen that classical conditioning is a process in which an organism learns to respond in a particular way to a stimulus that previously did not bring about that response.

5.0 SUMMARY

In this unit, we have looked at definition of theory, basic assumptions of behaviourists, classification of behaviourist learning theories, classical conditioning theory of Ivan Pavlov and educational implications of classical conditioning.

6.0 TUTOR MARKED ASSIGNMENT

(1) What do you understand by learning theories?

(2) Discuss the classical conditioning theory of Ivan Pavlov

(3) Explain the educational implications of classical conditioning theory.

(4) List the Stimulus – Response (S – R) theories with reinforcement and those without reinforcement.

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UNIT 2: THORNDIKE'S THEORY OF CONNECTIONISM

CONTENTS

1.0 INTRODUCTION

In this unit, you will read about the three major laws propounded by Thorndike on Connectionism. His theory went beyond Pavlov by showing that an act that is followed by a favourable effect is more likely to be repeated in similar situations and an act that is followed by unfavourable effect is less likely to be repeated.

2.0 OBJECTIVES

At the end of the unit, you should be able to:

- discuss the three major laws of learning propounded by Thorndike
- discuss the educational implications of Thorndike's theory

3.0 MAIN CONTENT

3.1 Edward Thorndike's Theory

Edward Lee Thorndike (1874 – 1949) believed that all learning is explained by connections (or bonds) that are formed between stimuli and responses. Using cats, dogs and chickens, he devised experiments in which an animal was placed in a cage from which it could escape to reach food. The food was visible but not accessible from the cage. On the inside was a release mechanism which could be operated by the animal.

When first placed in the box, the animal (the cat) exhibited a random movement trying to escape to get food. Eventually, it operated the release mechanism which allowed it to escape and obtain food. On subsequent trials, the activity became less random and focused on the part of the cage near the release mechanism. The time of escape decreased until the animal eventually operated the release as soon as it found itself in the cage. In this 'trial and error' fashion, the cat hit on the release mechanism to get the food. From this work, Thorndike derived three major laws of learning.

3.2 Thorndike's Laws of Learning

Thorndike propounded the following laws of learning on the basis of his theory.

The Law of Readiness

When organisms both human and animal are ready to act or learn to do so is satisfying and not to do so is annoying or unsatisfying. Thorndike believed that readiness is an important condition of learning because satisfaction or frustration depends on an individual's state of readiness. Schools cannot force students to learn if they are not biologically and psychologically prepared. They can learn only when they are ready.

The Law of Exercise

This law has two parts – use and disuse

The law of use states that all things being equal, the more frequently a connection between a stimulus and a response is made, the stronger the connection will be.

The law of disuse: The law of disuse states when a connection between stimulus and response is not made over a period of time, the strength of that connection is weakened.

In this way, law of use refers to the strengthening of connection with practice while the law of disuse refers to weakening of connection when the practice is discontinued. In brief, it can be said that law of exercise as a whole emphases the need of repetition, practice and drill work in the process of learning.

The Law of Effect

This law states that learning occurs only when responses are followed by reward and satisfaction. On the other hand, if frustration or punishment is experienced by the learner, the connection between stimulus and response becomes weakened.

In simple words, it means that learning takes place properly when it results in satisfaction and the learner derives pleasure out of it. In a situation where the learner meets with failure or gets no satisfaction, the progress on the path of learning is blocked. In other words, this law emphasis the role of rewards and punishment in the process of learning.

SELF ASSESSMENT EXERCISE 1

With example, distinguish between the Law of Effect and the Law of Exercise.

3.3 Implications of Thorndike's Theory to Adult Learner

1. Activities especially in the course material must be organized on increasing difficulty order as well as presented in varied ways so that novelty is maintained and learners progress without fear.

2. Guidance, praise and encouragement that give pleasure and satisfaction should be provided to keep learners in the right path.

3. More and appropriate opportunities must be given to learners to use and repeat knowledge they get in class

4. Review and drills are necessary to motivate and strengthen the connections of S – R for longer period.

5. Examination, quizzes, discussions, assignments and the likes must be provided for adequate exercise to enable and encourage learners to observe law of exercise. A connection will be strengthened with practice or forgotten without practice or use.

6. If an adult learner wants to learn a thing, he must be quite willing to learn it by fully realizing its importance to him. Experiences that will enable law of readiness to be practiced by the learner should be provided by the facilitators and even through the course material by bringing the mechanism of motivation into operation.

SELF ASSESSMENT EXERCISE 2

As an adult learner, what are the implications of the three major laws of Thorndike's theory to you?

4.0 CONCLUSION

In short, Thorndike's theory of connectionism along with his major laws of learning have contributed a lot in the field of learning. It has made learning purposeful and goal-directed and

has emphasized the importance of motivation. It has given an impetus to the work of practice, drill and exercise and highlighted the psychological importance of rewards and praise in the field of learning.

5.0 SUMMARY

In this unit, you have learnt about Thorndike's theory of trial and error learning which emphasizes that learning is caused by the formation of connection between stimuli and responses. Three major laws of learners propounded by Thorndike were discussed as well as their implications of learning.

6.0 TUTOR MARKED ASSIGNMENT

1. Discuss Thorndike's three major laws of learning

2. Discuss the classroom implications of Thorndike's theory.

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UNIT 3: SKINNER'S THEORY OF INSTRUMENTAL OR OPERANT CONDITIONING

CONTENTS

1.0 INTRODUCTION

In unit 2, you were taught Thorndike's theory of connectionism. In this unit, we shall be discussing about skinner's theory of instrumental or operant conditioning. Skinner revealed in his theory that learning is a function of change in overt behavior. Changes in behaviour according to skinners, are the result of an individual's response to events (Stimuli) that occur in the environment. The voluntary behaviour is either strengthened or weakened by the immediate presence of a reward or punishment.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- discuss Skinner's Instrumental/Operant conditioning
- describe reinforcement and punishment
- enumerate the implications of Skinner's theory to the adult learner.

3.0 MAIN CONTENT

3.1 B.F. Skinner's Theory of Instrumental or Operant Conditioning

Instrumental conditioning theory of learning was formulated by B.F. Skinner (1904 – 1990), who was an American Psychologist. Skinner improved on the work of Thorndike. Skinner revolted against "no stimulus, no response" mechanism in the evolution of behaviour. He argued that in practical situations in our life, we cannot always wait for things to happen in the environment. Man is not a victim of the environment. He may often manipulate the things in the environment with his own initiative. In his view, each learning experience is a stimulus that produces a behaviour response.

Skinner was convinced of the importance of reinforcement. Skinner developed an explanation of learning that stresses the consequences of behaviour. What happens after we do something is all important. In Operant conditioning, behaviour must occur before it can be reinforced. Operant or instrumental conditioning is a form of learning in which the consequences of behaviour lead to changes in the probability that the behaviour will occur.

Skinner defined two types of responses – the one "elicited" by known stimuli which he called "respondent behaviour" and the other emitted by unknown stimuli which he called Operant behaviour. Examples of respondent behaviour may include all reflexes such as jerking one's hand when jabbed with a pin, salivation in the presence of food. In respondent behaviour the stimulus preceding the response is responsible for causing the behaviour, the stimulus causing such behaviour is unknown. In this case, the stimulus is not important but the consequences of the behaviour hence operant behaviour is controlled by the strength of its consequences instead of stimuli. Examples of such behaviour include moving one's hand, arms or legs arbitrarily, eating a meal, writing a letter, standing up and walking about and similar other everyday activities. Operant conditioning occurs when a response to a stimulus is reinforced.

To establish his claims, Skinner conducted a series of experiments with animals. Skinner constructed a box called Skinner box containing a lever that releases a pellet of food. Skinner, in one of his experiments placed a hungry rat in the above described box and if the rat presses the lever, the food would drop for it. The lever in the box was mechanically connected to a device that automatically records every attempt the rat made.

In the box, the rat moved around tirelessly and each time the lever is pressed, the food falls for the rat. The rat becomes persistent in pressing the lever so that the food could fall. The food that comes down for the rat reinforces its action. The pressing response is instrumental in producing a reinforcer (food) which then acts as a stimulus for response (lever pressing). In contrast, if the food is not accompanied with the pressing of lever, the number of presses would fall gradually to the lowest point.

SELF ASSESSMENT EXERCISE 1

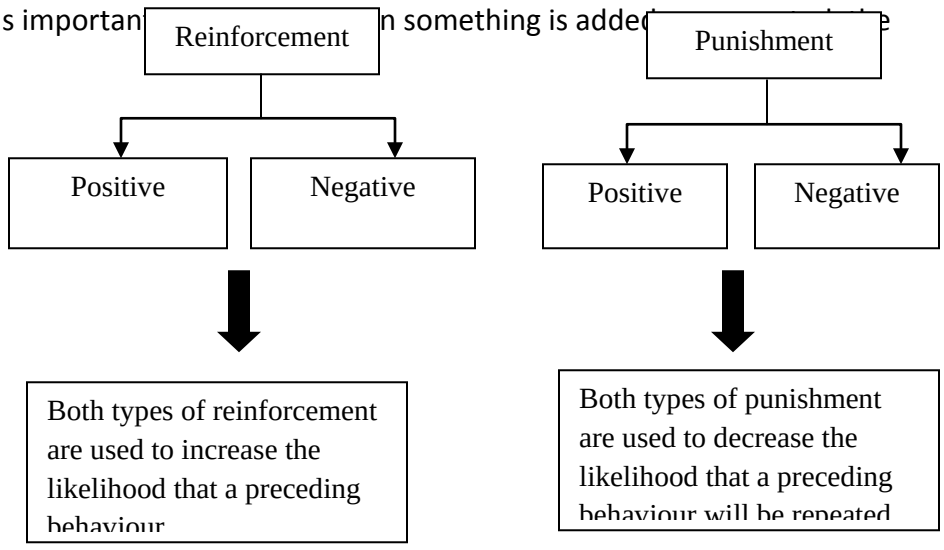
(1) What are the two types of responses defined by Skinner?

(2) Mention two (2) examples of each of the responses mentioned above.

3.2 Forms of Reinforcement and Punishment

Reinforcement is a consequence that increases the probability that a behaviour will occur. On the other hand, punishment is a consequence that decreases the probability that a behaviour will occur. In other words, reinforcement will strengthen a behaviour while punishment will weaken a behaviour.

There are two forms of reinforcement and punishment as shown below:



process of learning is called positive and when something is removed or taken away, the process of learning is called negative.

Table 3: Forms of Reinforcement and Punishment

Positive reinforcement	Receiving something pleasant will increase behaviour occurrence	A student is praised for asking question. Subsequently, the student asks more questions.
Negative reinforcement	Removing something unpleasant will increase behaviour occurrences.	A child who is tired of hearing his father's nagging will do his homework. He does the homework to remove the nagging .
Positive punishment	Receiving something unpleasant will decrease behaviour occurrences	If a teacher frowned when his student asked a question, the student would be less likely to ask question again.
Negative punishment	Removing something pleasant will decrease behaviour occurrences.	A misbehaving student is removed from the class.

Both positive and negative reinforcement functionally increase behaviour. Negative reinforcement should not be confused with punishment.

3.3 Schedules of Reinforcement

A reinforcer is a contingent event that increases the frequency of behaviour. Reinforcers are more effective when they are given as soon as possible after a student performs the target behaviour.

Schedule of reinforcement: A reinforcement schedule is simply a rule which specifies how often and under what conditions a particular response will be reinforced. Reinforcement may be given at continuous or intermittent schedule.

Continuous reinforcement: In this reinforcement technique, every correct response or behaviour is reinforced. For example, a student may be rewarded for every correct answer he gives to the questions or problems asked by his teacher.

Intermittent reinforcement: This involves sometimes withholding and at other times providing reinforcement. In this type of reinforcement only some of the correct responses are reinforced.

There are four types of schedule of reinforcement. They are as follows:

1. Fixed ratio schedule: This is when a behaviour is reinforced after a set number (fixed) of responses have occurred. For example, a student may be given a bar of chocolate for every ten mathematical problems solved.

2. Variable ratio: This is a type of reinforcement schedule where the number of responses needed for reinforcement varies from one reinforcement to the next. The number of responses needed to gain the reinforcement is not consistent. The individual does not know when he is going to be rewarded and consequently he remains motivated throughout the learning process in the wait of reinforcement. For example, a student may be rewarded after 3, 5, 9 and 15 mathematical problems solved.

3. Fixed interval schedule: This is a kind of schedule in which the time between reinforcement varies. The time period keeps changing. For example, rather than waiting for a

standard ten or fifteen minutes, teachers ask for responses at different times immediately later, and in the middle of the class.

3.4 Educational Implications

1. Principle of objective specification: Clear detailed specific objective expected during and at the end of each unit must be well stated in form of stimulus-response connection. A good example is the NOUN course material where the objectives to be achieved at the end of unit are stated.

2. Principle of Small Step: The subject matter must be programmed, analysed thoroughly and divided into meaningful segment of information to be presented at a time to the learners. A good example is the NOUN course material for ODL or any other ODL course material where the subject matter is programmed, divided into meaningful segments, and presented at a time to the learners.

3. Principle of Immediate Information and Assessment: Reward should follow quickly when correct response appears. This is referred to as feedback and is based on the principle that motivation is enhanced when we are informed of our progress. For an adult learner, when the result of his continuous assessment is provided immediately to him/her through the machine (internet), the learner is encouraged and motivated to work harder.

4. The learner is able to learn at his own pace. This is very suitable for open and distance learning.

These principles originating from operant conditioning have revolutionized learning programmes. As a result, teaching machines and computers assisted instructions are gradually replacing classroom instructions.

4.0 CONCLUSION

In operant conditioning, we see that the consequences of behaviour produce changes in the probability that the behaviour will occur.

5.0 SUMMARY

In this unit, you have learnt about Skinner's Operant Conditioning Theory. You also learnt about forms of reinforcement and punishment and the educational implications of Skinner's theory to adult learners.

6.0 TUTOR MARKED ASSIGNMENT

1. Discuss Skinner's instrumental or operant conditioning.
2. Define reinforcement and punishment
3. Write short notes on the following:
   (i) Continuous reinforcement
   (ii) Intermittent reinforcement
4. What are the contributions of Skinner's theory to adult learners?

7.0 REFERENCES/FURTHER READINGS

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Unit 4: DISTINCTION BETWEEN CLASSICAL CONDITIONING AND OPERANT CONDITIONING

CONTENTS

6.0 Tutor Marked Assignment

7.0 References/Further Readings

1.0 INTRODUCTION

From the work done in the previous units, you can discuss what classical conditioning and operant conditioning are all about. In this unit, you will get to know about the differences that exist between the two types of conditioning. You will get to know about the key terms and concepts in the two theories of learning.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- List the differences between classical and operant conditioning
- Explain the following terms:
  - (i) Discrimination
  - (ii) Extinction
  - (iii) Generalization
  - (iv) Conditioned Stimulus

3.0 MAIN CONTENT

3.1 Distinction between Classical Conditioning and Operant Conditioning

In classical conditioning, the organism is passive. It must wait for something to happen before it can respond. The behaviour cannot be emitted in the absence of a cause e.g. the dog waits for food to arrive before salivating while in operant conditioning, the organism is active. Operant behaviour is initiated on his own without a stimulus by the organism. In other words,

much emphasis is placed on the response rather than the stimulus causing the response. For example, accidental pressing of the lever by the rat.

In classical conditioning, reinforcement comes first, whereas in operant conditioning, reinforcement comes after appropriate response is made.

Classical conditioning involves the pairing of unconditioned stimulus (food) and conditioned stimulus (bell) while in operant conditioning, there is no pairing.

Classical conditioning is stimulus-oriented while operant conditioning is response-oriented.

Operant conditioning is more flexible than classical conditioning because responses that may be conditioned are not confined to natural or innate responses but to a variety of responses.

In operant conditioning, the association is between the emitted behaviour and the reinforcement upon which the behaviour is contingent while the association is between a stimulus and elicited response in classical conditioning.

In classical conditioning, the essence of learning is stimulus substitution whereas in operant conditioning, the essence of learning is behaviour modification.

SELF ASSESSMENT EXERCISE 1

In your own words, list three differences between classical conditioning and operant conditioning.

3.3 Key Terms and Concepts in Classical Conditioning and Operant Conditioning

Terms	Definitions
Conditional Stimulus	Stimulus that acquired the ability to produce the response because it was paired with the unconditioned stimulus
Conditioned response	Response that is similar to unconditioned response (UCR) but is produced by the conditioned stimulus
Discrimination	The ability to differentiate between similar stimuli. In other words, it is the process by which we learn not to respond to similar stimuli in the same way
Extinction	The disappearance of a response due to the removal of the reinforcer that maintained the response. In other words, it is a process by which conditioned responses are lost.
Generalisation	Responding in the same way to two different stimuli
Unconditioned response (UCR)	Unlearned or inborn reaction to the unconditioned stimulus
Unconditioned stimulus	Stimulus that can produce response without any learning
Classical conditioning	Type of learning in which neutral (conditioned) stimulus gradually gains the ability to elicit a response because of its pairing with a natural (unconditioned) stimulus.
Operant conditioning	Form of learning in which the consequences of behaviour lead to changes in the probability that the behaviour will occur
Spontaneous recovery	The reappearance of an apparently extinguished conditioned response (CR) after an interval when conditioned stimulus is presented again.

SELF ASSESSMENT EXERCISE 2

With examples, explain the following terms:

(1) Generalization

(2) Extinction

(3) Discrimination

4.0 CONCLUSION

Although classical conditioning and operant conditioning are classified and included in the category of conditioning, there still exist some differences between them. For both theories, learning is the acquisition of new behaviour through conditioning.

5.0 SUMMARY

In this unit, you learnt about the distinction between classical conditioning and operant conditioning. You also learnt about the key terms and concepts in the two types of conditioning.

6.0 TUTOR MARKED ASSIGNMENT

1. List the differences between classical conditioning and operant conditioning

2. Write short notes on the following:

   (i) Discrimination

   (ii) Extinction

   (iii) Generalization

   (iv) Conditioned Stimulus

7.0 REFERENCES/FURTHER READINGS

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