



NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF EDUCATION

COURSE CODE: EDT 841

COURSE TITLE: CONCEPTUALISATION OF INSTRUCTIONAL STRATEGIES

EDT 841: CONCEPTUALISATION OF INSTRUCTIONAL STRATEGIES

COURSE GUIDE

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• EDT 841: Conceptualization of Instructional Strategies

Introduction:

Course ware for the course EDT 841 is presented to you in two packages: this course guide and the main course content, both in print format.

This guide familiarizes you with the expected study guidelines. Please go through this guide thoroughly before you start your study of the main course content.

What you will learn in this Course

This course, EDT 841, exposes you to contemporary Instructional strategies for teaching at all levels across the school curriculum and the underlying psychological theories of learning and communication. The course is designed to bring you abreast of developments in instructional thinking and planning, with particular interest in the Activity based instructional strategies, and cooperative learning. You will be guided in the conduct of these innovative pedagogy with references to help you develop your skills further.

Course Aims

The major aims of this course are to

- a) expose you to theories of communication and learning that shape thoughts in pedagogy;
- b) assist you in the identification of suitable strategies for instruction at every level of the school curriculum;
- c) enhance your understanding of the different methods of instruction;
- d) encourage you to improve your instructional practice by promoting learner centeredness in instruction;
- e) enable you to contribute positively to the development of good educational practices in your country.

Course Objectives

At the end of this course you will be able to

- Discuss the theories of learning that underlie the new developments in pedagogy..
- Describe the new trends in content delivery at every level of the educational system.
- Appraise instructional systems and recommend pedagogic solutions to identified problems.
- Discuss a variety of instructional strategies and how they are used in content delivery, and their limitations.
- Design instructional strategies for a variety of learning situations.

Working through the Course

To complete this course, you are required to read each unit of this study material and read other materials, which may be provided by the National Open University of Nigeria or which may be available on-line. Each unit contains self-assessment exercises for this course and at certain points in the course you would be required to submit tutor-marked assignments for assessment purposes. At the end of the course, there is a final examination. This course should take you a maximum of 21 weeks to complete. Below you will find listed all the components of the course, what you have to do and how you should allocate your time to each unit in order to complete the course on time and successfully.

I want to strongly advise that you avail yourself the opportunity of attending the tutorial sessions where you will have the opportunity of exchanging information with your student colleagues.

The Course Materials

Major components of the course are:

1. The Course Guide
2. Study Units
3. References
4. Assignments
5. Presentation Schedule.

Study Units

There are twenty study units as listed below in 5 modules.

Module 1: Theories of Learning and Communication

Unit 1: Trends in learning strategies.

Unit 2: Learning Theories.

Unit 3: Communication Theories

Unit 4: Motivation and Learning

Unit 5: Perception and Learning

Unit 6: Constructivism

Module 2: Strategies for Young Learners.

Unit 1: Montessori

Unit 2: Poems, Songs, Rhymes, Play

Unit 3: Quizzes, games, puzzles

Module 3: Teaching Older Children

Unit 1: Demonstration

Unit 2: Questioning method

Unit 3: Group discussion, brainstorming, etc.

Unit 4: Role playing and Drama

Unit 5: Simulations

Module 4: Teaching Matured Learners

Unit 1; Lectures, seminars, symposium

Unit 2: Tutorials, team teaching, etc.

Unit 3: Case studies, projects, investigative methods

Module 5: New Development in Instructional Strategies

Unit 1: Strategies in Science Instruction

Unit 2: Computer based Instruction

Unit 3: Individualization of Instruction vs Collaborative learning

Each unit is written in the following format

- Introduction to the unit
- Objectives of the Unit
- Contents (in many subtitles)
- Conclusion
- Summary of content
- Tutor marked assignment (TMA) to be submitted to your course tutor
- References and Future Reading.

There are self assessment questions at the end of each subunit. These give you the opportunity to reflect on the content presented and indulge in some practice as required by the content.

Presentation Schedule

Your course materials will give you important dates for the early and timely completion and submission of your TMAs and attending tutorials. You should remember that you are required to submit all your assignments by the stipulated time and date. You should guard against lagging behind in your work.

Assignment File

There are assignments embedded into the learning schedule in each unit of this course. These are designed to ensure that you really understand each of the units. In this file, you will find all the details of the work you must submit to your tutor, for marking. Remember your assignments are as important as the examinations as they carry the weightings 40% .

Assessment

Two major methods will be used to grade and score your performance in this course. The first major method is through assignments, while written a examination will be the second one. The course material has been prepared to assist you to do these assignments. You are also expected to use information and knowledge from the recommended texts at the end of each unit. The assignment will carry 60% of the total marks.

Tutor-Marked Assignment (TMAs)

The TMA is a continuous assessment component of your course. It accounts for 30% of the total score. You are required to submit at least four (4) TMAs before you are allowed to sit for the end of course examination. The TMAs would be given to you by your facilitator you are to return them to the facilitator as and when due.

Assignment questions for the units in this course are contained in the assignment file. You will be able to complete your assignment from the information and materials contained in reading your study units and, references. However, it is desirable to demonstrate that you have read and researched more into other references, which will give you a wider view point and may provide a deeper understanding of the subject.

Make sure that each tutor–marked assignment reaches your facilitator on or before the deadline given in the presentation schedule and assignment file. If for any reason you cannot complete your work on time, contact your facilitator before the assignment is due to discuss the possibility of an extension. **Extensions will not be granted if asked for after the due date.**

Final Examination and Grading

The final examination for EDT 841 will be for three hours duration and will carry 60% of the total marks. The examination will consist of questions, which reflect the type of self testing, practice activities and tutor-marked assignments / problems you have encountered previously. All areas of the course will be examined.

You may wish to form a discussion group with a few of your colleagues and practice or discuss the activities and assignments written in each unit before the examination period. This strategy will give you the opportunity to discuss with your colleagues. It will also widen your horizon of the the knowledge of the course.

How to Get the Most from this Course

1. The course EDT 841 is a PhD level course. You are therefore expected to have developed good study habits. Read through the content presented at your own pace. Source internet facilities for additional information; interact as much as possible with opportunities on net, including net seminars and learning programmes. Join some learned net-based associations for update on information (e.g. International Forum for Educational Technology and Society, IFETS).
2. Work diligently through the suggested learning activities at the end of each sub-unit.

Summary

Pedagogic skills are very essential for effective content delivery at all levels of education. New shifts in emphases are constantly developing and as a teacher you need to keep abreast of these developments, and ensure that all your pupils are learning at all times. This course is designed to acquaint you with current trends and issues related to instructional strategies.

EDT 841: CONCEPTUALISATION OF INSTRUCTIONAL STRATEGIES

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EDT 841: CONCEPTUALIZATION OF INSTRUCTIONAL STRATEGIES 3 UNITS

MODULE 1: THEORIES OF LEARNING AND COMMUNICATION

UNIT 1: CURRENT TRENDS IN INSTRUCTIONAL STRATEGIES

1.1 Introduction

To plan and execute an effective teaching assignment, you need a firm grounding in the science of how people communicate and learn at various ages, what factors affect learning and what models of teaching and learning are available to you as options. This module will lead you through a review of theories of learning and communication.

In this unit discussions will centre on an overview of the options available to a teacher in the choice of learning and teaching strategies.

2.0 Objectives

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

- enumerate factors that affect the differences in achievement amongst groups of learners
- differentiate between instructional strategies and methods.
- list and describe the processes of some instructional strategies.

3.0 Main Content

3.1 Factors affecting the achievement of learners

When you teach a group of students, say 30 learners, and you test them at the end of your programme, do all of them pass? On the average, the answer for any teacher is “no” even when the pass mark is fixed at 40 percent.

Question: Why would all learners not pass at all times even if the pass mark is 80 percent? Take sometime to reflect on this question.

Your answer to the last question should touch on:

1. Learner differences which include:
 - (a) differences in the learning styles of the learners
 - (b) differences in the intellectual abilities of the learners
 - (c) differences in the previous experiences of the learners
 - (d) levels of motivation of the learners.
2. Instructional Strategies adopted which include:
 - (a) the organisation of the class
 - (b) the learning activities the learners engaged in
 - (c) the types of media used to facilitate learning
 - (d) the communication patterns between teacher and learner, learner and learner, and learner and media.

(e) the environment of the instruction.

3. Nature of the content of lesson which includes

- (a) the complexity of the content material
- (b) the scope of the study
- (c) skills required for mastery of the content

Given the above possibilities in a matrix of factors for any learner, it is understandable that all learners need some level of assistance from the teacher, and cannot be expected to learn adequately when taught at the same pace.

Research in cognitive psychology has provided information for characterising learners by their learning styles, preferences and abilities, so that the right strategies can be adopted to match these learner differences.

Developments in learning and communication theories also provide a basis for developing instructional strategies that would enhance the achievement of all learners irrespective of their differences. Instructional practices have therefore shifted from explicit to implicit teaching. In explicit teaching the teacher serves as a provider of knowledge, while in implicit teaching the teacher facilitates learning by creating situations in which learners are led to discover and construct knowledge and skills on their own.

Likewise, teachers and researchers have developed a large number of instructional strategies which can be used in a variety of adaptive forms to accommodate differences in learning needs. These strategies are classified in various forms by different authors. The groupings by the Canadian Saskatchewan Public School (2010) consist of:

- Direct Instruction
- Indirect Instruction
- Interactive Instruction
- Independent Study
- Experiential Learning

In another classification instructional strategies are grouped into:

- Expository Mode
- Inquiry Mode
- Demonstration Mode
- Activity Mode

Question: Classify the following instructional methods using the 2 types of classification above.

Role playing, Drama, Discussion, Model, projects, simulations, Computer assisted Instruction, inquiry, field trips, concept mapping, games, brainstorming, and lecture.

3.2: Instructional Strategies and Methods

Returning to the question posed to you earlier; why would all learners not pass even if the pass mark is raised to 80 percent? It should be possible for any learner to achieve to the level

of his or her ability, if the teacher takes the trouble to vary and adapt instructional strategies to suit the learner and the content of the programme. The trend now is to involve the learners in activities that lead to a better understanding of the content and the acquisition of requisite skills. This trend has led to the development of **active learning** or **activity based instruction**.

Democratization of the learning process gives the learner more latitude in putting forward his own ideas (**learner centred instruction**), developing interpersonal skills, and sharing information with other classmates (**cooperative and collaborative learning**). Promoting classroom interactions is the emphasis now in instructional strategizing.

In seeming irony, contrast and contradiction, democratization has also led to the **individualization** of instruction. This is a result of developments in electronic instructional media with which it is possible to **programme instruction** to cater for individual needs and learning at individual paces.

This can be viewed as another developing dimension in catering for learner differences, and expanding the opportunities in instructional delivery. Learner activity and learner directed pacing are emphasised.

Plasma link Web Services provides a glossary of Instructional Strategies as recourse for educators. As at October, 2007 there were 988 instructional strategies and methods listed on the glossary.

Exercise: Check up the glossary of instructional strategies on the internet [<http://glossary.plasmalink.com/glossary.html>]. Can you list any 20 of them that you are familiar with?

3.3 The changing learning environment

With such a variety of instructional strategies available there is also a complimentary variety of materials, equipment and space required for instruction. The trend is for flexibility of learning space. This flexibility affects classroom space, seating arrangements, types of seats, placement of the teacher's table and the display boards etc. The tendency is for learning spaces to look more like workshops. The following exercise will make you more aware of the limiting effects of learning space on your options for teaching strategies.

Exercise: Take a trip to a school in your neighbourhood. Calculate ratio of total classroom space to the seating space. Is there room for fluid classroom traffic? Is there enough space for tables to be turned around so that learners can seat in groups? At how many locations in the classroom can the teachers' table stand? Where are the display boards placed and what types are they? Is there space for viewing of films or video on a screen? Is your search going too far? Can you develop a science corner, a resource corner etc. in any part of the classroom? Are the partitioning walls adjustable? What about the surface available for each learner to work on? Does each student have enough work surface to hold a drawing board? Is there an alternative room to accommodate a class for special projects, e.g. construction of a model?

Now look beyond the classroom, is there a resource centre where a teacher can pick up equipment or materials needed for special topics? Are there reprographic facilities (or even a photocopier) where a teacher can make copies of materials to issue for a particular topic? Are there stocks of reference books that can be used in class for relevant topics?

All the above factors are limitations to how flexible a teacher can be in adopting the available instructional strategies. These limitations constrain the teacher into using only extrinsic strategies like the lecture method. The teacher's innate ability to vary his strategies is also a limiting factor to attainment of a learner's potentials.

Exercise: Write your view on how the learning environment can be a limiting factor to the achievement of objectives using any four instructional methods as examples. Discuss your write-up with your colleagues

4.0 Conclusions:

In Systems Theory, the Law of Requisite Variety demands that when, as a teacher, you are confronted with a class of learners of diverse characters and needs, you will have to employ an equivalent variety of strategies to effectively achieve your instructional objectives. Developments in instructional strategies have thrown up a plethora of strategies to be applied by a teacher. These strategies emphasize learner centeredness, cooperation in learning, active participation of learners.

5.0 Summary

In any given instructional system, a teacher has to take decisions on how to overcome the challenges of meeting the individual learning needs of his pupils. Research has developed a large number of possible strategies and methods through which the teacher can effectively deliver his lessons. These strategies can broadly be classified as, Direct, Indirect, Interactive, Experiential, and Independent. There are other possible classifications. The teacher should vary and use as many instructional strategies as possible.

The environment of a learning event should be conducive for the adopted instructional strategies.

6.0 Tutor Marked Assignment.

1. Give 5 reasons why teachers need to employ a variety of instructional strategies.
2. Describe at least 5 instructional strategies that are commonly used in Nigerian schools.
3. State how the average Nigerian classroom environment could frustrate the teacher's desire to vary his instructional methods.

7.0 For Further Reading.

Plasmalink Web Services (2007) *Glossary of Instructional Strategies.*
<http://glossary.plasmalink.com/glossary.html>

Saskatchewan Education (2010) *Instructional Strategies Online*
<http://olc.spsd.sk.ca/De/PD/inst/index.html>

UNIT 2: LEARNING THEORIES

1.0 INTRODUCTION

In your various courses in Psychology and Education, various definitions have been ascribed to learning depending on the orientation of the scholar. Learning is said to bring about a relatively permanent change in one's behaviour due to experience. I am sure that a child who accidentally touches a hot pressing iron will likely be more careful around pressing irons next time! Why? The child would have **learned** based on the last experience(s) he got from the last contact with the hot pressing iron! That is learning due to experience. How does learning occur? What are those things that happen when learning takes place? These are issues learning theories attempt to explain. A learning theory is thus an attempt to describe how people learn.

In this unit, emphasis will be on learning theories and their implications on the teaching and learning processes.

2.0 OBJECTIVES

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

- Explain the meaning of a learning theory.
- Describe concisely at least three learning theories.
- Discuss the impact/implications of the learning theories on the teaching and learning processes.

3.0 MAIN CONTENT

3.1 WHAT IS A LEARNING THEORY?

A learning theory enables us understand the inherently complex process of learning. It provides a means by which educators proffer solutions to problems and also obtain a conceptual frame work for interpreting the examples of learning that we observed. Learning theories serve as 'road maps' and guide educators in solving problems encountered during the instructional process. Learning theories help us explain and interpret events related to learning activities.

Wikipedia (2010) viewed learning theories under three main philosophical frame works viz (i) Behaviourism (ii) Cognitivism (iii) Constructivism and the Social learning theory. We shall examine each of these categories and also focus on their implications on the teaching and learning process.

Self Assessment Exercise 1

Briefly explain what a learning theory is.

3.2 Behaviourism-

1. Proponents of behaviourism include B.F. Skinner, Thorndike, Tolman, Hull, Guthrie on one hand and the pavlovian theorist.

Behaviourism is hinged on the concept that learning is the acquisition of a new behaviour through conditioning. These theorists are of the opinion that environmental conditions influence learning. Behaviourists lay emphasis on conditioning. To them, conditioning is regarded as a universal learning process.

Behaviourism recognizes: (i) Classical conditioning – Pavlov a great proponent of classical conditioning explains this as the response of a natural reflex to a stimulus i.e. Stimulus – Response learning. Do you recollect the case of the salivating dog when it sees food?

(ii) Operant Conditioning– B. F. Skinner a proponent of operant/instrumental/radical behaviourism – regards this as the reinforcement of a behavior/stimulus by a reward or punishment. A positive behaviour results in reinforcement while a negative behavior leads to punishment.

Behaviourism is hinged on the following basic assumptions:

- Learning is shown by a change in behaviour
- The environment shapes the behaviour
- Principles of contiguity and reinforcement are central to explaining the learning process .

Implications of Behaviourism on the Instructional Process.

- Teachers effectively utilize positive and negative reinforcement techniques in the development of good habits in school. The stimulus-response learning emphasizes that a desirable behaviour should be encouraged through reinforcement.
- Positive reinforcement could come in form of reward, praise, amongst others in the promotion of a student's exemplary manner. Similarly, a negative reinforcement in form of a punishment on an erring student can effectively reduce such a behaviour.
- Educators, teachers and school counsellors have utilized behaviourist theory to curb antisocial activities of learners such as truancy, stealing, etc. furthermore, human disorders like autism and anxiety can be reduced through conditioning.
- Works of the behaviourists have shown educators that learning is aided by reinforcement.
- It has also proven that learning is dependent on the nearness of a stimulus and the response i.e. learning is better achieved when concrete objects rather than abstracts are used.

Self Assessment Exercise 2

1. Operant Conditioning is synonymous with radical behaviourism. T/F
2. Classical conditioning occurs when a natural reflex responds to a stimulus. T/F
3. State the 3 basic assumptions of behaviourism.

3.3 Cognitivism – This is a learning theory that came about due to the limitations of behaviourism. The cognitivist psychologists are of the view that behaviourism was too dependent on ‘overt’ behaviour to explain learning. The proponents of Cognitivism are hinged on 2 major schools – Gestaltists and the Piagetians. The Gestaltists consist of Max Wertheimer, Kurt Koffla, Kohler, Kurt Lewin, while Jean Piaget and his adherents make up the Piagetians. ‘Gestalt’ is a German word which means “wholeness.” Gestaltists view learning as an “insightful” activity and not as a result of a stimulus – response. With insightful learning, a learner solves a problem by critically looking at the circumstances which surrounds a situation. Learning has to do with reasoning, experience and the learner’s ability to see the relationship between one aspect of a problem and another.

Gestaltists opined that a problem can be solved in different ways. They emphasize flexibility, inventiveness and creativity. Have you ever tried to help a child in solving a mathematics assignment, you will find that the method you adopt may be different from the one used in class by the teacher, however, either method leads to a correct answer!

Piaget and his adherents are of the view that the developing child builds cognitive structures (mental maps) for understanding and responding to physical experiences within his or her environment. Piagetians emphasize the following three abilities as important to learning.

- Assimilation- Seeing and interpretation of novel ideas in terms of what a child already knows.
- Accommodation- A change in one’s ideas as a result of a knowledge of new objects.
- Equilibrium- A state of mental satisfaction which comes from linking up a new knowledge with an old one, thus maintaining a balance.

Piagetians see knowledge as a process of interaction between the individual and the environment.

Summarily Cognitivism is hinged on these two approaches, that:

- (1) the memory system is an active organized processor of information
- (2) prior knowledge plays an important role in future learning.

Implications to Teaching – Learning process

Works of the Cognitivist have impacted on instruction in the following ways:

- Learning is acquired through insight.
- Previous learning (prior knowledge/experiences) serve as building blocks for future learning.
- Learning involves interaction with one's environment.
- Learning takes place in whole not piece-meal.
- Learning is a stepwise process which moves from simple to complex.
- Learning involves curiosity and activity.
- Transfer of learning is essential.
- Learning should be planned to correlate with the learner's logical and conceptual growth.
- Learning is dynamic and many approaches of solving a problem should be encouraged.

Self Assessment Exercise 3

Underline the correct answers

1. Abilities which go with learning according to Piaget include
 - (a.) assimilation, accommodation and equilibrium.
 - (b.) assimilation, conditioning and reinforcement.
 - (c.) conditioning, accommodation and insight.
2. Gestaltists believe that learning should proceed in
 - (a.) bits.
 - (b.) whole.
 - (c.) piece – meal.
3. Cognitivist regard prior knowledge as unimportant to future learning. True/False.
4. Cognitivism depends on overt behavior in explaining learning.

3.4 Constructivism

Brooks (2004) regards constructivism as a learning theory based on observation and scientific study. She describes it as a philosophy of learning founded on the premise that by reflecting on our experiences, we construct our own understanding of the world we live in. Learning is seen as a process of adjusting our mental modes to accommodate new experiences. Constructivism draws its strength from the developmental work of psychologists such as Piaget, Vygotsky, Brunner amongst others.

Constructivism dwells on the underlying principles that

1. Prior knowledge is the basis for future learning.

2. Learning involves the construction of one's own ideas rather than memorizing the right answer and relying on some one else's meaning. It promotes originality.
3. New learning occurs as we adopt and change our old ideas.

Constructivism promotes self-directed learning, experiential learning, active learning and discovery learning. Constructivism sees learning as a personal activity in which internalized concepts, rules and general principles may be applied in a practical real-world context. This is a learning theory that advocates a learner's free exploration within a given frame work. It gives the learner freedom to engage in meaningful activities that would lead to the attainment of the set-out instructional objectives.

Implications to Teaching and Learning

Constructivist approach to instruction has led to a radical change from the traditional classroom to a more dynamic one. Some of its impacts include:

- The shift from a teacher centred classroom to a learner-centred one.
- A shift in teacher's role to a facilitator and guide during instruction.
- Promotion of a process approach to learning where students are able to explore new ideas, analyze such, interpret and predict information from the ideas.
- Students take greater responsibility in their learning as they are able to judge their progress.
- Encourages interaction between student - student, student – teacher, and in group work.
- Emphasizes hands-on problem solving.
- Calls for the elimination of standardized curriculum.
- Promotes customization of curriculum tailored to students' prior knowledge.

Self Assessment Exercise 4

Describe briefly the implications of constructivism in the teaching – learning process.

3.5 Social Learning theory

Miller & Dollard (1941) proposed the theory of social learning and this was broadened by Bandura & Walters (1963). The social learning theory embodies observational learning. Observational learning occurs when an observer's behavior can be affected either positively or negatively by a model's behaviour. This theory explains how one acquires and maintains certain behavioural patterns while also providing basis for intervention strategies. In observational learning, a vicarious reinforcement or vicarious punishment can occur based on a model's behaviour. Examples of observations which can be modeled include the mannerism, dressing mode, speech, etc of a role model. Models may be real people such as one's teacher, parents, peers, musician, stars, etc. such models are in most cases respectable and successful individuals in the society.

Implication of Social Learning theory on Teaching and Learning

- Educators should strive to portray good / positive attributes which learners can emulate.
- Students must get a chance to observe and model behaviors that lead to a positive reinforcement.
- Good role models with exemplary behavior must be focused on.

Self Assessment Exercise 5

1. Which of these are proponents of the social learning theory? Explain or give reasons for your choice.
 - a. Pavlov and Kohler; Kurt and Koffla.
 - b. Skinner and Thorndike; Hull and Piaget.
 - c. Miller and Dollard; Bandura and Walters.
2. In which of these does learning occurs when an observer's behaviour is influenced by that of a role model.
 - a. Conditioning
 - b. Observational
 - c. Classical

4.0 CONCLUSION

As educators, teachers and parents, it is important to understand the learning theories and their impact on teaching – learning process. Having an in-depth knowledge of learning theories make us dynamic teachers who are able to tailor the instructional process to the right path and consider individual differences of our learners.

5.0 SUMMARY

In this unit, you have learnt about the major theories of learning – behaviorism, cognitivism, constructivism and social Learning. Furthermore, the impact of these theories on the instructional process were emphasized.

6.0. TUTOR MARKED ASSESSMENT

1. Discuss briefly the theory of learning from the view point of the behaviorism.
2. Describe the implications of Cognitivism in the teaching – learning process.
3.
 - a. What is observational learning?
 - b. Describe a role model that has impacted much on your life so far.
4. Write a short note on the theory of learning based on constructivism.

7.0 REFERENCES

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UNIT 3: COMMUNICATION THEORIES

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3.3.2 Laswell's Model (1948)

3.3.3 Shannon and Weaver Mathematical Model (1949)

3.3.4 Schramm's Interactive Model (1954)

3.3.5 Berlo's S-M-C-R Model (1960)

SELF ASSESSMENT EXERCISE

4.0 Conclusion

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1.0 Introduction

Communication encompasses a great deal of human activity. Reading, writing, listening, speaking, viewing images, and creating images are all acts of communication. There are as well many more subtle communication activities that may be conscious or unconscious, such as expression, gesture, and “body language” and nonverbal sounds. The process of communication has been the subject of study for thousands of years, during which time the process has come to be appreciated with increasing complexity. In education, communication is an extremely important tool for training and teaching. Interpersonal relationships whether between human and animals, or plants (plants communicate too) at any level of organisation are rooted in communication principles which are guided or predicted by in-depth theories created over time. Teaching as you will study in module 3, unit 2 on ‘questioning’ depends largely on the communication skills of the teacher in ensuring that the learners understand and can consequently use the concepts (message) of instructions. Learning as it is often defined, ‘is a permanent change in behaviour’ and if communication affects behaviour, then it is essential that we understand how it does. This need implies that you study a couple of communication theories that will assist you package your instructional messages and manage their attendant feedbacks effectively throughout your contacts with the learners.

2.0 Objectives

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

- Define communication
- State the key components of communication theories and Models
- State the universal communication law and defend it
- Explain the concept and types of ‘noise’ in a communication process
- Critique each model of communication

3.0 Main Content

3.1 Defining Communication

Although communication is ubiquitous, it appears nonetheless difficult to define. We see that different individuals define *communication* in different ways depending upon their interests.

- Ruben (1984) says that communication is any “information related behaviour.” Dale (1969) says it is the “sharing of ideas and feelings in a mood of mutuality.”
- Other definitions emphasize the significance of symbols, as in Berelson and Steiner (1964): “The transmission of information, ideas, emotions and skills...by the use of symbols,”
- Theodorson and Theodorson (1969): “the transmission of information, ideas, attitudes, or emotion from one person or group to another...primarily through symbols.”
- Communication processes are sign-mediated interactions between at least two agents which share a *repertoire* of signs and *semiotic* rules (Wikipedia, 2010)

It is quite obvious from this sample of definitions that **communication is a process of transferring information from one *entity* to another..** Communication is commonly defined as "**the imparting or interchange of thoughts, opinions, or information by speech, writing, or signs**". Although one-way communication is possible, communication can be perceived better as a two-way process in which there is an exchange and progression of thoughts, feelings or ideas (energy) towards a mutually

accepted goal or direction (information). These thoughts on what communication is will show you that there is an element of mutual understanding between groups of communicants (human or otherwise).

SELF ASSESSMENT EXERCISE

How would you define communication? Relate your definition to classroom interaction.

3.2 Key Components of Communication Theories and Modelling

Communication is a process whereby information is **encoded** in a package and is channelled and imparted by a **sender** to a **receiver** via some **medium**. The receiver then **decodes** the **message** and gives the sender a **feedback** (Wikipedia, 2010). All forms of communication require a sender, a message, and a receiver. These basic components of communication are made popular by early researchers into the concept of communication among human.

In the class room situation, can you find the equivalents of these components during instructional process? The teacher (sender)* packages the content of his lessons (message)* channels it through media (chalkboard, charts, diagrams, sound tapes, video, etc)* and the learner (receiver)* gets the information.

3.2 .1 Universal Communication Law

Communication Theory has one universal law posited by S. F. Scudder (1980) in Croft (2004). The Universal Communication Law states that, "**All living entities, beings and creatures communicate.**" According to Croft (2004), all of the living communicates through movements, sounds, reactions, physical changes, gestures, languages, breath, etc. Communication is a means of survival. Examples - the cry of a child (communication that it is hungry, hurt, cold, etc.); the browning of a leaf (communication that it is dehydrated, thirsty per se, dying); the cry of an animal (communicating that it is injured, hungry, angry, etc.). Everything living communicates in its quest for survival." Despite this universal law of communication, there are many clusters of communication theories right from the days of Aristotle's simple communication model and as posited in psychology, sociology, anthropology and education. Most of the modern theories of communication are quite complex in design and mathematical in some cases. This unit will not bother you with the complex ones but rather with the linear models that have developed since Aristotle's. Let us take a look first at the concept of models in communication.

3.2.2 What is a Model?

Models provide a simplified view of something to be studied. We choose those elements of interest and use the model to help us frame questions and predictions. The elements we include (or exclude) and the relationships between them that we represent will by necessity dictate the domain of inquiry. What we don't see (or acknowledge) we cannot study (Croft, 2004). Mortensen (1972) described model in the broadest sense as a systematic representation of an object or event in idealized and abstract form. Models are somewhat arbitrary by their nature. The act of abstracting eliminates certain details to focus on essential factors. The key to the usefulness of a model is the degree to which it conforms--in point-by-point correspondence--to the underlying determinants of communicative behaviour." "Communication models are merely pictures; they're even distorting pictures, because they stop or freeze an essentially dynamic interactive or transactive process into a static picture." Models are metaphors. They allow us to see one thing in terms of another (Mortensen, 1972). Having given consideration to the concept of models, we shall now shift attention to the early and linear models of communication starting with the classical model of Aristotle.

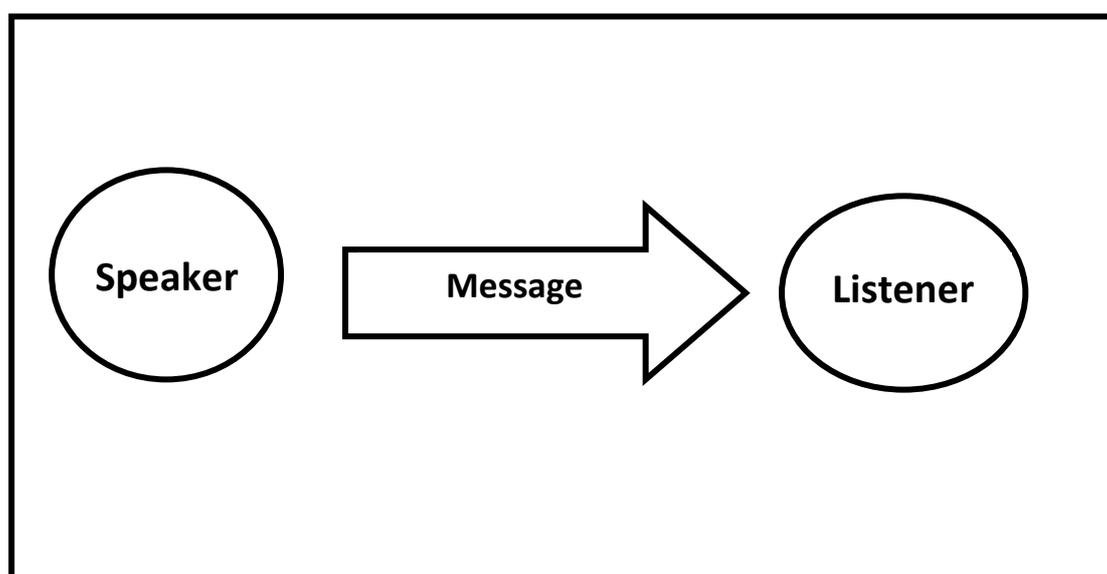
SELF ASSESSMENT EXERCISE

1. State the universal communication law and defend it.
2. How would you describe a model?

3.3 Linear Communication Models

3.3.1 Aristotle's Model (384-322 BC)

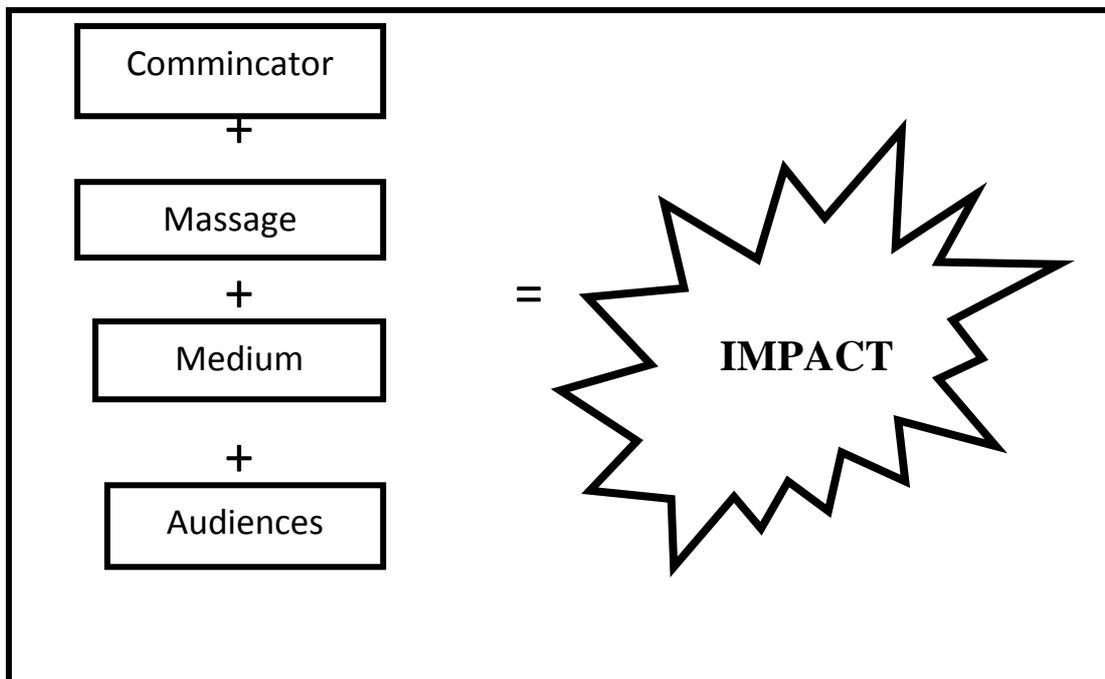
One of the earliest recorded models is attributed to the ancient Greek philosopher Aristotle. Aristotle represented communication as might an orator who speaks to large audience. His model incorporates few components or elements: The speaker, message and the listener.



(Adapted from Croft, 2004)

Aristotle's model could not have served the purpose of explaining the complexities of modern communication process. It simply assumed that a speaker sends message to a listener and that was it. It did not put consideration to the characteristics of the speaker and that of the listener or even that of the message itself that could prevent or aid effective communication. Although Aristotle backed up his theory with a '**model of proof**', his communication theory emphasized that the effectiveness of the communication process is based on the ability of the speaker to package an effective message. His model is consequently a '**speaker-centered**' one (Mortensen, 1972).

3.3.2 Laswell's Model (1948)



(Adapted from Croft, 2004)

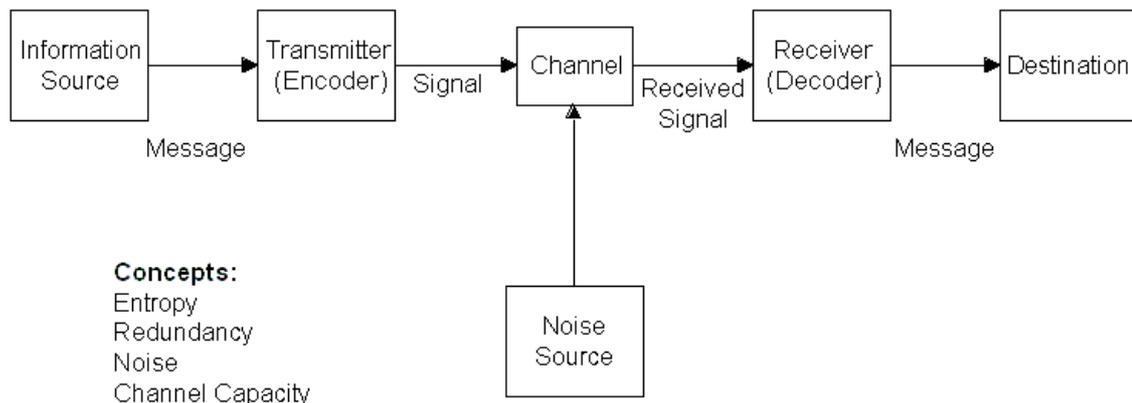
Political scientist Harold Laswell, writing in 1948, posed the question, "**Who says what in which channel with what effect?**" (p. 117). His model includes considerations of a variety of factors being considered to determine the impact of a communication. As simple as Laswell's model is, it stands the chance of an inappropriate impact or effect in the hands of a powerful orator or propagandist as it happened in Germany under Adolf Hitler and during the Rwandan inter-tribal war of the 1990s between the Tutsis and the Hutus. To illustrate the significance of each element of the model, try visualizing what effect some dynamic speaker would have if the medium were print, or what would happen if the audience didn't speak the same language (Croft, 2004). Although Laswell made a huge contribution to the evolution of modern theory of communication, the negative effect or impact that his model could have on gullible audience called for more effective model of communication as research in later years churned out.

3.3.3 Shannon and Weaver Mathematical Model (1949)

Claude Shannon, an engineer for the Bell Telephone Company, designed the most influential of all early communication models. His goal was to formulate a theory to guide the efforts of

engineers in finding the most efficient way of transmitting electrical signals from one location to another (Shannon and Weaver, 1949). Later Shannon introduced a mechanism in the receiver which corrected for differences between the transmitted and received signal; this monitoring or correcting mechanism was the forerunner of the now widely used concept of feedback (information which a communicator gains from others in response to his own verbal behavior) and on which a teacher depends in class for assessing the progress and achievement of the objectives by his learners.

The Shannon-Weaver Mathematical Model, 1949



(Adapted from Mortensen, 1972)

The Shannon and Weaver model is an improvement on that of Laswell. Its strength lies on the fact that for the first time, emphasis shifted away from the speaker's or source's ability to deliver an impactful message, to a critical considerations for the entire system of communication and its components (elements). The model invariably became a reference for communication theories and research, and was largely equated to an approximate process of human communication. The Shannon and Weaver Model of communication has four major attributes or concepts of great relevance to communication process. These are:

- Entropy
- Redundancy
- Noise
- Channel capacity

Entropy

This is the measure of uncertainty (disorder, chaos) in a system. "Uncertainty or entropy increases in exact proportion to the number of messages from which the source has to choose. You will need to think critically about the entropy consideration of information (message) in order to come to terms with its truth.

Redundancy

This concept in communication is considered as the **degree to which information is not unique in the system**. According to Mortensen (1972), those items in a message that add no new information are redundant. Perfect redundancy is equal to total repetition and is found in pure form only in machines. In human beings, the very act of repetition changes, in some minute way, the meaning or the message and the larger social significance of the event. When redundancy content of a lesson is given consideration, it tends to improve on learners' understanding and consequently, learning outcome. Repetition enhances comprehension and recall.

Noise

This concept is most critical to the Shannon and Weaver model. It is referred to as the measure of information not related to the message. In every communication models, **noise is anything that interferes with the decoding of messages sent over the channel by an encoder**. In other words, any additional signal that interferes with the reception of information is noise. Noise need not be considered a detriment unless it produces a significant interference with the reception of the message. This explains why some individuals could even study in a 'noisy' environment, especially with music playing in the background and still assimilate what they are reading. Even when the disturbance is substantial, the strength of the signal may be increased to restore efficiency (Mortensen, 1972).

Now, let us further describe the categories of noise in a communication process. There are many examples of noise:

Environmental Noise: Noise that physically disrupts communication, such as a construction site next to a classroom making it hard to hear the teacher.

Physiological-Impairment Noise: Physical maladies that prevent effective communication, such as actual deafness or blindness preventing messages from being received correctly.

Semantic Noise: Different interpretations of the meanings of certain words, like how the word "weed" can be interpreted as both an undesirable plant in your compound or marijuana.

Syntactical Noise: Mistakes in grammar can disrupt communication, such as abrupt changes in verb tense during a sentence, or differing sentence structures between different cultures.

Cultural Noise: Stereotypical assumptions can cause misunderstandings, such as unintentionally offending

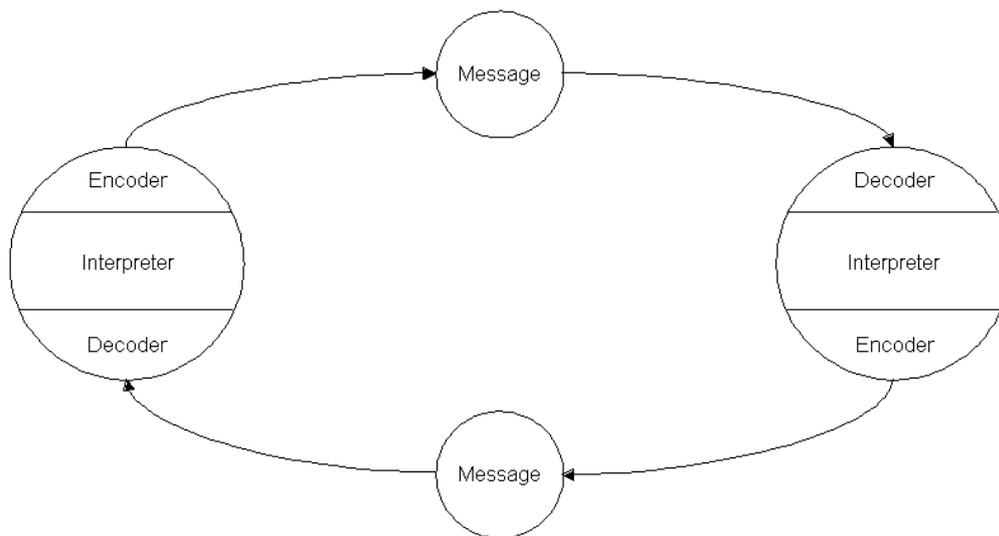
Psychological Noise: Certain attitudes can make communication difficult, like when great anger or sadness causes someone to lose focus on the present.

Despite the success and pioneering trail of the Shannon and Weaver model of communication in terms of mathematical explanation of communication process, it is largely criticized as being essentially restricted to inanimate communication systems as against the interpersonal encounters of the human communication principles. It conceives of a linear and literal transmission of information from one location to another. The notion of linearity leads to misleading ideas when transferred to human conduct; some of the problems can best be underscored by studying several alternative models of communication.”

3.3.4 Schramm’s Interactive Model (1954)

Wilbur Schramm (1954) was one of the first communication theorists to alter the mathematical model of Shannon and Weaver. He conceived of decoding and encoding as activities maintained simultaneously by sender and receiver; he also made provisions for a two-way interchange of messages. Notice also the inclusion of an “interpreter” as an abstract representation of the problem of meaning.

Schramm's Model of Communication, 1954



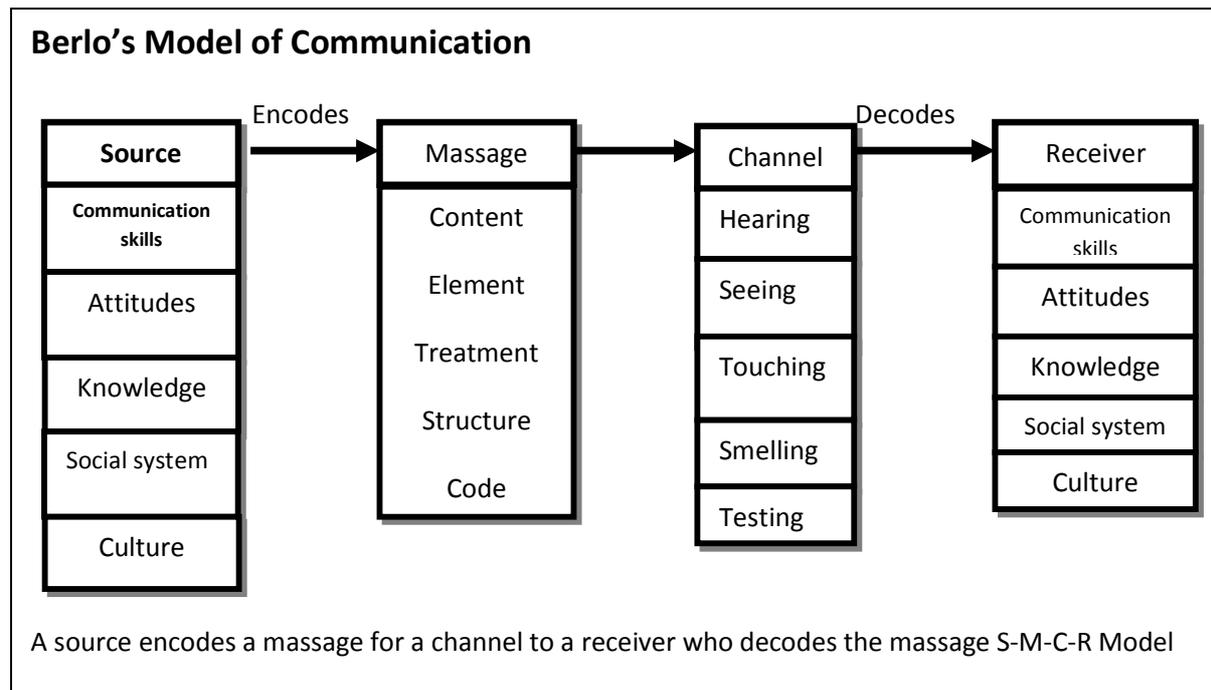
(Adapted from Mortensen, 1972)

If you take another look at the Wilbur Schramm’s model, you will observe it is interactive with feedback mechanism inbuilt into it. This implies that the encoder (source/sender) and the decoder (destination/receiver) interchange roles at different times thereby providing each other with feedbacks. This sort of interactive communication makes human communication, a two-way process and not strictly linear as in the Shannon and Weaver model. The element of **interpreter** within the encoder/sender and decoder/receiver, points to the creation of **meaning** that either attaches to the message being transmitted, and to each other’s disposition to one another. Schramm’s model is highly applicable in education. His model gave consideration to the **fields of experience** of the sender and receiver. The sender encodes the message, based upon the sender’s field of experience (Croft, 2004). The user’s field of experience guides decoding. If there is no commonality in the sender’s and receiver’s field of experience, then communication does not take place. The extent to which the signal is correctly decoded (that is, decoded so that it is the same as the original message prior to

decoding) depends on the extent of the overlap of the two fields of experience. For instance, a lesson on nuclear physics to primary school pupils may result into no communication at all as the teacher may not have put the pupils' experiences into consideration.

The major weakness of this model is that while being less linear, it still account for only bilateral communication between two people. It does not recognize the complex and multiple levels of communication between several sources.

3.3.5 Berlo's S-M-C-R Model (1960)



(Adapted from Mortensen, 1972)

Berlo (1960) took a different approach to constructing a model. Rather than attempting to identify elements of interest, and relationships between those elements, he created what he called “**a model of the ingredients of communication**” (pp. 23–24). This model identifies controlling factors for four identified elements of communication: Source, Message, Channel, and Receiver. This model promises to be helpful in identifying specific factors to use in experimentation and further research on communication, leading to more vibrant theories of communication.

By and large, Mortensen (1972) posited that Berlo's model could be credited with the following strengths:

- The source was flexible enough to include oral, written, electronic or other kinds of symbolic generation-of-message.
- In his model, the message is the central element, stressing the transmission of ideas.
- The model recognizes the fact that receivers are important to the communication as the targets of the entire process.

- The notion of encoding and decoding stressed on the problems that is common to all in translating thoughts into words or other symbols, and in decoding words or symbols of others into terms that can be understood.

On the other hand, he identified the following weaknesses of Berlo's model:

- It stressed the manipulation of the message through the encoding and decoding process.
- The model equates human communication with those of machines such as signal sending in telephones, television, computers and radar system.
- It assumes that human problems can be solved by technical accuracy, choosing the 'right' symbol, preventing interference, and sending efficient messages.
- It does not recognize the fact that even with the right symbols, people still misunderstand themselves. The problem of meaning and meaningfulness may not be matter of comprehension, but of reaction, agreement, shared concepts, beliefs, attitudes and values.

These problems often play themselves out easily in interpersonal relationships especially as they affect the school and instructional systems. Your job here is to understand these intricacies in classroom communication and consequently, let them guide communication behaviours within the entire teaching and learning process.

SELF ASSESSMENT EXERCISE

1. Identify linear communication models
2. Using appropriate models ONLY, describe four essential linear communication models
3. Explain the concepts of; entropy, redundancy, noise and channel capacity using appropriate communication model.
4. Describe constituents of noise in a communication process
5. Critique any TWO linear communication models.
6. Which of the five linear communication models that you studied would you consider as most explanatory of the human communication and why might you think so?

4.0 CONCLUSION

This unit exposed you to communication theories and models. Although we concentrated mostly on the classical and linear models of communication, it is very important that you understand that these theories are unable to explain the complexity of human communication in totality. There is the need for you to carry out investigations on other theories such as the, helical, multidimensional and fractal models all of which were developed after the linear models of the 1940s to 1960. This exercise is meant to provide you with more information on most recent communication theories in this age of information technology.

5.0 SUMMARY

In this unit, you have learned about communication theories and models. We took a historical development route from Aristotle's classical model to Berlo's S-M-R-C model in discussing communication models over time. Very importantly, you were able to describe and critique each of the models. The Laswell model provided the much quoted maxim of, 'who says what in which channel and with what effect? While the Shannon and Weaver communication model opened an avalanche for torrents of models of communication as you studied. You also learned that the Schramm's model became the first interactive model of communication. Finally, we were able to label the Berlo's model as the first time that emphasis will shift from communication models that could be said to be machine-like in design to a more humane model that explained human communication to some considerable extent even though it fell short in explaining all the intricacies of human communication behaviours.

6.0 TUTOR MARKED ASSIGNMENT

1. How would you define communication?
2. State the universal communication law and defend it.
3. How would you describe a model?
4. Identify linear communication models
5. Using appropriate models ONLY, describe four essential linear communication models
6. Explain the concepts of; entropy, redundancy, noise and channel capacity using appropriate communication model.
7. Describe constituents of noise in a communication process
8. Critique any TWO linear communication models.
9. Which of the five linear communication models that you studied would you consider as most explanatory of the human communication and why might you think so?

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UNIT 4: MOTIVATION AND LEARNING

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1.0 Introduction

Learning is an important aspect of human existence. As you will see later in this unit, it equips man with wisdom, knowledge and skills needed to live in and to contribute to the human society. Thus it is a vital activity of human beings. The effects of learning are mostly seen in how man conducts himself and his activities. It is very trivial and logical to assume that every action or activity of a sane man, including learning activities, is motivated by something. Thus motivation relates to factors that account for the direction, vigour, and persistence with which a human engages in an act or series of acts. Speaking psychologically, it is a kind of stimulus that pushes or spurs a person to act positively towards achieving a goal.

Recall that learning results from human experiences, which are functions of human activities i.e. what man does; and that motivation is a push that spurs man to engage in activities. It follows therefore that both terms are related in some form. Their relationship is mostly in terms of how one (motivation) can be used to achieve (improvement in) the other (learning).

2.0 Objectives

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

- Define/describe the term learning
- Define/describe the term motivation
- List and explain the two common types of motivation
- Explain how motivation can be used to achieve improved learning achievements

3.0 Main Content

3.1 Motivation

3.1.1 What is motivation?

Motivation is a Psychological construct, which literarily relates to a pushing force within or outside of an individual, making him or her to want to do something. The term is derived from the Latin word *movere*, which means to move. Motivation is the arousal of tendency o act to produce one or more effects. A motive is a force which propels or drives one in a particular direction or towards a particular activity.

Given that everyone needs to do one thing or the other for his survival and that of his society in which he lives, it follows that every sane person needs one form of motivation of the other. Consider this question. Why are studying for a degree in NOUN?

3.1.2 Types of motivation?

There are two basic types of motivation – intrinsic and extrinsic motivation. Each of these have peculiar uses in spurring human to action.

Intrinsic motivation is derived internally from within the individual who is being motivated. It involves the development of an internal drive which pushes an individual to want to engage in some activities. Therefore intrinsic motivation is the desire to voluntarily engage in an activity, irrespective of any external reward. For example when a Science student reads newspapers, he does so not because he wants to get some marks, or prizes, but because there exists some internal drive for the reading. Such activities give some personal satisfactions to the individual who engages in them. Brunner believes intrinsic motivation could be borne out of curiosity, out of competence and/or out of reciprocity.

Extrinsic motivation refers to an effective stimulus which comes from outside the individual and gives him some satisfaction as he pursues or achieves a goal (Akinade, 1996). Thus, extrinsic motivation is externally imposed, i.e. the urge to (or not to) act is not within the individual, but externally driven by some incentives, which are usually given by someone else. For example, when a student answers a question in class so as to receive some candy, or praise, or he reads his books so as to pass his examinations or be awarded some prizes at prize giving day, he is externally motivated into these actions (answering question in class and reading his books).

3.1.3 Motivation theories

Generally rewards, whether tangible or intangible, are presented after human beings have acted in a particular way (or exhibited a particular behaviour) that please(s) the observer(s). They (rewards) are always with the intent to cause the behaviour to occur again. This is made possible by the association of positive meaning to the activity or behaviour. Research studies have shown that if the person receives the reward immediately after the activity or behaviour, the effect would be greater, and that the effect decreases as the time between the action or behaviour and the reward increases. Studies have also shown that repetitive action-reward combination can cause the action to become habit.

There are many theories of motivation that have been propounded by Psychologists. Some of them are Maslow's hierarchy of needs; Murray's need theory; Psycho-analytic theory of motivation; Hull's drive reduction theory; Thorndike's law of effect and law of readiness; etc. You are advised to read these up these theories and see to their uses in strengthening human behaviours.

Self assessment exercise

In your own words, explain what motivation means, giving its different types. Briefly explain the effect of motivation on human goal achievement.

3.2 Learning

3.2.1 What is learning?

Learning is an activity or a system of activities that lead(s) to changes in the way an individual, who engages in the activities does his things or conducts himself or herself. The activities that constitute learning are called learning experiences and could be engaged in consciously or unconsciously. However, whether the experiences are engaged consciously or unconsciously, the associated change(s) must be relatively permanent. For many educationists, learning is a relatively permanent change in behaviour, which comes about as a result of past experiences (O'Connell, 1973; Hengenhann, 1982), and which cannot be associated with individual's response tendencies, maturation, or temporary states such as fatigue, drunkenness, drives, etc (Bower and Hilgard, 1986).

According to Wikipedia (1990), learning is a process of acquiring new knowledge, behaviour, skills, values or preferences. It may involve processing different types of information. The learning process can be performed by different brain learning processes, which depend on the mental capacities of human learning subject, the type of knowledge to acquire, as well as on socio-cognitive and environmental circumstances in which the learning is to take place and used. Human learning may occur as part of education or as personal development. It may be directed towards achieving a goal and may be aided by motivation. The study of how learning occurs is contained in a number of learning theories, which will be presented later in this unit.

Learning helps an individual to acquire knowledge and habit, to shape and re-shape perception, reduce chances of error, prevent unnecessary mistakes, acquire new and more proactive way(s) of overcoming obstacles, achieving goals and objectives and increasing precision (Akinade, 1996).

3.2.2 Types of learning

There are three basic types or domains of learning – cognitive learning, affective learning and psychomotor learning. Cognitive learning is the kind of learning that requires the learner to be involved through the use of his or her cognitive senses. Such learning equips the learner with abilities to recall facts, calculate, discuss, analyse, synthesis, evaluate, and solve some cognitive problems. Affective learning is the kind of learning that equips the learner with how to relate with other people within or outside his or her society. Such learning develops one socially, so it is the kind of learning that people have when they like something or someone, love, appreciate, fear, hate, etc. Psychomotor learning is the kind of learning that equips the learner with the knowledge of using his hands and muscles. It is the kind of learning that people have when they can drive, swim, drive a nail into a wooden piece, ride a bicycle, etc.

These domains are not mutually exclusive. For example, in learning to play the game of chess, the person will have to learn the rules of the game (cognitive domain); but he also has to learn how to set up the chess pieces on the chessboard and also how to properly hold and move a chess piece (psychomotor). Furthermore, later in the game the person may even learn to love the game itself, value its applications in life, and appreciate its history (affective domain).

3.2.3 Learning theories

Many learning theories have been propounded by many Psychologists. Our focus in this unit will be on a few of them, which include the behaviourists' (classical or instrumental) theories, cognitivists' (cognitive) theories, socio cultural theories, and situative theories. The discussion here will be at understanding, for each of these categories of learning theories, what counts as learning and the mechanism for learning for each of them.

For the behaviourists, a change in subject's behaviour is an evidence of learning (Piaget, 1964), while the mechanism for learning is reinforcement and conditioning and the fact that new knowledge are built on prior knowledge (known to unknown). For the cognitive theorists, learning is increasingly organized schemata (Cobb and Bowers, 1999), conceptual structures and states of equilibrium which increasingly resemble reality while the mechanism are equilibration (assimilation and accommodation), differentiation, integration, and co-ordination; and re-organisation of prior knowledge (Brodie, 2005). As for socio-cultural theorists, learning is increasingly organized inter- and intra-mental functions, functional systems and functioning and increasing inter-subjectivity (Vygotsky, 1978), while the mechanism for learning is mediation through signs i.e. language within the zone of proximal development and re-organisation of prior knowledge. For the situative theorists, learning is increasing participation in the activities of communities of practice and identification with the practice. To them, practice also learns and develops, while the mechanism for learning is in the Legitimate Peripheral Participation with tools and resources of the practice as participants move from newcomers to old-timers (Lave and Wenger, 1991).

Self assessment exercise

What is your concept of learning theories? Enumerate four groups of learning theorists and describe the conception of learning as perceived by the different groups.

3.3 Motivation and learning achievements

3.3.1 Motivation and human behaviour

Motivation can be positive or negative. Incentives that bring satisfaction or joy to the receiver are positive while those that bring dissatisfaction or sorrow are negative. Both positive and negative incentives are used to reinforce habits i.e. to make the individual to repeat action or do even better. However, while positive incentives like gifts, praises, marks are given out; negative incentives are withdrawn to encourage repeat of behaviour.

3.3.2 Motivation and learning

Like it does to every other human activity, motivation enhances achievement in learning. In the educational setting, motivation is used to enhance better learner participation and consequent improved learning achievements. As educators, generating and sustaining interest in learning should be paramount in our activities. This is done by motivating your learners to learn.

According to Brophy (1987), motivation to learn is a competence acquired "through general experience but stimulated most directly through modeling, communication of expectations, and direct instruction or socialization by significant others (especially parents and teachers)." Children's home environment shapes the initial constellation of attitudes they develop toward learning. On one hand, when parents nurture their children's natural curiosity about the world by welcoming their questions, encouraging exploration, and familiarizing them with resources that can enlarge their world, they are giving their children the message that learning is worthwhile and frequently fun and satisfying. When children are raised in a home that nurtures a sense of self-worth, competence, autonomy, and self-efficacy, they will be more apt to accept the risks inherent in learning. On the other hand, when children do not view themselves as basically competent and able, their freedom to engage in academically challenging pursuits and capacity to tolerate and cope with failure are greatly diminished.

Once children start school, they begin forming beliefs about their school-related successes and failures. The sources to which children attribute their successes (commonly effort, ability, luck, or level of task difficulty) and failures (often lack of ability or lack of effort) have important implications for how they approach and cope with learning situations.

The beliefs teachers themselves have about teaching and learning and the nature of the expectations they hold for students also exert some powerful influence on students' motivation to learn. According to Stipek (1988), "to a very large degree, students expect to learn if their teachers expect them to learn" (p. 162). School goals, policies, and procedures also interact with classroom climate and practices to affirm or alter students' increasingly complex learning-related attitudes and beliefs.

3.3.3 Improving learning achievement through motivation

There are various ways by which educators achieve this. Some of them are listed below:

- Provision of awards for deserving students, who had excelled in studies in a particular period of time- term, semester, year...
- Provision of adequate learning resources in and around classrooms
- Creation of effective learning environment through teachers demonstration of positive attitude towards and great enthusiasm in their work
- Provision of pictures and biography of highly respected and successful members of the society in class and telling their stories or episodes in their lives.
- Having students keep a record of their progress as they work towards the achievement of a goal.
- Creation and sustenance of social climate in classroom/school. This will particularly give learners some sense of belonging.

You should observe that all of the above are factors outside of the individual being motivated, and consequently, they are referred to as extrinsic motivation techniques. On the other hand, intrinsic motivation techniques include mainly developing an internal drive, in oneself, which helps or pushes oneself to act in some ways toward achieving source set goals. You should recall from previous reading in this unit that intrinsic motivation is the desire to act for the sole purpose of improving one or satisfying oneself, without any kind of award, reward or even initial intensives. As educators, you need to find ways of inculcating this by making your learners see and appreciate the worth of their learning both in the immediate and their future life. You as educator will play the role of a counsellor here.

Self assessment exercise

As an educator, enumerate the various ways you will adopt to ensure that (1) your learners are self motivated; and (2) you use extrinsic motivation to achieve improved learning achievement in your class.

4.0 Conclusion

The effect of motivation on all human behaviour or activities, including learning, cannot be over emphasised. The reason for this is both trivial and obvious because motivation aims at achieving a repeat of human activities. Thus when human beings are motivated into doing an activity, they tend to do it even better. Motivation can be extrinsic or intrinsic.

5.0 Summary

Learning is an activity that aims at achieving relatively permanent change in the behaviour of an individual. It is an important and a vital aspect of human existence. Motivation is that

which drives a person to engage in an activity or to behave in a particular manner. Like it does to other human activities, motivation ensures a repeat of an action or behaviour. Therefore, to achieve improved learning achievement, motivation of positive learner behaviour or learning activity is very vital. Extrinsic and intrinsic motivations have an effect of repeat of activity or behaviour.

6.0 Tutor Marked Assignment

In your own words, describe the term motivation. What effect does motivation have on human behaviour, particularly on human learning?

List and describe the three major types of learning, giving examples.

Enumerate five different strategies that teachers can use to use motivation to achieve improved learning achievement

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UNIT 5: PERCEPTION AND LEARNING

1.0 Introduction

Current modes of teaching, which depend on time and space, may be adequate for today's society, but may not be able to accommodate and produce the levels of learning and education needed by future societies. Although in certain areas traditional teaching methods are still effective, educational technology has expanded teaching and learning experiences in ways that are only limited by a teacher's own creativity.

Educational technology can help to gain and hold attention, clarifies concepts and facts, stimulate discussion, and engages learners in individualized instruction. However, we all know that people vary in many ways, and so in creating educational experiences, developers often target audience segments based on demographic groups.

Perception is the process of selecting, organizing and interpreting information inputs to produce meaning. It is an individual (or group) variable closely related to previous experience or background. A motivated person is ready to act. How that person acts is influenced by his or her perception; simply put, one's point of 'view'.

2.0 Objectives

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

- Define Perception
- Explain the theory of perception
- Explain the influence of perception on teachers' instructional strategies
- Describe the relationship between perception and evaluation of learning

3.0 Main Content

3.1 What is Perception?

Perception is the process by which organisms interpret and organize sensation to produce a meaningful experience of the world. **Sensation** usually refers to the immediate, relatively unprocessed result of stimulation of sensory receptors in the eyes, ears, nose, tongue, or skin. **Perception**, on the other hand, better describes one's ultimate experience of the world and typically involves further processing of sensory

input. In practice, sensation and perception are virtually impossible to separate, because they are part of one continuous process.

Thus, **perception in humans describes the process whereby sensory stimulation is translated into organized experience.** That experience, or percept, is the joint product of the stimulation and of the process itself. Relations found between various types of stimulation (e.g., light waves and sound waves) and their associated percepts suggest inferences that can be made about the properties of the perceptual process; theories of perceiving then can be developed on the basis of these inferences. Because the perceptual process is not itself public or directly observable (except to the perceiver himself, whose percepts are given directly in experience), the validity of perceptual theories can be checked only indirectly.

Historically, systematic thought about perceiving was the province of philosophy. Philosophical interest in perception stems largely from questions about the sources and validity of what is called human knowledge (epistemology). Epistemologists ask whether a real, physical world exists independently of human experience and, if so, how its properties can be learned and how the truth or accuracy of that experience can be determined. They also ask whether there are innate ideas or whether all experience originates through contact with the physical world, mediated by the sense organs.

As a scientific enterprise, however, the investigation of perception has especially developed as part of the larger discipline of psychology. For the most part, psychology bypasses the questions about perceiving raised by philosophy in favour of problems that can be handled by its special methods. The remnants of such philosophical questions, however, do remain; researchers are still concerned, for example, with the relative contributions of innate and learned factors to the perceptual process.

Such fundamental philosophical assertions as the existence of a physical world, however, are taken for granted among most scientific students of perceiving. Typically, researchers in perception simply accept the apparent physical world particularly as it is described in those branches of physics concerned with electromagnetic energy, optics, and mechanics. The problems they consider relate to the process whereby percepts are formed from the interaction of physical energy (for example, light) with the perceiving organism. Of further interest is the degree of correspondence between percepts and the physical objects to which they ordinarily relate. How accurately, for example, does the visually perceived size of an object match its physical size as measured (e.g., with a yardstick)?

3.2 Theories of Perception

Two Major Classes of perception theory include:

1. Bottom-Up: Perception Builds Up Hierarchically From A Set Of Primitive "Features" To Our Internal Representations.
2. Top-Down: Perception Starts With A Set Of Primitives, But Our Perceptual Experience Is Influenced By Higher-Level Processes, Such As Knowledge And Context.

3.2.1 Bottom-Up Theories

All bottom-up theories rely on the notion that perception builds upwards from a foundation of primitives to a representation our cognitive system can use.

This takes place without any influence from higher cognitive processes.

Five Main Theories:

1. Direct Perception

Precursor to behaviourism Ó Perception is a direct result of stimulus energy affecting receptor cells. No higher cognitive processes or internal representations are necessary

2. **Template/Exemplar Theory**

We Store Examples of All the Objects We Have Seen As *Exemplars* Or *Templates*.

We compare a perceived object to this set of exemplars until we find a match.

3. **Prototype Theory**

Instead of storing many exemplars or rigid templates, we store a *prototype*, which is kind of like the average of an object.

We compare a perceived object to these prototypes until we find the closest match.

4. **Feature Theory**

Perception starts with the identification of basic *features* that are put together into more complex objects, which are put together into more complex objects, etc. Until we identify an object.

Example: Pandemonium

5. **Neural Basis For Feature Theory**

Using Single-Cell Recording (Remember That?), Hubel & Wiesel Found Neurons In The Primary Visual Cortex (Occipital Lobe) That Respond To Visual Features Such As Lines And Corners.

These Feature Detectors Are A Result Of How The Early Visual System Is Wired.

6. **Structural Description Theory**

This is like a three-dimensional version of feature theory, where rather than having lines and corners as the basic features, simple geometric shapes, called *geons*, are the basic features.

We recognize objects by matching the Geons we are looking at to the stored Geons in memory.

3.2.2 Top-Down Theories

Top-down theories posit varying degrees of influence of higher cognitive processes on what we actually perceive.

The primary example of this is the effect of context on perception, such as in the word superiority effect.

3.3 Perception And Teachers Strategies

Edgen and Kauchak (2001) gave cognitive dimension of perception; they see perception as the process by which people attach meaning to experiences. They explained that after people attend to certain stimuli in their sensory memories, processing continues with perception. Perception is critical because it influences the information that enters working memory. Background knowledge in the form of schemas affects perception and subsequent learning.

Research findings have corroborated this claim that back- ground knowledge resulting from experience strongly influence perception (Glover et al., 1990). Baron and Byrne (1991) called it “social perception” which is the process through which we attempt to understand other persons. Attempt to obtain information about the temporary causes of others’ behavior (for example, the emotions or feelings).

Students are individuals who employ a variety of methods as a way to understand or conceptualize information. Some respond effectively to lectures and notes while

others can better internalize information connected to visual stimuli (Francis, 2000). Research concerning African American students show they prefer oral experiences, physical activities and loyalty in interpersonal relationships (Guild, 1994). This differs from mainstream culture in that education is based on the individual learner valuing independence, analytic thinking, objectivity, and accuracy (Guild, 1994). Many theorists believe African-American children generally learn successfully in ways characterized by harmony, cooperation, affect, and socialization (Francis, 2000).

Recent research has clearly shown that students benefit maximally from animations than from static images of Power Point presentation.. (Rieber, 1990). The type of resources and methods employed by teachers for instruction is greatly influenced by their perception of how their learners would benefit from them as their understanding of would be learners' learning styles.

Also important is the fact that learners' perception of their teachers' strategies and even the relevance of the course content will affect their level of participation as well as their performance in such courses or subjects.

Several studies on gifted underachievement point to a connection between student learning styles and classroom performance.

Basow (1998) reported that female professors are frequently evaluated differently by students than are male professors, and that these evaluative differences include differences in teaching style and perceptual biases.

Another important question about active learning courses is: How do students perceive active learning methods compared with lectures? Researchers have shown higher student course ratings (Arce, 1994; Richardson & Birge, 1995) no difference in student course ratings (Rangachari, 1991) or instructor ratings, (Richardson & Birge, 1995; Rangachari, 1991) and lower course ratings (Goodwin, Miller & Cheetham, 1991) in active learning courses when compared with courses using lectures. Some educators believe that students express concerns about their perceived lack of basic knowledge after completing active learning courses. This perception exists despite evidence that students who take these courses perform at the same level on examinations in advanced courses as students who take courses using the lecture format. (Goodwin, Miller & Cheetham, 1991)

Students' perception is, in their eyes, the truth. Influenced by their experiences and expectation, perception is what they see as reality to them, and what they believe will happen, whether it is true or not. In the eyes of students, perception of how they will perform in school determines their academic success (Rollins & Valdez, 2006). Perception includes all processes associated with the recognition, transformation and organization of sensory information (Little, 1999).

The perception theory considers perception as images which exist where and when the mind perceives them. By implication, images are not the whole reality of what is seen, but reality is duration, and the images are a selection within this duration. Perception, on the other hand, is derived throughout this period of reality is an external awareness of two objects, the mind and an absolute space at that moment thus what students see a given time sends messages to their mind that what they have seen is the truth.

3.4 Perception and Evaluation of Learning

Assessment is an important driver of student performance and gauge of student progress, as well as an effective means of objectively examining the effectiveness of

teaching programs (Bransford, Brown and Cocking, 2000). In most science subjects, assessment is typically summative in nature, with only occasional use of formative assessment to provide students with a benchmark of their understanding of concepts and processes. Furthermore, many summative assessment tasks encourage surface or rote learning, which provides immediate benefit for short-term examinations, but which does not facilitate deeper learning – the long term retention of knowledge and application of such knowledge (Dunn, Morgan, O'Reilly and Parry, 2004). The integrated use of formative assessment has been shown to enhance deep learning by students across a range of secondary and undergraduate disciplines (Black and William, 1998; Rushton, 2005).

Two separate studies revealed that students' perceived assessment requirements have a strong relation with the approach to learning a student adopts when tackling an academic task (Säljö, 1975; Marton & Säljö, 1997). Similar findings emerged from the Lancaster investigation (Ramsden, 1981) in relation to a whole series of academic tasks and also to students' general attitudes towards studying. Students often explained surface approaches or negative attitudes in terms of their experiences of excessive workloads or inappropriate forms of assessment. The experience of learning is diminished by assessment methods which are perceived to be inappropriate. High achievement in conventional terms may mask this dissatisfaction and also hide the fact that students have not understood material they have learned as completely as might appear. Inappropriate assessment procedures encourage surface approaches, yet varying the assessment questions may not be enough to fully evoke deep approaches to learning (Ramsden, 1997).

4.0 Conclusions

Teachers' choice of resources for instruction, mode of presentation and nature of interaction is greatly influenced by his perception of the learners' preferences and learning styles. In doing this, the teacher must consider various learning and communication theories as they affect how concrete learning can take place.

These factors also guide the teacher in determining how he evaluates the entire instructional process to ensure that the outcome of such evaluation depicts the true performance of learners.

5.0 Summary

Perception is the process by which people attach meaning to experiences. When they attend to certain stimuli in their sensory memories, processing continues with perception. Perception is critical because it influences the information that enters working memory. Background knowledge in the form of schemas affects perception and subsequent learning. Educational technology must be adequately informed on various theories of perception in their design and development of learning. Teachers also must consider learners individual differences and perceptual preference right from the planning, execution and evaluation of instruction to ensure effective and efficient learning.

6.0 Tutor Marked Assignment

- i. What is Perception
- ii. Explain the various theories of perception
- iii. Describe the relevance of perception to classroom instruction
- iv. What effect does learning have on perception?
- v. What is the relationship between perception evaluation of instruction?

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UNIT 6: CONSTRUCTIVISM

1. Introduction

Constructivism is a theory of knowledge which argues that humans generate knowledge and meaning from their active experiences, i.e. the things they do. Piaget's theory of constructivist learning has had wide ranging impact on learning theories and teaching methods in education and is an underlying theme of many education reform movements. Research support for constructivist teaching techniques has been mixed, with some research supporting these techniques and other research contradicting those results. It is pertinent therefore to explore how this activity based theory can be applied to instructional technology.

2. Objectives

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

- i.** Define Constructivism
- ii.** Identify components of Constructivism
- iii.** Explain the use of Constructivism in the classroom
- iv.** Explain the relevance of constructivism in Instructional Design

3.0 Main Content

3.1 Definition of Constructivism

Constructivism is a theory of learning based on the idea that knowledge is constructed by the knower based on mental activity. Learners are considered to be active organisms seeking meaning. Constructions of meaning may initially bear little relationship to reality (as in the naive theories of children), but will become increasing more complex, differentiated and realistic as time goes on.

The term refers to the idea that learners construct knowledge for themselves; each learner individually (and socially) constructs meaning; as he or she learns.

Knowledge can be completely characterized using the techniques of semantic analysis (or task analysis). One key to efficiency and effectiveness of acquiring knowledge (or processing thought) is simplification and regularization: thought is atomistic in that it can be completely broken down into simple building blocks, which form the basis of instruction (meaningfulness).

Learning is an active process in which meaning is developed on the basis of experience. Conceptual growth comes from the sharing of multiple perspectives and simultaneous changing of our internal representations in response to those perspectives as well as through cumulative experience.

Consistent with this view of knowledge, learning must be situated in a rich context, reflective of real world contexts, for this constructive process to occur and transfer to environments and situations beyond the school.

3.2 Components of Constructivism

Constructivism is a holistic philosophy. Tenets of this philosophy include: the need to situate learning and problem solving in real-life contexts where the environment is very rich in information and there are no right answers (embedded knowledge); authentic tasks; cognitive apprenticeship; meaning negotiated through interactions with others; multiple perspectives on reality; nurturance of reflexivity and learning in ill-structured domains.

Situated Learning and Authentic Tasks

Situated learning is a method of ensuring that students learn to understand concepts anchored within the context of the area of study. Instead of abstracting unrelated bits of knowledge deemed to be the important components of an area of study, a student would learn about a subject area by immersion in that culture. The final objective is to produce a student who, if studying geology, understands how a geologist would acquire knowledge, find information in his field and integrate this knowledge to solve problems in his field. A rich context for problem solving becomes part of this component.

The problems are engaging for students, and they mimic the complexity of real life, where problems are messy, and defining the problem can sometimes be harder than solving it.

Cognitive Apprenticeship

Cognitive apprenticeship is a situation where a teacher models the thought processes which would characterize an expert in a particular field. Experiences are provided for the student which mimics the apprenticeship programs of adults in the trades, or teachers in the internship.

Although it is not possible to submerge the student to the extent that an internship would imply, through the use of simulations and meaningful experiences, the student would learn the ways of knowing of an expert

Social Construction of Shared Perspectives - Collaborative Learning

Von Glaserfeld (1988) discusses the social construction of knowledge. Concepts are developed in a process of fine-tuning which involves the interaction of others. Group interaction is thought to aid this process, because it exposes the learner to multiple perspectives about a theme. Collaborative learning which emphasizes the need to examine an issue from all sides gives the student the understanding of various points of view.

As an example, professionals such as teachers may be brought together to discuss certain anomalies in the society and suggest varying routes towards solving them. Having taken note of different things, they may propose alternative solutions, which they must then justify to their peers.

Sharing others perspectives helps learners to judge the quality of their own solutions and to learn perhaps more effective strategies for problem solving.

Nurturance of Reflexivity

Constructivists believe it is important to encourage reflexivity, the process whereby a student becomes aware of how their own thinking processes work. Helping students to think about how they are arriving at conclusions, or how they go about solving problems, may help to form more meaningful links between knowledge and develop more elaborate schemas.

Ill-Structured Problem Domains

Spiro, et al. (1991) developed a theory termed Cognitive Flexibility theory which addresses knowledge acquisition in ill-structured domains. The theory was developed after discovering that many learning failures resulted from cognitive oversimplification and the inability to transfer knowledge and apply it to new cases. In many cases, the design of learning involved the use of typical cases to explain a concept. The solutions to these typical cases were usually too obvious for students; so many students could not solve problems which involved more complex sets of factors.

For example, in teaching interns, if the instructor used the example of a typical case of hypertension, students often missed this diagnosis if the patient did not exhibit the symptoms in the same way. To counter these problems they suggested the need for instructional systems which allow students to revisit "the same material, at different times, in rearranged contexts, for different purposes, and from different conceptual perspectives". The idea is that many cross links may occur, and conceptual richness will develop as a student spends time investigating the various connections between themes or concepts.

3.3 Constructivism in the Classroom

There are a number of ways and styles in which the constructivist approach can be applied in the classroom. They are as follows:

Principle 1: Pose problems that are or will be relevant to the students.

In many cases, the problem you pose is or will be relevant to the students, and they will approach it sensing its relevance to their lives.

Relevance need not be preexisting for students, but can emerge through teacher mediation. Teachers can add elements to the learning situation that make the activity relevant to the students.

Principle 2: Structure learning around essential concepts.

Encourage students to make meaning by breaking wholes into parts. Avoid starting with the parts to build a "whole."

For example, young storywriters can approach the concept of "telling a story" through discovery activities. These can include a class library of illustrated storybooks, a visit by a storyteller, and some Web activities sponsored by a book publisher. The teacher prepares the students for writing their own stories, and introduces the idea of sequencing through visuals. Students can rearrange parts of a known story or even digitized video material. This last activity might allow the students to reconstruct the order in which a visiting storyteller told her story.

You can define or find "essential concepts" in different ways. You might refer to the list of standards your professional group publishes. Or, you can organize your constructivist work by exploring significant historical events (e.g., the Holocaust) or seminal works (e.g., a Mozart opera) from multiple perspectives.

Principle 3 - Be aware that students' points of view are windows into their reasoning.

The challenging of ideas and the seeking of elaboration threatens many students. Students in the traditional classroom who cannot guess what the teacher has in mind for the right answer quickly drop out of class discussion. They must be "gentled" into the constructivist learning environment through open-ended, nonjudgmental questioning.

Students also need to have an opportunity to elaborate and explain. Sometimes, how you feel about something or what you think is not as important as WHY. Using evidence/proof to present your opinion is most important! The construction of knowledge calls for not only time to reflect but also for time and practice in explaining.

Principle 4 - Adapt curriculum to address students' suppositions and development.

Presenting developmentally appropriate work is a place to start and as students engage in the work, the teacher must monitor their perceptions and ways of learning.

For example, a junior secondary school social studies teacher prepares for her students to study the concept of immigration through films, readings, examinations of firsthand accounts and photographs, and a field trip. In class discussion, she comes to perceive that her students found the multimedia presentations on the Nigerian immigrants' experiences effective. She also senses how many of her students empathize with the stories of the immigrants. She collaborates with the computer teacher to offer lessons in multimedia-presentation skills. The students work in groups to archive material and give multimedia presentations depicting the immigration experiences of families.

Principle 5: Assess student learning in the context of teaching.

Shift from measuring how well or poorly a student performs to assessing how much and what kind of help a student needs to be successful.

Removing bell-curve assessment frees students from the need to out-achieve others and allows them to collaborate.

3.4 Application of Constructivist Principles to the Practice of Instructional Technology

Traditional designers first attempt to analyze content and prerequisites to identify a course sequence. A constructivist course designer knows that content cannot be pre-specified. Although a certain amount of content may be available for students to use, they are encouraged to seek out as many alternate sources of knowledge as they can find which will deepen their perspective of the topic they are working on. And the notion of situated learning is important, where students are encouraged to consider what real life people in a particular environment would do.

Traditional theory focused on the typical learner and what he would know when the course was completed. A constructivist learner is not described. Instead, through metacognition, all learners are encouraged to reflect on how and what they are learning and how it fits into what they already know.

Traditional theory specifies objectives for knowledge acquisition in advance. Constructivism attempts to identify the culture of a knowledge domain. For example, a constructivist learner would be encouraged to learn how to think like a historian, as opposed to learning dates in history.

The synthesis, or design phase of traditional instruction would involve the design of a sequence and message which would achieve specified performance objectives. Pre-specified content and objectives are not congruent with the constructivist worldview. Substituted for these activities would be: learning based on situating cognition in real

world contexts; cognitive apprenticeship and modeling; and negotiation of meaning through collaborative learning which emphasizes multiple perspectives of analysis. Another emphasis in constructivism is to make available an array of cognitive tools which can scaffold the learner within this rich, sometimes confusing, environment.

Who Does the Design?

A key element in effective instructional design (ID) is the nature of the design team. Instead of a designer and subject expert working in relative isolation, constructivist ID suggests that all major constituencies be represented on the design team, including teachers and students. These end users' the "consumers" of the instructional "product" should contribute directly to the project's design and development. Greenbaum and Kyng (1991) refer to this as participatory design, and by implication, we must involve students, teachers, administrators, future employers, and the community as participants in design, working with students and teachers in their setting.

Accommodating Multiple Perspectives

In a pluralistic world, more flexibility must be built into the instruction; after all, even experts disagree on optimal solutions to problems. Not all students share the same learning goals; not all students' learning goals converge completely with instructional goals; students have different styles of learning, different background knowledge. Rather than ignore these differences, instruction should acknowledge the evolving nature of knowledge and encourage students to engage in a continuing search for improved understanding. This plurality of content, strategies, and perspectives typifies postmodern approaches to instruction. Such a pluralistic approach to instruction follows a clear trend toward accommodating multiple goals, styles, and perspectives in instruction.

Guidelines for Doing Constructivist ID

This section is composed of a laundry list of tips for viewing ID from a constructivist perspective, organized according to generic ID phases. For scope reasons, issues of implementation are not addressed. Some of the tips are abstract and conceptual; others are simple and practical. Some depart radically from current practice; others reflect how most practitioners already view their jobs. Collectively, they provide a clearer picture of what it means to do constructivist ID.

Needs Assessment

- Consider solutions that are closer to the performance context (job aids, just-in-time training, performance support systems, etc.).
- Make use of consensus- and market-oriented needs assessment strategies, in addition to gap-oriented strategies. Not all instruction is designed to improve performance in a specific work setting. Schools may develop curriculum based on a consensus among political constituencies.
- Resist the temptation to be driven by easily measured and manipulated content. Many important learning outcomes cannot be easily measured.
- Ask: Who makes the rules about what constitutes a need? Are there other perspectives to consider? What (and whose) needs are being neglected? These questions arise out of the postmodern notion of the ideological base of all human activity.

Goal/Task Analyses

- Distinguish between educational and training situations and goals. Acknowledge that education and training goals arise in every setting. Schools train as well as educate, and workers must be educated not just trained in skills to work

effectively on the factory floor. Discerning different learning goals in every setting provides a basis for appropriate instructional strategies.

- Use objectives as heuristics to guide design. Don't always insist on operational performance descriptions which may constrain the learners' goals and achievement. Pushing goal statements to behavioral specifications can often be wasted work. The "intent" of instruction can be made clear by examining goal statements, learning activities, and assessment methods. Goals and objectives should be specific enough to serve as inputs to the design of assessments and instructional strategies.
- Allow for multiple layers of objectives clustering around learning experiences. Instruction need not be objectives-driven. A rich learning experience may embody a whole cluster of meaningful learning outcomes.
- Don't expect to capture the content in your goal- or task analysis. Content on paper is not the expertise in a practitioner's head (even if you believed expertise resided in someone's head!). The best analysis always falls short of the mark. The only remedy is to design rich learning experiences where learners can pick up on their own the content missing between the gaps of analysis.
- Allow for instruction and learning goals to emerge during instruction. Just as content cannot be fully captured, learning goals cannot be fully pre-specified apart from the actual learning context.
- Consider multiple stages of expertise. Expertise is usually thought of as having two levels: Expert or proficient performance and novice or initial performance. Of course, a two-level model is insufficient for accurate modeling of student growth over time. A series of qualitative models of expertise may be needed for modeling students' progression in learning critical tasks. Be prepared to confront learners' naive, intuitive theories and to scaffold their learning.
- Give priority to problem-solving, meaning-constructing learning goals. Instead of rule-following, emphasize problem solving (which incorporates rule-following but is not limited to it). Instead of simple recall tasks, ask learners to make sense out of material and demonstrate their understanding of it.
- Look for authentic, information-rich methods for representing content and assessing performance (e.g., audio, video). High-resolution methods for representing content can be useful throughout the ID process. Whereas we usually associate audio and video representations only with presentation of material to students, the same representation tools may be useful for documenting expertise and assessing student understanding.
- Define content in multiple ways. Use cases, stories, and patterns in addition to rules, principles, and procedures. Rich cases, stories, and patterns of performance can be alternative metaphors for finding and representing content.
- Appreciate the value-ladenness of all analysis. Defining content is a political, ideological enterprise. Valuing one perspective means that other perspectives will be given less value. One approach is given prominence; another is neglected. Somebody wins, and somebody loses. Be sensitive to the value implications of your decisions.
- Ask: Who makes the rules about what constitutes a legitimate learning goal? What learning goals are not being analyzed? What is the hidden agenda?

Instructional Strategy Development

- Distinguish between instructional goals and learners' goals; support learners in pursuing their own goals.

- Allow for multiple goals for different learners. Instructional design often includes the implicit assumption that instructional goals will be identical for all learners. This is sometimes necessary, but not always.
- Appreciate the interdependency of content and method
- Resist the temptation to cover material at shallow levels
- Look for opportunities to give guided control to the learner, encouraging development of metacognitive knowledge. Encourage growth in students' metacognitive knowledge, what we often call "learning how to learn." Don't assume that students know how to exercise effective learning control; instead, establish metacognitive skills as a learning goal for instruction to achieve.
- Allow for the teaching moment. Situations occur within instruction where the student is primed and ready to learn a significant new insight. Good teachers create conditions where such moments occur regularly, then they seize the moment and teach the lesson. This kind of flexibility requires a level of spontaneity and responsiveness not usually talked about in ID circles.
- Consider constructivist teaching models such as cognitive apprenticeship, minimalist training, intentional learning environments, and case- or story-based instruction. Seek out instructional strategies and systems that use authentic problems in collaborative, meaningful learning.
- Think in terms of designing learning environments rather than selecting instructional strategies.
- Think of instruction as providing tools that teachers and students can use for learning; make these tools user-friendly. This frame of mind is virtually the opposite of "teacher-proofing" instructional materials to assure uniform adherence to designers' use expectations. Instead, teachers and students are encouraged to make creative and intelligent use of instructional tools and resources.
- Consider strategies that provide multiple perspectives and that encourage the learner to exercise responsibility. Resist the temptation to "pre-package" everything. Let the learner generate her own questions or presentation forms.

Media Selection

- Consider media factors early in the design cycle. Practical and cost constraints typically dictate that tentative media decisions will be made relatively early in the design process. Media then becomes one of the instructional factors that receive increasing attention through iterations of analysis.
- Include media literacy and biases as a consideration in media decisions. Different media send different "messages" to an audience, independently of the instructional content. Look for any "hidden curriculum" elements in different media choices. Avoid negative stereotypes and cultural biases. Consider the rhetorical goodness of fit between media choice and overall instructional purposes. Also, design messages that are sensitive to an audience's media sophistication and literacy, paying particular attention to humor, media conventions, and production values.

Constructivist Tools for Learning

Constructivist designers develop learning tools and software which is much different than the standard drill and practice or linear presentations. Below are some promising tools based on constructivist ideas.

There are five structures for learning which may or may not be present in a regular classroom. These five include information banks (text or encyclopedia), symbol pads (notebooks, laptop computers) construction kits (Logo, legos, tinker toys), phenomenaria (area for presenting phenomena and making them available for manipulation; i.e., aquarium, Geometric Supposer, physics microworlds, simulations) and task managers (element which sets tasks, helps with execution, and provides feedback; i.e., teacher, computer managed instruction systems). Of these five elements, construction kits and phenomenaria seem to be those elements which would most readily fit into a constructivist learning context. Construction kits and phenomenaria provide a model for many of the new tools being developed to scaffold learners in their quest for meaning.

Other tools emphasize the use of communications or tele-collaboration. This thrust is based on Vygotsky's theory of social constructivism, where students construct knowledge based on interactions with others.

Still other tools are developed based on the constructivist recommendations that students learn best in authentic environments, using the complexity and richness of real world examples.

Evaluation of Constructivist Learning

Bednar, et al (1991) define two ways which constructivist learning can be evaluated. They suggest that one method would evaluate how well students were able to function within a content domain, and whether they could use the tools and understandings of the domain to solve problems within that domain. If they are involved in an authentic task, then evaluation would assess whether the student successfully completed that task. The second method suggested would have students reflect on the processes whereby they came to their conclusions and document this process.

Specifically, student assessment in a constructivist setting should;

- Incorporate assessment into the teaching product where possible
- Critique and discuss products grounded in authentic contexts, including portfolios, projects, compositions, and performances.
- Evaluate processes as well as products.
- Use informal assessments within classrooms and learning environments. i.e: teacher observations of eye contact, body language, facial expressions, and work performance. These observations can complement formal assessments as a basis for instructional adjustments.

4.0 Conclusions

The employment of constructivists approach to classroom instruction and training programmes will change the entire process of instruction right from the point of design to implementation. It changes the roles of the key players in the planning and execution of instructional programmes.

5.0 Summary

When learners are actively involved in the process of instruction by building up knowledge from scraps, they are able to face real situation in life and they will be able to solve problems faced in life rather than when knowledge is passed on them already processed. In the latter case there are not likely to two problem situations with the same conditions hence students will be faced with difficulty in solving other problems when the conditions are different in its entirety. Constructivism also put the learner at the centre since different routes can lead to the solution of a problem.

6.0 Tutor Marked Assignment

- a) What is constructivism?
- b) Mention five components of constructivism
- c) Differentiate between the traditional and the constructivist principles of instructional technology
- d) From the constructivist perspective, outline the steps in instructional design.
- e) What are the major considerations in the evaluation of constructivists' learning?

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MODULE 2: STRATEGIES FOR YOUNG LEARNERS.

UNIT 1: MONTESSORI METHOD OF EDUCATION

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1.0 Introduction

One of the great educators of 20th century was Maria Montessori. Her method of educating children from ages 0-18 (birth to adolescence) has come to be known as the Montessori Method. Although the method was originally thought to be meant for children in the nursery and primary schools especially in this part of the world, it is in actual fact applicable to adolescents of secondary school age too. Its curriculum is that all involving that it could be said to have been the precursor of the modern day **authentic instruction (AI)**. You may need to find out about this concept of AI and relate it to the Montessori philosophy of education. This unit will expose you to this philosophy, how it was developed and why it is very popular all over the world today as a method based on the individuality of the children and their natural readiness for hands-on **self directed learning activities** in the exploration of the environment, the central pedagogy of the Montessori Method.

2.0 Objectives

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

- Discuss briefly about the personality and work of Maria Montessori
- Explain the Montessori philosophy
- State some essential principles (details) of the Montessori method
- Discuss the Montessori curriculum

- Describe some basic Montessori materials
- Discuss briefly, the practice of Montessori Method in contemporary Nigeria

3.0 Main Content

3.1 Montessori Method

3.1.1 Maria Montessori (1870-1952)

Maria Montessori wanted to be the first female engineer in Italy by going to an all boys' technical high school in Rome. She however became the first female medical doctor in 1896 instead, at the age of twenty six, having studied at the University of Rome. On the staff of the university's psychiatric clinic, she specialized in work with medically deficient (backward or mentally handicapped) children for two years, travelling to London and Paris to study the methods of Jean Itard and Eduoard Séguin (Rusk and Scotland, 1979). This was the beginning of her interest in education, leading her to designing materials that helped them to surpass normal children in standard examinations. Through this work with disadvantaged children, she developed a philosophy of education that worked with all children. Returning to Rome she became a student of philosophy, psychology and anthropology and at the same time assisting on the staff of training college for women. She became a professor of anthropology in 1904 (Rusk and Scotland, 1979).

In 1907, she was hired to organize a day care center for children in a Roman housing project mostly for disadvantaged children. She called it '**House of Children**'. The remarkable results she achieved observing the children scientifically in line with Séguin's recommendations, received worldwide attention. Montessori schools began to proliferate starting with the United States of America (USA) in 1912. In the 1930's, Maria Montessori became an outspoken advocate of peace, and because of her views, was expelled from Italy by the Fascist regime headed by Mussolini. Her schools were closed and her books were banned and burned. During this period, she visited India, and was detained as an Italian national. Though not allowed to travel, she was able to teach, and trained hundreds of Montessori teachers during her stay there. After World War II, Montessori returned to Europe, and continued to write, lecture, and teach until her death in 1952.

Many of the things Maria Montessori believed in are taken for granted today, and credit is seldom given to the source. She pioneered the concept of child-sized furniture in nursery and primary schools as you see them today. She advocated natural childbirth and immediate bonding with the mother as a way of developing mental and emotional adjustments, judging from her experiences with special need children. Maria Montessori believed in developmentally appropriate practice and the use of hands-on teaching aids. Now I want you to compare this belief with those of 'modern; Nigerian parents and school proprietresses who believe that a 2-year old child should develop writing and number (arithmetic) skills before they even develop fine muscle manipulative skills of the fingers. She stressed ecology (study of the environment) and conservation of natural resources at a time when unchecked industrial growth was the norm. As a matter of fact, the central theme to her method of education is the environment, how it affects the natural learning capability of the child and how the child interacts with it. She was of the opinion that without self-esteem, a child cannot learn. She was born in 1870, and died in 1952.

3.1.2 Montessori Philosophy

The Montessori Method facilitates learning by **discovery** rather than by mere instruction. With instruction, a child must react by listening to something that is spoken or by reading something that is written by someone other than himself. The result of instruction is information - the facts of what is being taught. Discovery promotes a deeper level of learning from the very beginning of the process. In discovery a child responds to what is natural, or of the world. Learning is processed through the senses and the imagination. The **senses** perceive "concrete" concepts through material that can be observed directly. The **imagination** helps the child to progress to levels of "abstraction" where concepts that cannot be observed directly must be constructed. The result of discovery is a self-directed process that leads to a new and deeper understanding of the concepts. More simply put, discovery is the process of learning something without being taught.

Maria Montessori believed that **education**, rather than being a rote transfer of information, must seek to serve the "whole child" and to nurture the human potential of each individual. A child naturally learns to walk and talk and Montessori found that within the child is the same type of ability to naturally acquire skills for reading, writing and mathematics. In the Montessori environment the material are designed to be **self-correcting**, which allows the child to learn in an atmosphere of success and positive reinforcement. The child corrects his own errors as he works towards **mastery** of concepts, through **repetition** of manipulations with the material. His motivation is not for external reward but for internal fulfillment.

The educational philosophy and methodology of Montessori is not just another educational theory. It is the **"scientific method" of education**. Montessori employed the scientific method in her observations of the child and applied her knowledge of medicine to create a new model of the human stages of development. She found a progression of four Planes of Development in which there are Sensitive Periods where development occurs most naturally and quickly.

"To follow the child" and to meet his needs is the basic philosophy of Montessori. This is achieved through the pyramid of Montessori principles: Individualized Liberty of the **Child**, Observation of the **Directress or Director** (as the teacher is referred to in Montessori Method), and Preparation of the **Environment**.

SELF ASSESSMENT EXERCISE

1. What factors shaped Maria Montessori's life and work?
2. Explain the Montessori philosophy.

3.2 Essential Details of the Montessori Method

(Adapted from <http://www.montessori.edu/montessorifaq's.htm>)

3.2.1 The schedule - The three-hour work period Note

Under the age of six, there are one or two 3-hour, uninterrupted, work periods each day, not broken up by required group lessons. Older children schedule meetings or study groups with each other the teacher when necessary. Adults and children respect concentration and do not interrupt someone who is busy at a task. Groups form

spontaneously or are arranged ahead by special appointment. They almost never take precedence over self-selected work.

3.2.2 Multi-age grouping

Children are grouped in mixed ages and abilities in three to six year spans: 0-3, 3-6, 6-12 (sometimes temporarily 6-9 and 9-12), 12-15, 15-18. There is constant interaction, problem solving, child to child teaching, and socialization. Children are challenged according to their ability and never bored. The Montessori middle and high school teacher ideally has taken all three training courses plus graduate work in an academic area or areas.

3.2.3 Work centers

The environment is arranged according to subject area, and children are always free to move around the room instead of staying at desks. There is no limit to how long a child can work with a piece of material. At any one time in a day all subjects -- math, language, science, history, geography, art, music, etc., will be being studied, at all levels.

3.2.4 Teaching method - "Teach by teaching, not by correcting"

There are no papers turned back with red marks and corrections. Instead the child's effort and work is respected as it is. The teacher, through extensive observation and record-keeping, plans individual projects to enable each child to learn what he needs in order to improve.

3.2.5 Teaching Ratio - 1:1 and 1:30+

Except for infant/toddler groups (Ratio dictated by local social service regulations), the teaching ratio is one trained Montessori teacher and one non-teaching aide to 30+ children. Rather than lecturing to large or small groups of children, **the teacher is trained to teach one child at a time, and to oversee thirty or more children working on a broad array of tasks.** She is facile in the basic lessons of math, language, the arts and sciences, and in guiding a child's research and exploration, capitalizing on his interest in and excitement about a subject. The teacher does not make assignments or dictate what to study or read, nor does she set a limit as to how far a child follows an interest.

3.2.6 Basic lessons

The Montessori teacher spends a lot of time during teacher training practicing the many lessons with materials in all areas. She must pass a written and oral exam on these lessons in order to be certified. She is trained to recognize a child's readiness according to age, ability, and interest in a specific lesson, and is prepared to guide individual progress.

3.2.7 Areas of study

All subjects are interwoven, not taught in isolation, the teacher modeling a "Renaissance" person of broad interests for the children. A child can work on any material he understands at any time.

3.2.8 Class size

Except for infant/toddler groups, the most successful classes are of 30-35 children to one teacher (who is very well trained for the level she is teaching), with one non-teaching assistant. This is possible because the children stay in the same group for three to six years and much of the teaching comes from the children and the environment.

3.2.9 Learning styles

All kinds of intelligences and styles of learning are nurtured: musical, bodily-kinesthetic, spatial, interpersonal, intrapersonal, intuitive, and the traditional linguistic and logical-mathematical (reading, writing, and math).

3.2.10 Assessment

There are no grades, or other forms of reward or punishment, subtle or overt. Assessment is by portfolio and the teacher's observation and record keeping. The test of whether or not the system is working lies in the accomplishment and behavior of the children, their happiness, maturity, kindness, and love of learning and level of work.

3.2.11 Requirements for age 0-6

There are no academic requirements for this age, but children are exposed to amazing amounts of knowledge and often learn to read, write and calculate beyond what is usually thought interesting to a child of this age. According to Montessori, children especially those of ages 3-6 (nursery and the first year of primary) possess the *absorbent mind*, the ability to absorb all aspects of one's culture and environment without effort or fatigue.

3.2.12 Requirements for ages 6-18

The teacher remains alert to the interests of each child and facilitates individual research in following interests. There are no curriculum requirements except those set by the state, or college entrance requirements, for specific grade levels. These take a minimum amount of time. From age six on, students design contracts with the teacher to guide their required work, to balance their general work, and to teach them to become responsible for their own time management and education. The work of the 6+ class includes subjects usually not introduced until high school or college.

3.2.13 Character education:

Education of character is considered equally with academic education, children learning to take care of themselves, their environment, each other - cooking, cleaning, building, gardening, moving gracefully, speaking politely, being considerate and helpful, doing social work in the community, etc.

SELF ASSESSMENT EXERCISE

State some basic principles of the Montessori Method.

3.3 Montessori Curriculum

3.3.1 SENSORIAL (Training of Senses)

- Visual
- Tactile (Touch)
- Olfactory (Smell)
- Gustatory (Taste)
- Auditory (Hearing)
- Stegnostic (Tactile and Movement)

The major objective sensorial activities are for the children to experience the natural order of environment and the nature of objects such as size, colour, shape and dimension.

3.3.2 PRACTICAL LIFE

Practical life

- Care of Self
- Care of Environment
- Grace and Courtesy

Specific materials, for example, provide opportunities for self-help dressing activities, using various devices to practice buttoning, bow tying, and lacing. Other practical life materials include pouring, scooping and sorting activities, as well as washing a table and food preparation to develop hand-eye coordination (Wikipedia, 2010). When the child carries out these activities successfully, he/she does not only learn them, they allow him/her to concentrate and get normalized, a major principle of Montessori Method.

3.3.3 LANGUAGE

- Word Cards (Vocabulary)
- Phonics
- Grammar (Mechanics)
- Word Study (Usage)
- Sentence Analysis (Structure)
- Composition

Skills to be developed in the language curriculum include; manipulative skill by children of 0-6 years needed for writing, and reading skills through sounding of letters and words using the phonics method. The Montessori environment is rich in oral language opportunities, allowing the child to experience conversation, stories and poetry. The sandpaper letters help children link sound and symbol effortlessly, encouraging the development of written expression and reading skills. The older children learn grammar, use of words, sentence construction and parts of speech with a view to applying them in composition.

3.3.4 MATHEMATICS

- Counting
- Decimal System
- Memory Work
- Abstraction

The mathematics skills to be developed here are; numeration, addition, subtraction, division, multiplication and place values. The mathematics activities help children learn and understand the concepts of mathematics by manipulating concrete materials. This work gives children a solid understanding of basic mathematical principles, prepares them for later abstract reasoning and helps to develop problem-solving capabilities.

3.3.5 CULTURE

- Geography
- History
- Science
- Art and Music

The major focus of the cultural aspect of the curriculum is the development of a critical understanding of the environment, its geography, history of its people and of course the distinction, identification and classification of living things. Children learn about people and cultures in other countries with an attitude of respect and admiration. Consequently, they feel connected to the global human family. Lessons and experience with nature inspire a reverence for all life. The comprehensive art and music programmes give them the opportunities to enjoy a variety of activities, as well as gain knowledge of great masters.

SELF ASSESSMENT EXERCISE

Outline the Montessori curriculum giving the major objectives of each aspect.

3.4 Montessori Materials

There are wide varieties of Montessori materials to suit the education of the child from concrete stage to abstraction stage of education. Newer materials are constantly being developed and marketed. However, this section introduces you to the basic and original Montessori sensorial materials. It is adapted from Wikipedia (2010).

Montessori Sensorial Materials

These materials help the child develop his or her 5 senses. They are designed to help the child refine tactile, visual, auditory, olfactory, and gustatory senses. This is the next level of difficulty after those of practical life (Wikipedia, 2010). The sensorial materials, adapted from Wikipedia (2010) include:

3.4.1 The Cylinder Blocks (Knobbed)

The blocks are wooden and four in number, each containing ten (10) cylinders of varying sizes with knobs for removing and placing them back into the blocks with a natural 3-finger pincher grip used on pencils. The purpose of the cylinder blocks are to provide various size dimensions so the child can distinguish between large and small, tall and short, thick and thin, or a combination of the two.

3.4.2 The Pink Tower

The pink tower work has 10 pink cubes. The smallest cube is 1 cubic centimeter and the largest cube is 10 cubic centimeters. The work is designed to provide the child with a concept

of "big" and "small." The child starts with the largest cube and puts the 2nd largest cube on top of it. The work continues until all 10 cubes are stacked on top of each other.

3.4.3 The Broad Stair

The broad stair is designed to teach the concepts of "thick" and "thin." The broad stairs are 10 sets of wooden prisms with a natural or brown stain finish. Each stair is 20 cm in length and varies in thickness from 1 square cm to 10 square cm. When the broad stairs are put together from thickest to thinnest, the material makes stairs going down. As an extension, the broad stairs are often used with the pink tower to allow the child to make many designs.

3.4.4 The Red Rods

The red rods are 10 red rods with equal diameter. They vary only in length. The smallest is 10 cm long and the largest is one meter long. Each rod is 1 square inch thick. By holding the ends of the rods with two hands, the material is designed to give the child a sense of long and short in a very concrete manner.

3.4.5 The Coloured Cylinders

Also called the knobless cylinders, these are cylinders of the exact same size and dimensions as the cylinder blocks mentioned above.

There are 4 boxes of cylinders:

- Yellow cylinders that vary in height and width. The shortest cylinder is the thinnest and the tallest cylinder is the thickest.
- Red cylinders that are the same height but vary in width.
- Blue cylinders that have the same width but vary in height.
- Green cylinders that vary in height and width. The shortest cylinder is the thickest and the tallest cylinder is the thinnest.

The child can do a variety of exercises with these materials, including matching them with the cylinder blocks, stacking them on top of each other to form a tower, and arranging them in size or different patterns. When the yellow, red, and green cylinders are placed on top of each other, they all are the same height.

3.4.6 The Binomial Cube

The binomial cube is a cube that has the following pieces: 1 red cube, 3 black and red prisms, 3 black and blue prisms and 1 blue cube.

A box with 8 prisms represent the elements of $(a + b)^3$ or: $a^3 + 3a^2b + 3ab^2 + b^3$

The pieces are stored in a box with two hinged opening sides. The color pattern of the cube is painted all around the outside of the box (except the bottom).

The material is not designed as a math material until the elementary years of Montessori Education. In the Primary levels (ages 3-6), it is used as a sensorial material.

3.4.7 The Trinomial Cube

The trinomial cube is similar to the binomial cube, but has the following pieces:
1 red cube and 6 black and red prisms (varying in size)
1 blue cube and 6 black and blue prisms (varying in size)
1 yellow cube and 6 black and yellow prisms (varying in size)
6 black prisms (same size)

This is used similar to the binomial cube, but is a physical representation of the math formula:

$$(a + b + c)^3 = a^3 + 3a^2b + 3a^2c + b^3 + 3ab^2 + 3b^2c + c^3 + 3ac^2 + 3bc^2 + 6abc$$

Sensorial Materials have what is called a "control of error." This means that the child will work with the material, but will have a way for them to check their own work rather than seeking out the teacher. This is done to help promote independence on the part of the child (Wikipedia, 2010).

SELF ASSESSMENT EXERCISE

List five features of some basic Montessori sensorial materials.

3.5 The Practice of Montessori Method in Contemporary Nigeria

Like most parts of the world, the Montessori Method is used in some nursery and primary schools in Nigeria and these schools are so identified in signage. So, it is quite easy to identify these schools in your location. I will like you to visit at least four of these schools and carry out a study on how they practice and comply with the Montessori Method as you have learned in this unit.

For the purpose of this study, you will need to find out and compare:

- How the four schools practice the Montessori Method.
- Whether they have specially trained and certificated Montessori teachers
- What their Montessori classrooms look like
- Are the children actually interacting with the Montessori materials in their quest for self-directed learning?
- What roles do you observe their teachers playing in the Montessori classrooms?
- In your judgment, would you say that these schools are practicing the Montessori Method as prescribed by Maria Montessori?

SELF ASSESSMENT EXERCISE

Write a report of your findings about the practice of Montessori Method in contemporary Nigeria based on the four schools that you studied.

4.0 CONCLUSION

From the foregone in this unit, you would have noticed that a study of the Montessori Method during the pre-service training of teachers is very important in that it prescribes strategies for

educating the child from birth with particular reference to his/her interaction with the natural environment. The child has a natural tendency to be **normal** and consequently, the system of education should bring forth this **normalization** in him/her to the advantage of the cultural setting that he/she is located and to the benefit of mankind as a citizen of the world by virtue of his/her beneficial cultured behaviours.

5.0 SUMMARY

In this unit, you learnt about the personality of Maria Montessori and how she came about her design of the Montessori Method of education. Considerations were given to Montessori-philosophy, principles curriculum and materials. In finding out about the practice of the Montessori Method in Nigeria, you studied four nursery and primary school that claimed the Montessori education in their signage. Your findings were very instructive to the nature of the Montessori Method in Nigeria.

6.0 TUTOR MARKED ASSIGNMENT

1. Who was Maria Montessori?
2. Explain the Montessori philosophy of education.
3. The Montessori Curriculum could be said to take care of a child's education from cradle to grave. Justify this statement.
4. Discuss some essential principles of the Montessori Method.
5. Give examples of Montessori materials needed for the different aspects of the Montessori curriculum.
6. Based on your observations of the four Montessori schools that you studied, critique the practice of Montessori Method in the contemporary Nigeria.

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UNIT 2: POEMS, SONGS AND RHYMES

1.0 INTRODUCTION

Have you recently visited a lower primary class? How are pupils at this tender age instructed in the class? Young learners of this age are easily distracted due to their very short attention span! As professional teachers, it is our responsibility to be creative, resourceful and dynamic. Our creativity makes us seek for interesting and lively means of instructing learners of this young age. Consequently, strategies which will challenge, and sustain their interest in the instructional process must be used. Such strategies must be “attention grabbers” and activity packed. Young learners have boundless and unlimited energy that are ready to be put into play. Children love play as play is great fun! Hence, strategies such as poems, songs and rhymes which connote play are ‘attention grabbers’ which can provide attractive and instructionally effective frameworks for learning activities.

Do you still remember some of the poems, songs and rhymes you learnt when at this young age? Some of us can still recollect vividly some of these and with nostalgia attempt to recite some verses if not all.

This unit introduces us to an overview of these delightful instructional strategies.

2.0 OBJECTIVES

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

- Describe the use of poems, songs and rhymes in the classroom.
- Describe the instructional importance of poems, songs and rhymes.
- State the guidelines for effective implementation of these strategies in instruction.

MAIN CONTENT

3.1 Poems, Songs and Rhymes

Recite a favourite poem of yours. What concept(s) does the poem teach? Highlight these concepts and attempt to see if a young learner can easily understand the concepts. Would you rather sing a song or a rhyme? The choice is yours. Poems, songs and rhymes are collectively viewed as a play way approach to instruction. These strategies are basically used in the lower primary class. The learner at this stage is in the process of mastering the skills required to become a good reader. These strategies emphasize more on oral presentation.

Poems, songs and rhymes are active and engaging strategies which build motivation and enthusiasm for learning development of dynamic communication skills. These strategies create friendship among learners and promote a “talking” classroom. Children will love to come to school as they know that learning time is fun time!

Our vast rich cultural heritage is portrayed in most of our indigenous poems, songs, and rhymes. The rich experiences in art, music, drama, dance and storytelling exploited in these strategies enable children find personal meaning in school learning. In the use of these strategies, it is important that one’s choice should be based on poems, songs and rhymes that will inspire the children and relate concepts to what they can easily relate with within their immediate environment. In ensuring a mastery of the chosen poem, song or rhyme, the learners can be grouped. Grouping aids the

more hesitant reader. Grouping also fosters confidence in peers who are more ready to repeat the poem/song/rhyme after listening to their peers. Hearing a classmate recite a poem seems to reinforce the process of learning the poem for many students.

Below are two poems teaching the sense organs and concept of gravity respectively.

1. MY FIVE SENSES

I have eyes; I can see

With my ears; I can hear

I have a nose; I can smell

With my body; I can feel

And with my tongue; I can taste but only when it is safe.

2. GRAVITY

Up! Up! Goes my ball

And down again it comes

It will always come crashing down no matter how high I throw

Now I know the reason why

For teacher often said;

Gravity will pull things down to you

No matter how high you throw

That is why the fruits come crashing down even from the highest trees.

(adapted from Bajah, S.T. and Asim, E.A. 1997)

In the use of songs, poems and rhymes, recitation and memorization are important. The two poems above when recited with the children enable them:

- Get an understanding of the sense organs
- Functions of these organs
- The meaning of gravity
- Imagine how it will be like if gravity is absent.

During the recitation of the poems, expressions, gestures and actions are infused. These create a vivid and interesting atmosphere. With these strategies, young children are able to memorize, recite and perform language. They turn print into sound. Well loved poems, rhymes and songs make the child build up good language skills which may promote/enhance their speech and reading skills.

A social studies teacher can turn print into sound when he wants to teach the pupils the topic: **Rules in the Community:**

Rules! Rules! Rules!

Rules make us live in unity

Rules make us love one another

Respect is one rule

Honesty is another

Sanitation is next

Loyalty is a rule

Obedience makes next

Another is cooperation

Rules! Rules! Rules!

Each child in the class can represent a rule as the teacher recites, and dramatizes with the children. It is worthwhile to note that rhythm created within these strategies and the repetition involved help to accelerate language learning amongst the children.

Self Assessment Exercise 1

1. Create a simple poem to teach a specific concept in your subject area.

3.2 Instructional importance of Poems, Songs and Rhymes

These strategies have several instructional benefits. They include the following:

- Promotion of the development of oral language fluency
- Ensures meaningful learning as children can illustrate and read language which they already have a memorable and playful connection with.
- It serves as a connection to meaningful projects and to the lives of our children.
- Promotes creativity and higher order thinking
- Enhances vocabulary practice and literacy analysis.

Self Assessment Exercise 2

1. List 3 instructional benefits of poem, song and rhyme in the classroom.

3.3 Tips for using Poems, Songs and Rhymes

The ability to hear and make rhymes is one of the best indicators of a child's future success as a reader. Children love to play with language, and singing and chanting, rapping and clapping, are all important ways to address multiple learning modalities. Because children learn songs and poems so easily, they're perfect for teaching Concepts About Print, including one-to-one correspondance, tracking, and return sweep. Repeated exposure to printed songs and poems also helps children develop sight word vocabulary.

Using songs and poems in the classroom is a major part of the early childhood curriculum, in language arts and across all subject areas. Songs and poems teach phonemic awareness -- directly and indirectly, and help children learn about math, science, and social studies concepts. In early childhood classrooms, children sing and chant throughout the day! There are songs and poems to learn the alphabet and letter sounds, the days of the week, weather, counting, colors, sharing, manners, holidays, and almost any concept you are teaching.

Music and poetry should be woven throughout your curriculum and your teaching day, and are great as whole group, small group, individual, and transitional activities.

Children learn by repetition and songs are a great way to incorporate learning into their young lives. Have you ever watched a child as they watch television? Notice how they learn the theme songs to the programs they like and can sing them all day long and annoy you? Just give a simple twist of the lyrics of their favorite songs to help them in learning a new fact or detail for school.

Edge (n.d) identified the following as tips for infusing poems, songs and rhymes in the classroom.

- Select poems, songs or rhymes with qualitative language.
- Choose only the most memorable and delightful ones.
- Ensure that the chosen poem/song/rhyme contains concepts related to what you want to teach.
- Choose only those that are copyright secured.
- Look for imagery that involves dramatic, artistic and creative involvement.
- Children will memorize, recite and perform the language.
- Recitation can be done from language charts.
- Individuals will recite poem
- Recitation will also be done chorally and also in distinct groups until a mastery is achieved.

Self Assessment Exercise 3

Identify the guidelines you will adopt in using either a poem, song or rhyme in your classroom.

Visit a primary school in your area. Record the types of poetic rhymes the children make. How appropriate are these for learning the concepts taught?

4.0. CONCLUSION

The use of play way strategies in instruction for young learners establish a respectful, warm and caring bonds between the learners and their teachers and also between learners and their peers. Interaction is promoted when learners are taught as a group. These strategies create fun and excitement in the classroom. They foster confidence in the learners as well as helping to promote their verbal skills.

5.0. SUMMARY

In this unit, you have learnt about;

- The use of play way approach specifically poems, songs and rhymes as effective strategies for instructing young learners.
- Instructional importance of these strategies.
- Guidelines for using these strategies.

6.0. TUTOR MARKED ASSIGNMENT

1. Discuss the place of poem, song and rhyme as an instructional strategy in the lower primary school.

2. Use a simple poem / song of your own (adapted) to explain a specific concept in your subject area.
3. Highlight 3 benefits of using play way approach as instructional strategy in the classroom.

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UNIT 3 QUIZZES, GAMES AND PUZZLES

1.0 INTRODUCTION

In unit 2, you were introduced to instructional strategies for lower primary schools. Some other instructional strategies that can be used for learners at this level include quizzes, games and puzzles. These are instructional strategies which result in an enriched learning environment. Learning should be a pleasant experience, affording joy, fun and humor where possible. An enriched learning environment makes learning meaningful and memorable. You do not really need any complex learning programme or tool to make your classroom enriched! All you need are actually simple things that can arouse learners' curiosity and create a fun filled class. "Attention grabbers" which young learners can easily channel their boundless and unlimited energy into is required. What game do you enjoy playing? Are you an avid fan of puzzles? Some of us enjoy finding clues, filling up missing letters and so on in puzzles. The puzzles offer challenges and stimulation. These can also create a relaxed and fun filled classroom. The fun nature of these strategies makes learning an enjoyable experience. This unit focuses on how these strategies can be used in the classroom. Enjoy more fun filled classroom!

2.1 OBJECTIVES

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

- Describe the infusion of quizzes, games and puzzles in the teaching- learning process.
- Highlight the benefits of these instructional strategies.
- Mention the guidelines for the effective implementation of these strategies in the classroom.
- Utilize the strategies in the teaching of a specific concept in your subject area.

3.0 MAIN CONTENT

3.1 QUIZZES, GAMES AND PUZZLES

A game is described as a contest in which people or players agree to abide by a set of rules in an attempt to achieve a goal or an objective. Instructional games are based on specific objectives that the learner should achieve. What is your favorite game? Ludo, whot, card or some other sophisticated game? Whatever game you enjoy, you must have had fun while it lasted. Games involve competition. For young learners, simple games such as Ludo can be used to teach addition and multiplication while whot can be used to teach shapes. Games can teach skills, and can also involve chance options. You can develop your own game to teach specific concepts or adapt already developed ones. The important fact is that the game should meet the intended instructional objective.

Puzzles are regarded as forms of games. Many forms of puzzles exist. Some of these include word search, crisscross puzzle, double puzzle, mathematics squares, letter tiles among others.

Below are examples of some of these forms of puzzles

- (i) Word search-a simple word search which indicates terminologies in livestock production

is indicated below.

Live stock terminologies

M	S	D	X	F	I	D	Q	C	U	R	P	Q	Y	F
F	H	O	M	D	Q	O	Y	R	G	E	E	U	G	M
W	V	E	Z	Z	X	Q	Q	C	O	B	W	W	H	P
L	C	R	O	J	H	P	R	T	B	L	Q	E	J	W
I	L	E	K	L	H	C	G	E	F	H	D	B	F	I
Q	K	T	W	R	Q	K	F	X	F	X	E	F	Q	K
Y	H	U	Z	Y	I	R	L	I	D	Q	R	A	S	C
C	R	K	I	W	P	X	S	D	A	A	H	E	T	O
K	H	K	O	I	R	T	O	V	D	R	W	O	C	L
J	N	C	W	E	A	F	W	F	A	F	H	Z	M	L
U	L	X	T	N	L	K	O	M	L	J	V	V	K	U
Q	Z	T	Y	K	R	P	X	J	P	X	A	D	B	B
K	I	T	T	E	N	D	R	K	Y	C	M	B	V	C
L	Q	M	G	B	J	S	Q	Y	W	Y	W	J	I	L
A	N	J	G	F	G	K	T	Y	M	S	C	K	X	I

Bullock, Sow, Heat, Litter, Ewe, Kitten, Ram, Cow

8 of 8 words were placed in the search.

A simpler brainteaser on livestock terminologies can also come in this form

(i) a matured female pig s....w (3)

(ii) a young cat kit..en(6)

(iii) a male cattle b ...ll (4)

This type of word quizzes is abundantly available in daily newspapers. Solving these

quizzes is intrinsically motivating to a learner. A creative teacher can also turn these exercises into gaming by introducing competition between groups or individuals.

A quiz is described as a short informal test. Either of these instructional strategies introduces novelty into the classroom. The strategies introduce humor as learners interact with one another and can create fun and jokes at one another's expense. The uses of these strategies also facilitate movement in the classroom and enhance the infusion of multisensory instruction. Multisensory instruction includes the use of interesting and colorful images to attract the attention of learners. These strategies enable learners relate what they are learning to what they already know. The fun nature of these strategies encourages activity and this endears it to users as it is obvious that one is generally more inclined to be involved in fun.

SELF ASSESSMENT EXERCISE 1

1. Develop a simple crossword puzzle in teaching a concept in your subject area.

3.2 Benefits Of Quizzes, Games And Puzzles in The Teaching-Learning Process

The strategies above have been described as tools for enriching our classroom. Benefits inherent in the use of these strategies include:

- Improvement of problem solving skills in learners.
- Introduces novelty which increases learners' concentration.
- Improvement of the emotional and social climate of the classroom.
- Adds an element of fun and creates a relaxing classroom atmosphere.
- Establishes a positive learning environment.
- Provides a multisensory learning experience that improves retention.
- Enhances active learning sessions.
- Increases attention by creating a short burst of energizing excitement.
- Develops interaction and rapport among learners.

SELF ASSESSMENT EXERCISE 2

1. List 5 benefits of utilizing quizzes, games and puzzles in the instructional process.

3.3 Rationale for Using Quizzes, Games and Puzzles During Instruction

Discovery education (2008) listed some of these as steps to follow in the development of a puzzle:

- State the title of the puzzle i.e what topic / content are you focusing on?
- Titles are usually restricted to 49 letters.
- Determine the size of your word search puzzle.
- Size could be up to 40lettersx40 letters.
- Create options for the word search puzzle.

Note: puzzles where the words do not share any letters are faster to generate and easier to

solve.

In the adoption of a game, you must bear these in mind:

- Provide a clearly stated procedure on how the game is to be played. You can even model how it is to be played.
- Clearly state the behavioral objective(s) of the game.
- Ensure that the context and format of the game are related to the age and interest of the learners.
- Devise a simple but concrete way of evaluating learners' performance.
- Monitor learners as they engage in game play and provide specific and corrective feedback
- Show enthusiasm and encourage learners during gaming session.
- To ensure durability, laminate game board.

SELF ASSESSMENT EXERCISE 3

1. Briefly describe the steps you will take in the use of an instructional game in your class.

4.0 CONCLUSION

Quizzes, games and puzzles enhance the understanding of a topic and also create positive attitude in learners. These strategies make learning fun and more enjoyable. Mackenty (2006) as a closing remark stated that the use of these strategies as instructional tools is a bit of a "jump." There is rarely a problem encouraging kids to use games to learn rather it is the teachers that need to be encouraged and motivated to engage in the use of these strategies in order to create excitement in the classroom. As dynamic teachers, it is our responsibility to ensure that the classroom is made a place learners will long to come to. What better way to do that than to create and sustain a fun filled classroom!

5.0 SUMMARY

In this unit, you have learnt about instructional strategies which enrich the classroom environment. Emphasis was on quizzes, games and puzzles. Similarly, benefits of the strategies were described and the guidelines for their implementation were highlighted.

6.0 TUTOR MARKED ASSIGNMENT

1. Discuss the guidelines for using games in your classroom.
2. Develop a simple word search puzzle to explain a concept in your subject area.
3. Describe 5 importance of using a quiz, game and puzzle in the classroom.

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MODULE 3: TEACHING OLDER CHILDREN

UNIT 1: DEMONSTRATION METHOD

CONTENTS

1.0 Introduction

- 2.0 Objectives
- 3.0 Main Content
 - 3.1 What is demonstration?**
 - 3.1.1 Operational definition of demonstration as a teaching mode
 - 3.1.2 Features of demonstration
 - 3.1.3 Using demonstration mode of teaching
 - 3.2 General hints on the use of demonstration**
 - 3.3 Advantages and disadvantages of demonstration method**
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 - Self assessment exercise
- 4.0 Conclusion
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1.0 Introduction

As explained in the previous module, various modes or techniques exist for teaching. The group of students to be taught are usually given prime consideration in the choice of particular teaching techniques. Earlier we discussed Montessori; Poems, Songs, Rhymes, Play; and Quizzes, Games, Puzzles, as strategies for teaching children. The other group of learners to necessarily consider is the group of older students. Older students are matured learners and may require some detailed introduction and be able to learn on their own. Sometimes, they require some elements of independent study to meet up with the requirements of excellent studentship as they pursue a course of study.

Thus, given their level of experience, they do not require teaching strategies such as those used in teaching children. Strategies that allow them to learn effectively, even on their own, are to be given priority in teaching matured learners. In this module, you will learn about some of these strategies and their respective usefulness. In particular, in this unit, you will learn about demonstration method of teaching.

2.0 Objectives

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

- Describe demonstration as a method of teaching
- Explain the characteristic features of demonstration

- Enumerate the advantages and disadvantages of demonstration

3.0 Main Content

3.1 What is demonstration?

3.1.1 Operational definition of demonstration as a teaching mode

Demonstration is a method of teaching in which the teacher shows the learner a model performance that he (the learner) should match or even surpass. It is the basic, and most often used, method of instruction for teaching skills transfer. This is because it covers all the necessary steps in an effective learning order. The demonstration approach is a very effective method of teaching, especially when trainees have the opportunity to repeat the procedures. It is very useful for teaching motor and psycho-productive skills.

3.1.2 Features of demonstration

In using this method, the teacher should always plan to include at least a demonstration step and a performance step and then allows (the learners) to use other steps as deemed necessary.

During the demonstration step, the teacher shows the skills in the content for the purpose of making the student learn how to do it himself. The demonstration step gives trainees the opportunity to see and hear the details related to the skill being taught. Those details include the necessary background knowledge, the steps or procedure, the nomenclature, and the safety precautions.

On the other hand, during the performance step, you give learners the opportunity to practice what the teacher has demonstrated. This will provide an opportunity for the teacher to immediately correct mistakes and reinforce proper procedures, thereby helping you learn the task more quickly.

In between these two steps is the repetition step(s). The repetition step helps the average and slow learners and gives the trainees an additional opportunity to see and hear the skill being taught. The performance step gives all learners the opportunity to become proficient. Other steps might include the teacher observing learners on the skill for the purpose of establishing their level of achievement of the set objectives.

3.1.3 Using demonstration mode of teaching

The following tips (or techniques) will guide in your use of demonstration as a method of teaching:

- Position the students and instructional materials properly. If you direct the students to gather around a worktable or a training aid, make sure every student has an unobstructed view.
- Show and explain the operations. Perform the operations in step-by-step order. Whenever it is possible, present the telling and doing simultaneously. Do not hurry; you will not normally emphasize speed in performing operations or in moving from one operation to another in the demonstration step.
- Ensure that the students understand the first step before you proceed to the second, and so on.
- Repeat difficult operations.
- Pause briefly after each operation to observe student reaction and to check student comprehension.

- Observe safety precautions.
- Wear, and have your students wear, safety devices or clothing where necessary for example donning a safety mask, or tagging an electric cable may be necessary. Note that this may take a few minutes, especially if your students are using the devices for the first time, but you have not wasted the time. You have rather impressed on the students the importance of exercising extreme care in dealing with dangerous equipment.
- As you explain, give proper attention to appropriate terminologies. Call each part of the materials in use by its proper name each time you call attention to it. Getting students to retain the correct nomenclature requires more than just mentioning the name. The following suggestions should prove helpful: List the names of parts; Refer students to any available chart that shows the parts and names of parts; Conduct a terminology drill on the parts of the training aid while the aid is assembled or disassembled, as appropriate.
- Check student comprehension carefully. Ask questions during the demonstration step that require the students to recall nomenclature, procedural steps, underlying principles, safety precautions, and the like. Watch the class for reactions indicating lack of attention, confusion, or doubt; but do not depend solely upon visual observations.
- Always proceed from simple to complex in logical sequence; show the correct way to perform the steps the first time you demonstrate them.
- Along with teaching a skill, develop proper attitudes, such as the desire to perform safely, and the desire to exercise economy of time and effort.
- Repetition Steps: When using the demonstration method, you will always provide a demonstration step and a performance step. Generally, you will include one or more repetition steps between the demonstration step and the performance step.

3.2 General hints on the use of demonstration

Make every effort to get trainees to observe correct procedures the first time they try a new task. The most effective learning results when trainees use a skill immediately after you have taught it. So as soon as you teach trainees to do a job, have them practice the skill.

Teaching applicable safety precautions is especially important. Teach a safety precaution just before reaching the point in your demonstration where it applies. State the reason for the precaution so that the trainees will understand the need for compliance.

Patience is a virtue for any petty officer. If it does not come naturally to you, you must train yourself to be patient. A slow learner may never acquire the knowledge or skill you are trying to impart if you are impatient.

Avoid sarcasm toward a bungler; that person may be trying harder than you suspect. Nothing exhausts the patience of the expert as much as the fumbling attempts of a beginner; however, the instructor must patiently demonstrate and explain until the trainee acquires the needed competence. "Good instruction" means a more effective crew, and such an asset justifies any amount of patience.

If you find that your learners have not learned what you tried to teach them, do not react as if they disobeyed orders. If learners do not understand a certain lesson or operation, that could indicate a poor job of teaching. Remember that the old saying “If the learner hasn’t learned, the teacher hasn’t taught” might apply in some situations.

3.3 When to use the demonstration method

Demonstration is essential when teaching skills and processes. It provides some means of bringing reality to the classroom through the use of the actual materials that the content of the lesson is touching on. Working on hands on assignments improve assimilation and retention. For example the best way to teach learners titration of acids and bases in chemistry is to demonstrate how it is done and allow learners some practice time. It would be almost impossible to teach practical based content without the demonstration method.

Subjects like the technical and vocational studies therefore need extended periods for practical work. Unfortunately the benefits of this method are lost on students because of the high cost of providing functional laboratories and workshops. From the learning theories you worked on in module 1, you will see that the demonstration method give an opportunity for constructivist learning.

Self assessment exercise

Give a succinct description of demonstration as a method of teaching

What are the advantages of demonstration?

4.0 Conclusion

Learners learn better by doing. A teaching mode that allows the learners to be involved in hands-on activities will usually yield better learning. Demonstration provides for the teacher, a means of bringing reality into the classroom, and for the learners, an elimination of abstraction.

5.0 Summary

In this module, you have learnt one method of teaching older children. In particular, you studied demonstration as a method of teaching. Its features were discussed, as well as some basic hints about its usage. In general, demonstration is seen as a method that allows us to teacher skill-contents i.e. contents that requires practica descriptions.

6.0 Tutor marked assignment

Explain the conditions under which you will select demonstration as a method of teaching.

Identify five concepts for which you will use demonstration in a class of SSS 3 students. Describe what you will demonstrate and how for any three of the concepts you listed above.

7.0 Reference and further reading

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UNIT 2: QUESTIONING METHODS

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3.2.2 Functions of Questions

SELF ASSESSMENT EXERCISE

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SELF ASSESSMENT EXERCISE

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SELF ASSESSMENT EXERCISE

3.5 Presenting Questions in a Classroom

SELF ASSESSMENT EXERCISE

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further Readings

1.0 Introduction

Would you believe this? Most teachers do not use questions as effective teaching strategy, or tool if you like. If you don't, all you have to do is watch a lesson in progress. You would be amazed at the quality of questioning skills demonstrated by teachers granted that you are very skilled at questioning art yourself. Most lessons are programmed towards finishing the topic within the '**short**' or stipulated time allocated hence, the syllabus. There is therefore '**no time**' to ask meaningful or thought provoking (**critical**) questions. When questions are asked, they are often badly structured in most cases. Wait for this; some teachers often answer the questions themselves in a bout of teaching mannerisms. This unit exposes you to strategies for using questions as an effective teaching tool in achieving depth of thought in conceptual assimilation by learners and consequently, knowledge application skills development.

2.0 Objectives

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

- Define question
- State purposes and functions of questions in an instructional system
- Identify poorly structured questions when posed in the classrooms.
- Distinguish between types of questions based on Bloom's taxonomy of objectives
- Discuss the role of quality questions to education and development
- State presentation strategies for using questions during the teaching and learning process

3.0 Main Content

3.1 Defining Question

Basically, a question is any sentence which has an interrogative form or function. In classroom settings teacher questions are defined as instructional cues or stimuli that convey to students the content elements to be learned and directions for what they are to do and how they are to do it (Cotton, 2009). According to Kisko and Iyortsuun (1982), at every stage in education, questions are the core around which all communication between teacher and pupils takes place. They are a fundamental tool of teaching and lie at the very heart of developing critical thinking abilities in pupils. From the foregoing descriptions of questions, it is quite obvious that no teaching can occur where there are no questions. Teachers often ask many questions during the course of any instruction. This is not in doubt as the quality of the questions that they ask, are in doubt. This observation may not be unconnected with the pre-

service training of teachers which does not adequately prepare them for using questions as an effective tool of teaching (Cotton, 2009).

SELF ASSESSMENT EXERCISE

How would you define question within a classroom setting?

3.2 Purposes and Functions of Questions in an Instructional System

3.2.1 Purposes

Well structured questions serve 2 major purposes according to Farrant (1975). These are:

1. They are used to test previous knowledge when direct factual questions are asked using the four interrogatives; **Who, What, Where** and **When**.
2. Questions may be asked to **stimulate thought**.

In addition to these two major purposes of questions, a variety of purposes emerge from analysis of the literature, as reported by Cotton (2009):

- * To develop interest and motivate students to become actively involved in lessons
- * To evaluate students' preparation and check on homework or seatwork completion
- * To develop critical thinking skills and inquiring attitudes
- * To review and summarize previous lesson
- * To nurture insights by exposing new relationships
- * To assess achievement of instructional goals and objectives
- * To stimulate students to pursue knowledge on their own

These purposes are generally pursued in the context of classroom recitation, defined as a series of teacher questions, each eliciting a student response and sometimes a teacher reaction to that response. Within these recitations, students follow a series of steps (consciously or unconsciously) in order to produce responses to the questions posed. These steps include:

- * Attending to the question
- * Deciphering the meaning of the question

- * Generating a covert response (i.e., formulating a response in one's mind)
- * Generating an overt response; and often
- * Revising the response (based on teacher probing or other feedback)

These steps taken by students in providing responses to questions depict the fact that questions should generate thoughtful responses rather than spontaneous ones as common in our classrooms in this part of the world, especially in our primary and junior secondary classes. The steps call for a '**wait-time**' by both teachers and students before responses are made to the questions. The question at this point is; why ask thoughtful questions? Answer to this can be summed in the following nature of quality questions:

- Thoughtful questions deal in higher level **reasoning** by using the interrogatives, **how** and **why**.
- In other words, they deal in the **processes** of the **observed** phenomena and lend themselves to **critical thinking**.
- These sorts of questions should be **carefully structured** if the learners are to develop **independent minds** and be **creative**.

Excellent teachers endeavour to ask **quality** questions that **stimulate** thoughts **always**. They play down on factual questions. Average teachers think more of factual questions rather than think **deeply** in asking **thoughtful** questions that would develop the learners' minds. In a lighter mood, which one are you, an excellent or average teacher? Give it a thought. Believe this, most teachers in this country are mere **average** teachers. You only need to develop **good quality** questioning skills, and then sit in any classroom to be convinced that most teachers here are **just** average and it does show in the quality of students and professionals that our education system produces. Something has to be done about this and you can make a lot of difference in this regard by virtue of the training that you are going through. To be an excellent teacher, you **must work hard** at your questioning skills. It takes conscious efforts to do so.

3.2.2 Functions of Questions in a Classroom Setting

We had talked about two major purposes of questions in 3.2.1 above. Now let us break them down further into the following functions in the Teaching and Learning Process as identified by Kisko and Iyortsuun (1982):

1. Development of the processes of thinking and guiding inquiry and decision making.
2. Acquire and clarify information that is needed for the development of skills.
3. Determine the knowledge brought to the class so that the lesson can be made to meet the learners' needs.

4. Provide motivation by encouraging **active** participation in learning.
5. Lead students to consider new ideas, and make use of ideas already learned.
6. Help students to clarify their ideas, structure their study, and learn about things that interest them.
7. Encourage students to ask their own questions.
8. Gain information from learners on which to judge their performance and understanding.
9. Encourage teachers and learners to share ideas.
10. Challenge beliefs and guide reconsideration of the values that people hold.
11. Help teachers to assess the effectiveness of their own teaching strategies.
12. Assist teachers to identify the learners who might need **remedial** attention.

If you are to fulfill these purposes, questions should be constructed with the **goals** of the instruction in mind. Present the questions in a way that would have **great effects**. You **must** predetermine before every lesson, which piece of information is **most** important and therefore **worth** remembering. The guiding philosophy for determining the most important information worth remembering is its **utilization value** by the learners in **novel** situations that they would encounter as they develop an understanding of themselves and the world they live in. Take note that information which is of **least** value is that which has no practical application beyond **examinations** and **grading** (Kissock and Iyortsuun, 1982). Incidentally, most lessons in our country are geared towards passing the prescribed examinations rather than acquisition of knowledge that could be used in understanding observed phenomena and solving associated thereby making life comfortable for humanity.

SELF ASSESSMENT EXERCISE

1. What purposes would you adduce for questions within an instructional system?
2. What goes on in the mind of a learner each time a question is posed to him/her?
3. What would you use questions for in a classroom situation?

3.3 Poorly Structured Questions

Farrant (1980) identified eight poorly structured questions. Six of these are common with us here. They are:

1. **Vague or Very General Questions**; in most cases, learners do not have answers to them at all or there could be many possible answers. For example, 'What do you find

on the ocean?’ There would be many correct answers to this question. Think of it yourself there would be very many things that one can find on the ocean. So, which will be correct, which would be wrong?

2. **Rhetorical Questions;** these are usually put in interrogative phrases like, ‘isn’t it?’, ‘don’t you think so?’ Obviously, no answers are required. The responses to these types of questions are just mere approvals, ‘YEEEEES.....’ the learners would usually chorus.
3. **Post Script Questions;** these are like the rhetorical questions that require no answers. They are usually ‘after thought’ questions which are never designed to help the course of the lesson. The teacher suddenly realizes that he should have asked some questions and quickly frames one; ‘thermometers are used to measure temperature. What instrument is used to measure temperature?’
4. **Fill-In-The-Blank Questions;** when written, these are good questions that test factual knowledge. However, when asked orally, they are **bad** questions. For instance, questions such as; ‘anaerobic respiration does not require...What?’ Merely cover up a teacher who does not put his thought into proper question form before asking the question.
5. **Repeated Questions;** this is when teachers ask a question in two or more different forms before expecting the learners to provide an answer. The question is simply not well thought out.

6. Multiple Questions;

These are similar to repeated questions in their not being properly thought out before they are asked. They tend to grow as the teacher thinks while trying to ask the questions. ‘Which of the sons of Jesse did Samuel anoint to be king and how did he choose him? Was his choice dictated by reason or other means and if so, how was it done?’

You would have discovered that you commit some of these pitfalls of questioning skills. Never mind, you are not alone, most teachers do. This unit is designed to help you identify your weakness and to improve on your questioning skills.

SELF ASSESSMENT EXERCISE

Write short notes on five (5) poorly structured questions.

3.4 Types of questions

Types of questions are based on the ‘Blooms Taxonomy of Objectives’. There are two main domains of questions: **cognitive** and **affective**.

3.4.1 Cognitive Domain

These are concerned with intellectual understanding. Teachers usually use this to direct attention to the learners' abilities to use ideas and information earlier presented. Cognitive domain involves a **hierarchical** arrangement of abilities from the lowest to the highest cognitive levels. The cognitive domain according to Bloom (1956) includes;

- **Knowledge** or Recall questions.
- **Comprehension** which includes translation and interpretation
- **Application**
- **Analysis**
- **Synthesis**
- **Evaluation**

The following key words are usually used with each level:

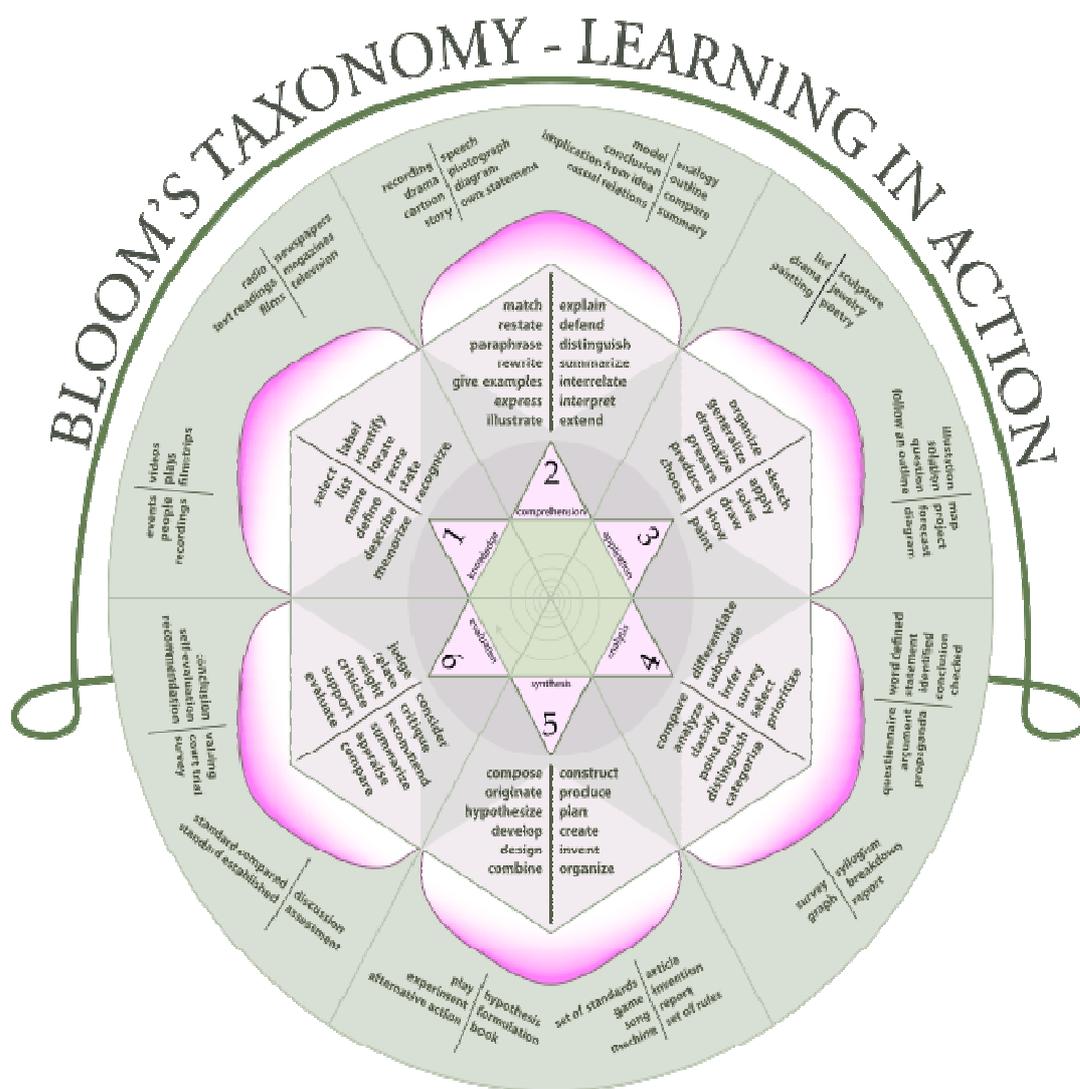
1. Knowledge/**What**
2. Translation/**Restate**
3. Interpretation/**Compare** (Comprehension Level)
4. Application/**How**
5. Analysis/ **Why**
6. Synthesis/**Create**
7. Evaluation/**Judge** (What else does a Judge do in the court in judging a case if not to evaluate evidences before him/her in determining the case?)

The cognitive domain six (6) learned capabilities have been arranged in order of simplicity to complexity. The abilities (Learned Capabilities) demonstrated with these levels are:

- **Knowledge** (Repeating information; during which the thinking activities involved is simply 'Remembering' or 'Recall').
- **Comprehension** (Translation and Interpretation) '**Understanding**', during which the thinking ability is **Convergent**, that is, focused on a particular concept.
- **Application**, Analysis, and Synthesis (Using information, during which the thinking activity is **Divergent**, which is, being able to use the concept under a novel situation entirely).
- **Evaluation** 'Judgment', during which the thinking ability is **Evaluative** and **Judgmental**.

A characteristic of the hierarchical nature of cognitive questions above is that it is not possible to answer the higher level questions without being able to answer the lower level questions.

Take time to observe the Bloom's rose critically. You will find at the core of the 'rose' the six cognitive domain learning activities (or learned capabilities), with each radiating out to the various action verbs that describe it. These verbs can be used in formulating questions that fits each activity.



Bloom's Rose (Source: <http://commons.wikimedia.org/wik/image>. Bloom%27s_Rose.png)

3.4.2 Affective Domain

These types of questions are concerned with **Emotions, Attitudes** and **Values**. They are also hierarchical in nature and important in education because they focus attention on attitude changes that are stated in course objectives. Affective Domain questions include: **Receiving, Responding, Valuing, Organizing a Value Set** and **Characterizing by Value Complex** (Krathwohl, et al.).

Those were the hierarchy of affective domain questions. Now, give a deep thought to the following process of belief.

- At the lowest level of **Receiving**, the person simply become aware of an object or idea and pays some attention to it.
- At the **Responding** level, the student elicits a reaction to the idea received either by being asked or out of his own volition.
- At the third level of **Valuing**, the idea is **accepted**.
- The accepted idea is seen as being valuable and worth **Arguing** for or **Defending**.
- At the **Organizing** level, the learner makes the new value or belief fit with already held values and beliefs. As a result of thinking at this level, the values a person holds are made consistent with each other.
- The final stage of **Characterizing Value Complex** represents the point at which the value becomes an **ACCEPTED** part of the individual. This is the point when the learner can express his mind and feelings about any issue and possibly defend it as his own or what he believes. Consequently, it might be difficult to change his mind about any issue unless there is a better argument or proposition.

This process of affective domain takes a long time, so no teacher can accomplish it within the framework of a single lesson. You should however continue to build on the process **formally** and **informally** whenever you have contacts with the learners.

Teachers often avoid the affective domain questions which require that the learners make **judgments**, consider **attitudes, feelings, beliefs** and **emotions** which might influence their daily actions. Where is the time for these types of questions? You might say. Excellent teachers **create** the time. Here lies the difference between the Nigerian education and those of the industrialized countries. Teachers need to ask '**higher-order-thinking (HOT)**' questions as against the '**lower-order-thinking (LOT)**' questions that lead only to '**rote-learning**'. This is the clog that we must remove from the Nigerian education system. Higher levels thinking are required if the learners and adults are to solve problems, which demand **reflective decision making**. The learners should therefore be given opportunities to think for themselves by asking and responding to questions that go beyond recall of information earlier presented to them. To develop the skills of critical thinking, you should allow the learners the **freedom** of raising questions of **interest** and **concerns** to them. This is the basis for the development of the skills of **research** and **project designs** in our Curriculum.

SELF ASSESSMENT EXERCISE

1. Using any concept in your subject area, produce questions for all the levels of cognitive domain of learned capabilities.
2. Describe the process of belief in an issue.

3.5. Presenting Questions in a Classroom

Teachers often ask so many questions during the course of a lesson, many of which are usually at the recall level (Kissock and Iyortsuun, 1982). More often than not, these questions are answered by the teachers themselves. This behavior constitutes what is generally referred to as distractive mannerism in teaching. Enough time should be **created** for the students to **respond** to your questions. Usually 1-3 seconds between the end of the teacher's question and the expected response from the learners. This is what is referred to as the '**wait-time**' (Cotton, 2009).

- It is necessary to give adequate time to the learners to **think** about the question. This would encourage them to initiate comments on the raised question.
- You should **always** encourage the learners to ask questions of their own in line with the concept of discourse.
- When this is done, they are encouraged to develop skills of **inquiry** and **critical thinking**.
- Try and teach your students to ask questions of the higher domain.
- Respond to the learners' answers with pleasantries such as; **good, all right, I agree, excellent**, etc.
- Non-verbal responses are good for this purpose too.
- Most importantly, you may also respond by posing another question that would set the learners thinking. This is the much talked about **Socratic Method** in classroom interaction. This strategy leads the learners to discover the **truth** themselves.
- You may also throw a learner's question open to the whole class for discussion or response. This would stimulate class **interactions** and **activities** thus limiting your own **domineering** role as the central figure in the problem solving situation.

There is no hard and fast rule in classroom presentation of questions. Just develop your own strategy making sure that the questions are diverse and of good qualities. Your performance objectives would help you to design good questions granted that you have designed them with precision. The following advice will help you:

- When questions are orally presented, wait for an appreciable time in order to allow students **think**.
- Call on students by their names when soliciting for responses.
- Distribute such calls evenly between students of varying abilities. Do not be tempted to use the brilliant students all the time. It can be demoralizing to other students and may lead to unhealthy rivalry and petty jealousy.
- Do not call on a student before you ask your question. Otherwise you will give an impression that that question is meant for that student alone. Others may simply not think about responding to the question.
- Do not accept '**no idea**' or '**absolute silence**' as answers. Always encourage the learners to express their minds whether their responses will be correct or not. It will help you carry ALL students along with you.
- Call on students who do not volunteer answers. Let them realize that you are not trying to ridicule but rather making them participate in the lesson.
- Avoid repeating questions. This will help to keep the attention of the students.
- Ask questions at the point in the lesson where they can have the **best** effect, when students are interested, ready and able to answer.
- State questions clearly so that **only ONE answer can be correct**, if the question is understood.
- Encourage students to comment on other students' responses.
- Present 'key' or 'focal' questions at the beginning of a lesson and not at the end.

- Do not of course, answer your own questions unless students have been given time to respond and are unable to do so. Situations like this provide good opportunities for learners to carry out their own research on the concept of discussion. This is an opportunity you should not let go by. Students should also be made responsible for what they learn through their own research of some aspects of the concept of discussion. Make the learners feel that they too are **important** in the Teaching and Learning Process by allowing them to make contributions to the problems under study. Do not ‘spoon feed’ them.

SELF ASSESSMENT EXERCISE

Set out the **dos** and **don'ts** of classroom presentation of questions.

4.0 CONCLUSION

This unit has exposed you to the importance of **questioning** as an effective teaching strategy. It has shown ‘types of questions’ that are used in the course of ‘instruction’ and how to present them with the desired effects. You should realize that to be skilled at preparing questions, there is a need to understand the various types of questions which can be created, the effect each type has on **thinking**, and their relationships to the lesson **objectives**. It is very important that you know how to **phrase** and **organise** questions if the desired **impact** is to be **achieved**. Presenting questions effectively requires knowledge of factors involved in ‘interpersonal communication’ and the ability to make use of these factors in a **dynamic** classroom setting. Reacting to students’ responses require **sensitivity** to individual feelings and ability to **listen** and respond in ways that encourage **thought**. Do not be discouraged if your initial attempts at using questions effectively meet with some flaws. This can be expected with any new skill being learned. With practice, you will improve, and this will ensure that your students become actively involved in their learning and better able to continue learning themselves, long after they have left you and the school.

5.0 SUMMARY

In this unit, you learnt about the concept of questioning method as an effective teaching strategy. Definition, purposes and functions of questions within the classroom situation had been discussed. You also learned to identify poorly structured questions in order to prevent you from using them in the classroom. Very essentially, types of questions in the cognitive and affective domains and their hierarchy were learned. Finally, you learned to use questions effectively within the teaching and learning process.

6.0 TUTOR MARKED ASSIGNMENT

1. Give a working definition of question within a classroom setting?
2. List 5 important purposes for questions in an instructional process.

3. How does a learner process a question in his mind before answering it?
4. Give 4 characteristics of poorly structured questions.
5. Using any concept in your subject area, produce questions for all the levels of cognitive domain of learning.
6. Set out the **dos** and **don'ts** of classroom presentation of questions.

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UNIT 3 DISCUSSIONS, AND RELATED STRATEGIES

CONTENT

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Body
 - 3.1 Discussion Strategy
 - 3.2 Debate
 - 3.3 Brainstorming
 - 3.4 Think, Pair and Share
 - 3.5 Learner-led review session
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

In the last decade there has been an explosion of interests in ‘active learning’ and ‘cooperative learning’. These approaches involve a variety of instructional strategies in which learners are guided through activities and various forms of interactions to learn. These include activities such as group discussions, debates, inquiry, questioning, brainstorming, simulation, role play, games, projects, demonstration, drama, fieldtrips to mention a few. These activities are dynamic and interactive. They are meant to motivate learners to seek solutions, exchange ideas, and share information among one another and their teacher.

This unit will take you through some of these strategies; the ones that involve learner to learner communication and collaboration.

2.0 OBJECTIVES

By the end of this unit, you should be able to

- identify some instructional strategies that promote learning through inter-learner talk base activities.
- explain the conduct class discussions, debates, and brainstorming activities
- select appropriate teaching/learning activities for specific classroom presentations
- demonstrate at least four of the teaching/learning activities in classroom presentation.

3.0 MAIN BODY

3.1 Discussion Strategy

The discussion strategy is both expository and interactive. It is a strategy in which ideas and information are exchanged and shared between teacher and learner(s) or between learner(s) and learner(s). By this nature, one would expect that learners involved would have had some level of repository knowledge on the subject matter to be discussed. Learners draw from their experiences in the discussion process. This would suggest that the topic for discussion would be one in which the learners would have had experiences to share. If learners in Lagos Nigeria are asked to discuss ‘natural occurring disasters’ for instance, they can only be

expected to contribute their first hand experiences on the natural floods in parts of Lagos state, landslides in Anambra state, and maybe locusts in Kano state. If their curriculum offerings are enriched with films and videos, or if the learners are drawn from a more international background, the discussion of the topic could extend to Tsunami experiences, volcanic eruptions, earthquakes and hurricanes. By listening to each other in groups, and making contributions to the discussions, they could come up on their own with the causes, magnitudes of damage, and preventive and management measures.

This method refers to learner - to - learner talk with occasional intervention by the teacher. The method involves the use of small group of learners where each group will have a leader who initiates the discussion of the issue or subject matter. It should be noted that the learners are more active than the teacher when this method is used. But care should be taken to avoid the discussion being dominated by some learners. Every member of a small group should be given equal opportunity or chances of making contributions to any discussion. The bits of contributions from the group members will enlarge the horizon of each group member's knowledge of the subject matter.

The more varied the pool of experiences within a discussion group the better. Not all topics are suitable for discussion. Also one is not likely to ask children at the junior primary level to hold group discussions.

Conduct of Group Discussion

Not all topics are suitable for group discussions. You are not likely to seat a group of students to discuss how acid-base titrations are done in Chemistry. You will show them how by demonstration of the process. So your very first step in conducting a discussion session with your students is to ensure that the subject matter is amenable to discussion. Do the learners have their own experiences to contribute? Are they likely to have varied opinions on an issue? Is the object or subject of interest a fairly commonly occurring phenomenon? If the answers are "yes" then go on with the discussion of the topic.

The class, if large, could be divided into smaller groups within the class to give room for more meaningful interactions. Make sure that each group is a heterogeneous group so that there could be cross-fertilization of ideas. Appoint a leader and a recorder for each group and make sure the materials needed are provided. The teacher can initiate the discussion by introducing a topic to the class and asking each group to work on an assigned subtopic. Each member of the group gets an opportunity to contribute his/her own opinions or ideas.

During the discussion the teacher moves around to observe the different groups and assist where he is needed. A specific time is allotted for the duration of the discussions, after which the whole class comes together to take reports from the groups. Individuals from other groups could make their contributions or ask questions.

The teacher then summarizes the inputs from all the groups on the chalkboard.

Class discussions could come in various forms, for example.

- **Stand Up and Share:** Here, after the teacher asks a question, students discuss and report their findings to the class. The best answers can be shared on the board, or projected through overhead transparency or PowerPoint presentation. When an individual student in a group has something to share with the class, he or she stands up and the teacher calls on the student to respond.
- **Roam the Room:** Here, students move around to view the work of other groups and return to their group to Round Robin share what they have learned.

Self Assessment Exercise:

Make list of any four topics in upper primary or junior secondary curriculum that would be amenable to group discussions in a class. For each topic state the possible background experiences that the learners would bring to bear on the discussions.

3.2 Other Discussion-based Strategies**DEBATES**

These can be formal (whole school or inter school) or informal (class based), individual or group. Debates allow learners the opportunity to take a position and gather data and logic to support that view critically. Debates also give learners experience with verbal presentations. Teacher asks learners their personal view on an issue and then makes them argue the opposite positions. Debates staged in class can be effective tools for encouraging learners to think about several sides of an issue.

The teacher could kick off a debate by raising an issue that has opposing views. He then divides the class into two or more groups according to their opinions. Each group is then given the time to discuss and research their view, align their points of argument, and choose their representatives (debaters).

The teacher could be the judge or appoint judges to listen to the arguments from opposing sides. Procedures and rules will be set for the debate. Points will be awarded for various factors of the process, e.g. ideas, fluency, comportsment, etc. The group with the highest points win. However the teacher must explain how the points will be scored.

Debates use competition as a motivation for group cooperation and hard work. It encourages learner research, confidence, and oratory. It adds a lot of excitement to learning.

BRAINSTORMING

Brainstorming is a large or small group activity which encourages learner to focus on a topic and contribute to the free flow of ideas. The teacher may begin by posing a question or a problem, or by introducing a topic. Learners then express possible answers, relevant words and ideas. Contributions are accepted without criticism or judgment. Initially, some learners may be reluctant to speak out in a group setting, but brainstorming is an open sharing activity which encourages all learners to participate. By expressing ideas and listening to what others say, learners adjust their previous knowledge or understanding, accommodate new information and increase their level of awareness.

Teachers should emphasize active listening during these sessions. Learners should be encouraged to listen carefully and politely to what their classmates contribute, to tell the speakers or the teacher when they cannot hear others clearly and to think of different suggestions or responses to share.

Purpose of Brainstorming

- to focus learners' attention on a particular topic
- to generate a quantity of ideas
- to teach acceptance and respect for individual differences
- to encourage learners to take risks in sharing their ideas and opinions

- to demonstrate to learners that their knowledge and their language abilities are valued and accepted
- to introduce the practice of idea collection prior to beginning tasks such as writing or solving problems
- to provide an opportunity for learners to share ideas and expand their existing knowledge by building on each other's contributions

Steps for the use of Brainstorming

1. Introduce the Session.
2. Review the reason for the brainstorming session; discuss the ground rules, and the procedure to be used.
3. Warm-Up.
Provide a warm up activity (5 to 10 minutes) that helps the group get used to the excitement possible in a brainstorming session. This activity should be on a neutral subject that will encourage learners to be creative. The teacher may want to end the warm up by having the learners discuss what could be said about the ideas that would prevent brainstorming from being successful.
4. Brainstorming.
This is the creative part! Set a time limit. Sometimes it is effective to call time and then allow 5 more minutes. Stop when there is still excitement; do not force the group to work. Guide the group to generate as many ideas as possible. All suggestions made must be noted by the teacher on the chalkboard. The teacher should use the speaker's own words. If the speaker's idea is long, the teacher may need to summarize it and verify with the originator if the summary is correct.
5. Process the Ideas.
6. Review ideas for clarification, making sure everyone understands each item. Similar ideas should be combined and grouped. At this point you can eliminate duplicate ideas and remove ideas.

Establish a consensus if appropriate. Have the class vote on ten ideas to consider, then have the class vote on five of the ideas and tally the results to get a priority of feelings of the class.

LEARNER-LED REVIEW SESSIONS

Instead of the traditional instructor-led review session, have the learners do the work. This is a problem solving approach. For example, learners may spend half the class time working in small groups reviewing materials and finding answers to posed problems or questions, or sorting out issues. Each learner is to ask at least one question related to the material he or she doesn't understand, and to try to answer a question raised by another learner. Learners can also practice discussing, illustrating and applying difficult materials or concepts. For the second half of the review session, the whole class works together. Learners may ask questions and other learners volunteer to answer them. Teacher speaks only if there is a problem. She should explain what will be going on ahead of time so learners have a sense of direction and are less frustrated. Such learner-led learning strategies are gaining more support in educational circles.

Self assessment exercise: Give the summary of the three discussion based methods outline above, attempting to differentiate between them.

3.3 Think, Pair and Share

Think-Pair-Share is a method designed to provide learners with "food for thought" on given topics enabling them to formulate individual ideas and share these ideas with another learners. It is a learning strategy developed to encourage learner classroom participation. Rather than using a basic recitation method in which a teacher poses a question and one learner offers a response, Think-Pair-Share encourages a high degree of learner response and can help keep learners on task.

How it is done

The teacher gives learners a task such as a question or problem to solve, an original example to develop, etc. Have them work on this for 2-5 minutes alone (THINK). Then have them discuss their ideas for 3-5 minutes with another learner (PAIR). Finally, ask or choose learner pairs to share their ideas with the whole class (SHARE).

Teachers may also ask learners to write or draw their responses while doing the Think-Pair-Share activity. Think, Pair, Share helps learners develop conceptual understanding of a topic, develop the ability to filter information and draw conclusions, and develop the ability to consider other points of view.

Hints and Management Ideas

- **Assign Partners** - Be sure to assign discussion partners rather than just saying "Turn to a partner and talk it over." When you don't assign partners, learners frequently turn to the most popular learner and leave the other person out.
- **Change Partners** - Switch the discussion partners frequently. With learners seated in teams, they can pair with the person beside them for one discussion and the person across from them for the next discussion.
- **Give Think Time** - Be sure to provide adequate "think time."
- **Monitor Discussions** - Walk around and monitor the discussion stage. You will frequently hear misunderstandings that you can address during the whole-group discussion that follows.
- **Timed-Pair-Share** - If you notice that one person in each pair is monopolizing the conversation, you can switch to "Timed-Pair-Share." In this modification, you give each partner a certain amount of time to talk. (For example, say that Learners #1 and #3 will begin the discussion. After 60 seconds, call time and ask the others to share their ideas.)
- **Rallyrobin** - If learners have to list ideas in their discussion, ask them to take turns. (For example, if they are to name all the states of the federation, have them take turns naming the states. This allows for more equal participation.) The structure variation name is Rallyrobin (similar to Rallytable, but kids are talking instead of taking turns writing).
- **Randomly Select Learners** - During the sharing stage at the end, call on learners randomly. You can do this by having a container with names number of learners written on pieces of paper. (One number for each learner in the class, according to their number on your register.) Draw out a piece of paper and ask that person to tell what their PARTNER said. The first time you do this; expect them to be quite shocked! Most kids don't listen well, and all they know is what they said! If you keep using this strategy, they will learn to listen to their partner.

- **Questioning** - Think-Pair-Share can be used for a single question or a series of questions. You might use it one time at the beginning of class to say "What do you know about _____?" or at the end of class to say "What have you learned today?"

Self Assessment Exercises

- (a) Compare and contrast Activating Prior Knowledge and Demonstration Methods.
- (b) State three benefits of Field Trip and Project Method.

4.0 Conclusion

This unit has shown some of the innovative strategies that you could use to lead learners to a better understanding of the lessons they have to learn, by guiding them to actively participate in the conduct of the lesson. This eliminates learning interferences and obstructions by making every learner listen carefully to others. Involving learners actively in the learning process leads to the promotion of effective and sustainable learning. Always invoke a variety of teaching/learning activities, like group discussion approaches, in your teaching.

5.0 Summary

In this unit, we have learnt how to use the following strategies in instruction.

- Discussion Strategy
- Conduct of Group Discussion
- Debates
- Brainstorming, etc.

6.0 Tutor-Marked Assignment

- (a) List 4 types of instructional strategies that promote learner centered instruction.
- (b) Link each of your identified strategies to the theories of learning and communication in module 1.

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UNIT 4: DRAMATISATION AND ROLE PLAYING

1.0 INTRODUCTION

Drama is regarded as a lively and enjoyable method of exploring and learning about concepts related mostly to the affective domain. Drama involves active-learning and can be used in a wide range of subjects.

Role playing shares common aims with drama, but it is simple, brief and more flexible. Role playing can take two main forms.

- Role playing can be embedded within drama or be in form of an impromptu play-let or drama sketch. In this case learners are asked to act out a scene to illustrate a point about a character or behaviour in consideration.
- Role playing is also embedded in simulations. In this case, simulation is the main event but utilises an element of role playing. Generally simulations are more complex and lengthier than role playing.

Simulations will be treated fully in Unit 5 of this module.

In this unit, you will be exposed to the use of drama and role playing as instructional strategies for older children. Furthermore, benefits of drama/role play as instructional strategies will be discussed. Similarly, you will be guided on the ways of infusing drama / role play in the teaching-learning process.

This unit will also introduce you to role playing as it relates to simulations.

2.0 OBJECTIVES

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

- Discuss briefly the considerations in the adoption of drama and role playing as instructional strategies.
- Highlight the benefits of drama and role play as instructional strategies.
- State the guidelines for effective implementation of these strategies in the teaching-learning process.

3.0 MAIN CONTENT

3.1 ROLE PLAY AND DRAMA

Drama and role playing are categorized as experiential learning strategies. These are learner centred and activity oriented strategies which are regarded as inductive. Learners involved in drama and role playing are motivated due to their active participation. These strategies increase understanding and retention in learners as they are fully involved in the learning process.

Telling and acting stories is a hallmark of childhood and teachers should guide, model, and design dramatic experiences that make children smile while learning. By introducing drama into the classroom, learner's play can be channeled into teaching fundamental language, self-management, and character-building skills. Teachers could build vocabulary skills, improve reading comprehension, and expand writing techniques through drama activities designed in a step-by-step process. Drama activities are also used to develop teamwork and creative

problem solving skills in students. The drama technique is very versatile and amenable to use for topics in even the sciences and technology.

Drama entails the design and writing of scripts with story lines, and characters who speak and act out the story; the content to be taught is put into the words and actions of the characters in the drama.

Role playing involves “short dramas” which can be based on real world issues. i.e. it involves stepping into another (identifiable) person’s shoes. In this instance, the learner takes on the personality of the character/role he is playing and attempts to invoke the thought processes and actions of the role. Role play can be used with small groups.

Drama and role play stimulate discussion and training in group problem solving. It also promotes self reliance in learners. Role plays can be based on real world behavioural issues such as:

- Disease and health management
- Money and business.
- Illustrating stories from the Religions or Literature.
- Language drills.
-

3.2 Considerations in the adoption of drama/role play

In their article “virtual worlds and role playing”, Montecino, Smith & Young suggested the following as necessary in the adoption of these strategies:

- **Maintain control:-**The teacher should as much as possible have a clearly defined role which is basically that of a guide, helper and a facilitator. The teacher defines the structure of the role play but does not actively participate in it. Students should be in control. Allow some of the students to be moderators and do not pass negative remarks. The self esteem and confidence of the participants must be boosted.
- **Avoid controversial topics:-** Prepare yourself that opinions of learners may be provoking especially if it bothers on controversial topics. Sentiments of participants may colour objectivity. As much as possible, choose issues that will be less likely to provoke strong out bursts.
- **Have a mastery of the subject matter:-** It is essential that the teacher must have an adequate mastery of the subject matter. Clearly defined learning objectives must be stated for the role play. Review these learning objectives with students either before or after the role play. You must also understand how the role play will help students learn. Practice the role play in your imagination or with colleagues to be sure that there will be sufficient discussion possibilities.
- **Be a help mate:-**The teacher should be well prepared to assist students in the clarification of ideas.
- **Ensure avenue for reflection:** Provide enough time to discuss the process of role-playing. How did the students feel? What did they learn? What might have been done differently?

Self Assessment Exercise 1

Discuss briefly 5 important considerations in the adoption of role play as an instructional strategy.

3.3 Benefits of drama/role playing in the teaching – learning process.

Some of the benefits of infusing drama/role playing in the teaching – learning process include:

- Builds confidence in the learner and creates a sense of self-worth which promotes intrinsic motivation in the learner.
- Fosters the skills of group interactions such as discussion, negotiation, and reaching concession. It enhances interpersonal relationship among learners.
- Creates vicarious experience for learners as learners are able to imagine situations and characters. This encourages thinking and creativity as it places a great demand on learners' imagination.
- It is process-oriented rather than product-oriented.
- It places learners in limelight as the teacher's- role shifts to that of a guide and facilitator.
- Serves as a “mirror” for reflection as drama and role play can be regarded as therapeutic media which prepare students for life.
- Promotes an understanding of other people's position and their attitudes.

Self Assessment Exercise 2

List four benefits of drama and role playing in the classroom.

Guidelines for effective implementation of drama/role play in the teaching –learning process.

The Science Education Resource Centre at Carleton College listed the following as guidelines in effective use of drama/role play in the teaching – learning process. These include:-

- Define objectives: What topics/concept do you want the drama/role play to encompass? Will it include elements of conflict or a challenge? How much time do you and your class have to work on the role play? What do you expect of your students? Are they to write reports or make a presentation? Will the students role-play together or separately?
- Choose context and roles: Decide on a problem related to the chosen topic of study and a setting for the characters. Setting must be made realistic though not necessarily real. Work out each character's background by providing adequate information and defining goals of each character.
- Introduce the exercise – Engage students in the scenario by describing the setting and problem. Determine how many of the students have been involved in drama/ role play before and explain how this will benefit the current exercise. Outline your expectations to the learners.
- Student preparations/research: Students/participants will require some time to go through their characters and get into the roles for the exercise. They will want to ask

questions such as – why are they doing this character? Why did the teacher decide to adopt a role playing exercise?

- Concluding discussion involves a debriefing exercise. Students should have a forum to define what they have learnt and to reinforce it. This can be done in form of a reflective essay or in a class discussion moderated by the teacher.

Self Assessment Exercise 3

Discuss briefly the steps involved in the effective implementation of drama/role play in your classroom.

3.3 Role Playing in Simulations

This is a representation or model of a real (or sometimes imaginary) system, situation or phenomenon. In most cases, it simplifies or makes learning easier. In simulations the speech and actions are spontaneously generated by the learners as they play assigned roles.

Learners love playing roles. They enjoy taking on the identity of others. In the process they learn valuable social studies skills such as developing empathy and seeing situations from multiple perspectives. Simulations are also effective at helping learners engage in problem solving in real world contexts through the enactments of situations, for example, a simulation of a Court hearing in class are examples of simulations. Simulations and role plays are wonderful ways to make events from the past or present come alive. You as a teacher need a lot of practise to master them.

Role playing takes place in five stages:

Stage 1: Initiation and Direction

At this stage the teacher identifies a topic which requires learners to look at many sides of a difficult issue, requires the development of an opinion, or includes key players with interesting personalities. A role play is not the way to teach a procedure or process; it is an excellent way to explore an event, situation, or narrative with a crucial, decision making component.

Stage 2: Describing the Context

The teacher sets the context and makes sure learners do not fall into the trap of presenter-role playing with hindsight. The situation must be set up and all perspectives explained clearly.

Step 3: Roles

In a successful role playing activity everyone must have a role. There may only be five or six key roles, but the entire class should be engaged in the role playing in some way, albeit as jurors, or interested citizens, or newspaper reporters. Everyone has an assignment, something they do in the role play. Once everyone is assigned a role, time is needed for learners to understand their roles, to practice, to “try on” their new identity.

Stage 4: Enactment

Make sure learners stay in role, and proceed.

Stage 5: Debriefing

Depending upon the structure of the role playing activity, learners complete the action with a written reflection followed by an oral debriefing. The debriefing is the most important part of a role play; it is the teacher's chance to ask learners to discuss, to reason, to draw conclusions, and to pull everything together.

Simulations run in a very similar fashion, after the simulation problem or issue is carefully explained, the rules for the simulation or simulation "game" are carefully discussed. Roles must be specified and the resources or constraints of the simulation outlined. Again, the debriefing is important. Learners tend to focus on "who won," not what the process or procedure was.

4.4 CONCLUSION

Infusing drama and role play in the classroom instruction creates excitement and learners are able to establish connections with reality which makes learning more concrete. These strategies enliven the routine procedures of teaching- learning as it arouses learners' interest in the subject matter.

In the adoption of these strategies, the teacher should keep the drama/role play as simple as possible and its preparation should not take too much time.

5.0 SUMMARY

In this unit, you have learnt about:-

- The use of drama/role play as instructional strategies for older learners.
- Considerations required in the adoption of the strategies.
- Benefits of the strategies.
- Guidelines for the implementation of the strategies either in drama sketches or simulation.

6.0 TUTOR MARKED ASSIGNMENT

1. Develop a short and simple drama/role play in the teaching of a specific concept in your subject area. State how you would conduct your class instruction.
2. Mention three benefits of using drama/role play as instructional strategy in the classroom.

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UNIT 5: SIMULATION

5.1 Introduction

Some concepts and subjects require the exposure of learners to real experience to appreciate the intricacies of such concepts and acquire the required knowledge and capabilities in handling different situations in true live experiences.

Simulation is an excellent venue for students to learn experientially and provides opportunities for students to practice problem solving and psychomotor skills in a safe, controlled environment.

Simulations are a useful teaching strategy for illustrating a complex and changing situation. Simulations are (necessarily) less complex than the situations they represent.

In a simulation, the learner acts, the simulation reacts, the learner learns from this feedback. Examples of simulations: car and flight simulators, SIM City, Monopoly, mock elections, model UN. Note that in each of these cases, the “game” involves rules, and the students must make decisions. Each decision a student makes affects the outcome of the game.

5.2 Objectives

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

- i. Define Simulation
- ii. Identify various types of Simulation
- iii. Explain the power of simulation for instruction
- iv. Identify the steps in integrating simulation into classroom instruction
- v. Explain the conduct of Evaluation of Simulated Instruction

5.3 Main Content

3.1

3.1.1 What is Simulation?

The term simulation is used in different ways by different people. It can be defined as the process of creating a model of an existing or proposed system (e.g., a project, a business, a mine, a watershed, a forest, the organs in your body) in order to identify and understand those factors which control the system and/or to predict the future behaviour of the system. Almost any system which can be quantitatively described using equations and/or rules can be simulated.

The underlying purpose of simulation is to shed light on the underlying mechanisms that control the behaviour of a system. More practically, simulation can be used to predict the future behaviour of a system, and determine what you can do to influence that future behaviour. That is, simulation can be used to predict the way in which the system will evolve and respond to its surroundings, so that you can identify any necessary changes that will help make the system perform the way that you want it to.

For example, a fisheries biologist could dynamically simulate the salmon population in a river in order to predict changes to the population, and quantitatively understand the impacts on the salmon of possible actions (e.g., fishing, loss of habitat) to ensure that they do not go extinct at some point in the future.

3.1.2 Types of Simulation

Three main types of simulation can be identified: live, virtual, and constructive.

- **Live** - M&S involving real people operating real systems.
- **Virtual** - involving real people operating simulated systems.

Virtual simulations inject Human-in-the-Loop in a central role by exercising motor control skills (e.g., flying an airplane), decision making skills (e.g., committing fire control resources to action), or communication skills

- **Constructive** - this involves simulated people operating simulated systems. Real people stimulate (make inputs) to such simulations, but are not involved in determining the outcomes.

Live (live action) and virtual simulations are primarily used for training purposes, whereas a constructive simulation is used to view or predict outcomes like war gaming or stock market behavior. Each of these types is based on some reality and is intended to provide the user with a pseudo-experience without the danger, expense, or complexity of real life.

The Power of Simulation

Simulation is a powerful and important tool because it provides a way in which alternative designs, plans and/or policies can be evaluated without having to experiment on a real systems, which may be prohibitively costly, time-consuming, or simply impractical to do. That is, it allows you to ask "What if?" questions about a system without having to experiment on the actual system itself (and hence incur the costs of field tests, prototypes, etc.).

For example, simulation can be used as a teaching method in a family communication class to foster a feeling of empathy with others whereby the entire class is divided into groups of five or six, characterized as families, each of which will discuss concepts and issues in class and work on projects outside of class. The family groups will develop their own networks of communication as the semester progresses. Advantages of using the simulated family system include; students identifying with their group, relying on the others for support in group discussion and discovering their own communication behaviour as well as that of others.

While simulations are used for learning and training purposes, noted authors, such as Aldrich (2003) and Gibbons (2001) suggest that simulations in and of themselves are not instructional. Rather, a simulation only becomes instructional when instructional elements are included that help expose the learner to key parts or concepts of the system or environment. For example, an F-16 simulator is not inherently instructional because it is primarily intended to replicate the F-16 cockpit behavior and the environments the aircraft operates within. The simulator may be used for training purposes, but it requires an instructor or some other external element to identify key learning aspects of the system to the learner.

For the students to learn what you intend for them to learn from the simulation, you must hold a discussion during and/or after the game. This is integral to the students' learning. For example, there is so much one could have learned from playing Monopoly that went right through our heads because there was no discussion about what it all meant. (Not that there isn't time to play without focusing on learning. But that kind of play takes place outside of classrooms, not in them.)

In education, simulations have had their use under a number of different names. Ken Jones (1985) in the 1980s defined simulations as interactions between people such as role-playing. Others suggest that experiential learning activities like those found in team training or ropes courses are also simulations because they replicate the human decision-making processes groups may display, albeit in a very different environment. These can be considered instructional simulations because the effective use of these

simulation types include using instructional elements to help learners focus on key behaviors, concepts or principles.

With the ever decreasing cost of computing tools, virtual and constructive simulations are being used more and more. Simulation is used more and more in e-learning environments because of improved Web-authoring tools and an increasing demand for performance-based training. As a result, more non-technical personnel are involved designing simulation, a field dominated by engineers and computer scientists.

3.1.3 Simulation in Instruction

A simulation is a form of experiential learning. Simulations are instructional scenarios where the learner is placed in a "world" defined by the teacher. They represent a reality within which students interact. The teacher controls the parameters of this "world" and uses it to achieve the desired instructional results. Simulations are in way, a lab experiment where the students themselves are the test subjects. They experience the reality of the scenario and gather meaning from it. It is a strategy that fits well with the principles of constructivism.

Simulations promote the use of critical and evaluative thinking. The ambiguous or open ended nature of a simulation encourages students to contemplate the implications of a scenario. The situation feels real and thus leads to more engaging interaction by learners. They are motivating activities enjoyed by students of all ages.

Simulations take a number of forms. They may contain elements of a game, a role-play, or an activity that acts as a metaphor. The chief element is that they have context. Board games such as Monopoly or Careers are a type of simulation. The primary distinctions between a game and a "sim" are the nonlinear nature and the controlled ambiguity. Students must make decisions within its context. Success is usually determined by the industry and commitment of the participants. The goal is not to win but to acquire knowledge and understanding.

Advantages

- Enjoyable, motivating activity
- Element of reality is compatible with principles of constructivism
- Enhances appreciation of the more subtle aspects of a concept/principle
- Promotes critical thinking

Disadvantages

- Preparation time
- Cost can be an issue
- Assessment is more complex than some traditional teaching methods

What is its purpose?

Simulations promote concept attainment through experiential practice. Simulations are effective at helping students understand the nuances of a concept or circumstance. Students are often more deeply involved in simulations than other activities. Since they are living the activity the opportunity exists for increased engagement.

Issues from Social Studies for example, such as the management of the environment, politics, community, and culture can be more deeply appreciated through simulations. Similar to labs in a science class, the process itself educates the students. The goal of a simulation may be singular or multifaceted. Students might be expected to gain an understanding of inequity in society while participating in a resource distribution activity. A class gains an understanding of the Nigerian political system via a mock election campaign. Simulations can reinforce other skills indirectly. Debating, a method associated with some large scale simulations, is a skill sharpened within this context. Research skills are often applied to an activity.

3.1.4 How to Employ Simulation?

Guided by a set of parameters, students undertake to solve problems, adapt to issues arising from their scenario, and gain an awareness of the unique circumstances that exist within the confines of the simulation. Some simulations require one day, others may take weeks to complete. Scope and content varies greatly. This being true, specific guidelines change with the activity. Several principles however apply to all.

- Ensure that students understand the procedures before beginning. It improves efficacy if the students can enjoy uninterrupted participation. Frustration can arise with too many uncertainties. This will be counter productive.
- Try to anticipate questions before they are asked. The pace of some simulations is quick and the sense of reality is best maintained with ready responses. Monitor student progress.
- Know what you wish to accomplish. Many simulations can have more than one instructional goal. Developing a rubric for evaluation is a worthwhile step. If appropriate, students should be made aware of the specific outcomes expected of them.

The following guides you in to employ simulation in a typical classroom

Phase One: Orientation

- Explain to your students what simulations are about and for. (If you mention some common games they play which are simulations, they might start thinking about what real life complex situations the games model, and might learn something about them.)
- Describe the particular simulation.
- Ensure the students understand the purpose of the simulation.
- Outline the rules for the students. I put the rules on an overhead, and leave the overhead on during the simulation. You could also write the rules on bristle board, and hang this in a conspicuous place during the activity.
- Assign roles to the students.

Phase Two: The Simulation

- The students participate in the game, playing their roles as assigned. You, are the coach and referee. You should stay uninvolved, except when you notice that you can facilitate the educational opportunities the simulation presents.
- While your students are playing, you could make anecdotal records, or fill in checklists.

Phase Three: Debrief

For every teaching strategy involving a debrief, There are a number of ways in which debriefs can be done. Please mix and match the different forms of debriefs you use.

- Put the students into small groups.
- Choose three or four learning objectives for the simulation. Write up these learning objectives as questions for discussion. One question should be about how the students think the simulation is like the real thing and how it is not like the real thing. Give each small group of students one question to discuss.
- Tell the students how much time they have to discuss the questions.
- Five minutes before the time is up, visit each group with a card which has written on it: Five minutes until presentation. "Choose a speaker and write a summary of your discussion for the speaker to present to the class."

An alternative to the above method would be to put groups who have discussed different question together to discuss their different questions and answers.

This way, each group has an opportunity to discuss at least two of the questions.

- If you use this second method, you could have students write answers to the questions in a learning log instead of having them present to the class.

How to adapt Simulation

Simulations can typically be adapted internally to address the specific circumstances of the students and class environment. They can also be offered as a replacement for other teaching strategies thus themselves being an adaptation.

Opportunity for enrichment or modification exists. A Social Studies resource simulation can be adapted to fit a unit in Language Arts. The grade 6 and 7 themes of survival can be drawn out from the need to struggle to obtain limited resources. There are at least 3 ways simulations can be used and internally adapted to classrooms.

- Time - the arc of the activity can be adjusted.
- Content - some simulations offer content more appropriate to specific ages.
- Expectations - Not all students appreciate the subtleties of a concept as well as others. Rubrics can be developed to help the teacher determine the level of success.

3.1.5 Assessment and Evaluation

The nature of simulations means that experiences are more real than some other techniques. Their drawback can be the assessment. Teachers must monitor the process to ensure that students both understand the process and are benefiting from it. For this reason, it is very helpful to develop a rubric as a guide. Simulations are often best used as part of the process of learning rather than a summative measure of it. Follow-up activities may be helpful to establish a measure of comprehension. Some prepackaged simulations include assessment suggestions. See the resource page for examples. Listed below are a number of rubrics to use as samples and an interesting rubric generator.

Teachers may ask themselves a number of questions to assess the simulation and its apparent success.

- Does this simulation offer an appropriate measure of realism for my group of students?
- Are the desired instructional outcomes well defined?
- Is the level of ambiguity manageable for this group?
- Does the student demonstrate an understanding of his/her role?
- Are problem solving techniques in evidence?
- Does the research being generated match the nature of the problem?
- Is cooperation between participants in evidence?
- Has the student been able to resolve the issue satisfactorily?
- Does the student provide meaningful answers to probing questions?
- Will follow-up activities be necessary?

4.0 Conclusions

High-fidelity simulation integrated with other teaching innovations holds great promise as a strategy to better prepare the learner for the essential experiential learning that takes place on the unit. But it is unlikely that time spent in a simulation lab will speed the process of skills acquisition; it may even slow the process. It is worthy also to note that as long as teaching strategies remain unchanged and the student-teacher relationship continues to be sacrificed to efficiency, simulation promises only to add another layer to the technologic complexity of the post modern world without bringing comparable benefit.

5.0 Summary

In summary, Simulation is a powerful and important tool because it provides a way in which alternative designs, plans and/or policies can be evaluated without having to experiment on a real system, which may be prohibitively costly, time-consuming, or simply impractical to do. If properly employed in instructional situations, simulation promotes experiential learning and skills acquisition.

6.0 Tutor Marked Assignment

MODULE 4:

TEACHING MATURE LEARNERS

UNIT 4: LECTURES, SEMINARS, SYMPOSIUM

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1.0 Introduction

As earlier mentioned in the previous units, matured learners require some elements of independent study to meet up with the minimum requirements as they pursue a course of study. We began to look at the strategies that allow for evidenced independent study by

matured learners in the previous unit. In this unit you will learn about some other strategies that are used to teach older students and their respective usefulness. In particular, you will learn about lectures, seminars and symposium.

2.0 Objectives

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

- Describe lecture as a method of teaching
- Explain the characteristics or features of a lecture
- Enumerate the advantages and disadvantages of lecture
- Describe seminars as a method of teaching
- Discuss the characteristics of seminars
- Explain the advantages and disadvantages of seminar as a teaching method
- Describe symposium as a method of teaching
- Discuss the characteristics of symposium

3.0 Main Content

3.1 Lecture Method

3.1.1 What is a Lecture?

The noun "lecture" evolves from the Latin word *lectus*, meaning "to read." Its subsequent meaning as "a discourse on a given subject before an audience for purposes of instruction comes much later. According to Bligh (2000), lectures "represent a conception of education in which teachers who know give knowledge to students who do not and are therefore supposed to have nothing worth contributing."

Operationally, a lecture is an oral presentation that is intended to present information or teach people, usually students, about a particular subject or content, for example by a university teacher. Basically, lectures are used to convey critical information, history, background, theories and equations. Usually the lecturer will stand at the front of the room and recite or give information relevant to the lecture's content. Thus, apart from the lecturers' lecture, a politician's speech, a minister's sermon, or even a businessman's sales presentation are other forms of lecture.

Critics of lecture method point out that lecturing is mainly a one-way method of communication that does not involve significant audience participation. Therefore, lecturing is often contrasted to active learning. In spite of this criticism however, lecture delivery by talented speakers can be highly stimulating; at the very least, lectures have survived in the academics as a quick, cheap and efficient way of course delivery to a very large number of students in a particular field of study. Even though lecture method is much criticised as a teaching method, universities have not yet found practical alternative teaching methods for the large majority of their courses.

3.1.2 Features of a lecture

In lecture, the teacher or presenter talks perhaps with the use of the chalkboard, while the students listen quietly and sometimes take notes. Lecture method teaches you how to listen and also teaches the skills of notes taking. In lecture, it is usually assumed that the words of lecturers convey the same meaning to all the students in a lecture. It is also assumed that the students are listening with the intent to comprehend and remember the content that is being presented.

For greater effectiveness, many university courses relying on lectures supplement them with smaller discussion sections called tutorial sessions, seminars, demonstration or laboratory experiment sessions as a means of achieving active students' involvement in their learning. Usually but not always, these supplemental sections are led by postgraduate students, tutors, teaching/research assistants or fellows rather than senior academic staff members.

3.1.3 Advantages and disadvantages of lecture

The lecture method of teaching has the following advantages:

- Great volume of content is covered within a relatively short period of time
- Lecture provides a way of reaching large number of students
- Lecture develops students' notes taking skills
- Lecture promotes independent learning

The lecture method is also known for the following disadvantages:

- Lecture method is usually a one-way communication
- Students' participation in their learning is very minimal in lecture
- It gives little or no room for students to air their views

Self assessment exercise

Describe, in your own words, lecture as a method of teaching. Why would you as a teacher or lecturer decide as to adopt the method in your teaching?

What are the disadvantages of the lecture method? How would you work towards reducing the effect(s) of these disadvantages to improve your effectiveness?

3.2 Seminars

3.2.1 What is a seminar?

A seminar is a class, usually (but not always) at the University or College level, which consists of a small group of students and a teacher in a discussion or study of a topic or content. The *seminar method* is the most modern and advanced method of teaching, which is usually used in higher institutions of learning with matured learners. After the lecture, seminar is probably the next most widely used teaching method in advanced countries. Unlike the lecture method, the seminar provides a session within the presentation, when participants are allowed to ask questions, make comments, clarify issues etc.

3.2.2 Characteristics of a seminar

Seminar method of teaching is closely related to the tutorial method, which will be discussed in the next module. The distinction between what a tutorial is and what is a seminar is not so

clear-cut. To some it depends upon size (i.e. 'a 20 person group cannot be a tutorial because it is too big and is therefore a seminar') whereas to some other people, the seminar has a different structure (existence of a speaker and the audience) and different objectives. In tutorial, all participants including the tutor usually know what the topic to discuss in advance, and prepare for the session, while in seminar, only the presenter does. The level of participation of learners in a seminar makes it the main source for students to acquire some of the 'personal transferable skills', e.g. in presentation and group work.

3.2.3 Advantages and disadvantages of seminar

Seminar method of teaching is known for the following advantages:

- Very low teach to students ratio
- Improved students' participation
- Promotes inter-personal relationships among students
- Being a small group, the teacher is able to see and involve every learner in the group

Seminar method of teaching is known for the following disadvantages:

- Requires additional human resources (tutors) to take charge of several tutorial groups
- Using seminar method requires that the topic is not entirely new to the students
- It is not useful in large classes, which are common in the Nigerian society
- It is an expensive method of teaching, given that the required materials can be very scarce and costly
- It consumes time

Self assessment exercise

Discuss, in your own words the characteristics of a seminar

Explain the advantages and disadvantages of seminar as a method of teaching

3.3 Symposium

3.3.1 What is a Symposium?

A symposium consists of series of speeches, given by as many speakers as there are aspects of a problem or issue to talk about, to an audience and the audience participation. The symposium differs from the panel in that the speakers do not discuss the subject among themselves in a symposium. They make separate but related speeches, generally for between 5 to 10 minutes in length. In order to have a genuine symposium, the session must allow for both the formal speeches and the subsequent audience participation.

3.3.2 Characteristics of a symposium

Since it is rarely useful all alone by itself, symposium is usually used as a supplementary method of teaching, which enhances and extends the benefits of other teaching approaches. It offers the additional dimension of allowing the audience to ask questions about points which were not clear during the previous presentation. The forum also provides an opportunity for

correcting or clarifying possible misimpressions given by, or misinterpretation of, the speakers. It also provides a form of review in which the audience can again think through the issues, thereby providing greater clarity and additional order and design to the learning experience.

The most significant person in the presentation will not be one of the experts. More important to the success of a forum is the chairman, who will keep the question on target, sort out key questions for discussion, prod the special speakers if necessary, and summarize the significant findings at the end of the session. Other responsibilities of the chairman include introducing the speaker or speakers, reminding the audience to be ready to participate after the presentations are made, soliciting response from the larger group, clarifying questions and answers when necessary, avoiding awkward pauses of silence by posing questions himself, and keeping the discussion on the sharp edge of controversy. He must do all of this while refraining from a lengthy or prominent speaking role himself.

3.1.4 Advantages and disadvantages of symposium

The symposium method of teaching has the following advantages:

- It provides a means of generating and sustaining learners' interests. When people hear controversial points of view presented by speakers or debaters, they tend to be drawn into the subject at hand and subsequently want to interact with the viewpoints of the speakers
- It Provides ways of getting immediate feedback on areas of uncertainty about concepts
- It provides a means of getting learners involved in what is to be learnt

On the other hand, symposium method is also known for the following disadvantages:

- The questions and discussions time is usually limited
- Requires a lot of additional work from the teacher who will usually serve as the chairman of the session
- Requires an attractive subject, which are more often than not rare to come by in many subject areas
- If not well chosen, an issue or topic may interest the speakers but of little concern to the audience
- It takes time to plan and prosecute, however a teacher who uses various forms of discussion should invariably be a teacher who is committed to quality rather than quantity.

Self assessment exercise

Explain in your own words, symposium as a method of teaching.

Enumerate some basic features of symposium as a method of teaching. Why would you as a teacher or lecturer decide as to adopt the method in your teaching?

What are the disadvantages of the symposium method of teaching? How would you plan to overcome some of these disadvantages to improve your effectiveness?

4.0 Conclusion

In conclusion, the older learners are less tender and so, do not require spoon feeding teaching approaches as do children. We have discussed some of the approaches that can be found useful for teaching older students. Be it for children or for older learners, as teachers or lecturers, we should consider the features, as well as advantages and disadvantages of each teaching approach in our choice of methods.

5.0 Summary

In this unit, you have studied some strategies that are useful for teaching older learners. In particular, you studied lecture, seminar and symposium methods of teaching. The features of each of these strategies for teaching were discussed as well as their usefulness, advantages and disadvantages. On one hand, you have seen the lecture method as a more teacher centred approach, in which the teachers talks almost although the teaching session leaving little or no room for learner involvement. On the other hand, you have seen both seminar and symposium as more learner centred approaches, in which the learners are active participants in their learning activities. The choice of any of the methods is largely dependent on the content to teach, your group of learners and the purpose of instruction.

6.0 Tutor marked assignment

Describe the conditions under which each of the teaching techniques you studied in this module is considered useful.

Differentiate between a symposium and a seminar.

Lecture has been widely criticised for the passiveness of students. How would you (as a lecturer) use this point for the benefit of your students?

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UNIT 2: TUTORIALS, TEAM TEACHING, ETC.

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1.0 Introduction

Matured learners are those who are non negligible and who require some elements of independent study to meet up with the minimum requirements as they pursue a course of study. Given their experience, teaching matured learners require methodologies that allow some level of independent study and variety in their exposure. In this unit you will learn about some methods of teaching matured learners and their uses.

2.0 Objectives

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

- Define/describe the tutorial as a method of teaching
- Define/describe different types of tutorials
- Describe team teaching as a method of teaching
- Enumerate the various kinds of team teaching and their respective features
- Explain the effects and considerations of team teaching

3.0 Main Content

3.1 Tutorials

3.1.1. What is tutorial?

Tutorial is one method of teaching matured learners and is usually used with other teaching methods, like lecture and demonstration. It is designed for you to have some greater level of interaction with the content being taught within very small groups (usually less than 30). So, tutorial sessions are usually more interactive and more specific than the lecture or teaching sessions. A usually more knowledgeable person is appointed as the tutorial master and tutorial tasks or questions are set and administered by a lecturer or teacher. In a tutorial session, you seek to learn by example. The tutor guides each tutorial session by supplying the information required to complete a certain task.

3.1.2. Types of tutorial

Tutorial is one method of teaching matured learners and is usually used with other teaching methods, like lecture. Depending on the context, a tutorial can take many different forms, ranging from a set of instructions to complete a task to an interactive problem solving session (usually in academia). It could be a small class of one, or only a few learners, in which the tutorial master gives individual attention to the learners. In some places, tutorial sessions are fundamental to methods of university teaching. Putting tutorial classes in place in an institution requires some extent of additional academic staff.

In some foreign (American) universities, a tutorial, sometimes called a ‘recitation’, ‘tute’ or ‘preceptorials’, refers to a class of between 12 and 18 students that is supplementary to a large lecture class, and which gives students the opportunity to discuss the lectures and/or additional readings in smaller groups. These tutorials are often led by graduate students, normally known as ‘Teaching Assistants’ or ‘tutors’ (in South Africa), though it is not unheard of for the junior academic staff or even Professors to take a tutorial.

One other important feature of tutorials is that tutorial groups meet regularly with the guidance of a tutor. A tutorial session focuses on a certain earlier taught content, and generally proceeds with careful reading of selected primary texts and working through associated exercises.

Tutorials can also be computer-based or online. In computer-based or online instruction, a tutorial is a computer program whose purpose is to assist users in learning how to use (parts of) a software. There are basically two kinds of software tutorials – movie tutorials that you watch, and interactive tutorials where you follow an on-screen instructions (and in some cases watch short instruction movies), whereupon you do the tutorial exercises and get feedback depending on your actions. Some computer based tutorials can also be put up on the web.

3.1.3 Characteristics of tutorials

Tutorials usually have the following characteristics:

- A presentation of content, usually with an example or examples, often broken up into discrete modules or sections.
- Some method of review that reinforces or tests understanding of the content in the related module or section.
- A transition to additional modules or sections that builds on the instructions already provided. Tutorials can be *linear* or *branching*.

Self assessment exercise

Describe the term tutorials as a method of teaching

What are the various kinds of tutorials that you have learnt in this unit?

List and describe other kinds of tutorials that you have come across

What are the various characteristics of tutorials?

3.2 Team Teaching

3.2.1 What is team teaching

Team teaching is traditionally thought of as when more than one teacher or lecturer is involved in instruction within a classroom. There are a few different models of team teaching, and more than one model may be carried out within one class period. When team teaching is organized and carried out effectively, positive effects are felt by students. Research has shown that students taught using a team teaching approach have higher levels of achievement. There is also more contact with parents by teachers in a team teaching situation. Additionally, schools that employ team teaching have teachers who are more satisfied with their job, resulting in an improved work climate. There are many positive effects associated with team teaching, but there are also many things that need to be considered before jumping into a team teaching approach.

3.2.2 Types of team teaching

Team teaching comes in various forms. Traditionally, team teaching is a model in which two teachers within a classroom take equal responsibility for teaching the students and both teachers are actively involved in teaching at all times. One may be teaching while the other is writing notes on the board, or supervising students' work. This model of team teaching is referred to as 'traditional team' teaching.

'Supportive instruction' is another model of team teaching. In 'supportive instruction', one teacher teaches the material and the other teacher provides follow-up activities. The follow up activities can be in the form of problem solving (especially in mathematics and Physics) or supervised further readings, etc.

'Parallel instruction' is a form of team teaching in which students are split into two groups and each of the two teachers in team teaching is responsible for teaching one particular group.

'Differentiated split class' team teaching involves splitting students into two groups based on achievement. One teacher provides remedial instruction to students who are struggling on a skill while the other teacher provides enrichment to those who have grasped the skill.

The 'monitoring teacher' is another form of team teaching. In this model, one teacher assumes the role of instruction while the other teacher walks around the class and monitors students' behavior and progress. Different types of team teaching may be used within one class period.

There is also a type of team teaching in which the teachers or lecturers in the team share the content to be taught among themselves. Each of the teachers takes control of teaching when it is turn for him or her to teach his/her own content.

3.2.3 Considerations and cautions in team teaching

If team teaching is something you are thinking about implementing, ask yourself these questions before proposing the idea to colleagues:
Are the teachers involved open to trying new methods of instruction?
Are the teachers involved open-minded, optimistic people?
Are the teachers involved resourceful, flexible, and able and willing to communicate

effectively?

Are the team members honest, trustworthy, respectful people who won't be offended by constructive criticism?

3.2.3.1 Caution

Teachers involved in team teaching need to define what team teaching will look like in their classroom before implementing this model of instruction. The definition needs to include everything from goals and responsibilities to planning time. Lack of a unified definition or vision for team teaching could result in confusion by all involved, including the students. It could also result in an inconsistent classroom environment in which students play one teacher against the other.

Self assessment exercise

Explain what you understand by team teaching

Enumerate and describe the various kinds of team teaching that you learned in this unit

What are the guiding principles in the effective use of team teaching?

4.0 Conclusion

Given that higher expectations are placed on both students and teachers of the 21st century than ever before, more proactive methods of teaching need to be sought in order to meet these numerous expectations. Different studies have been conducted that address different teaching methods for helping students meet these expectations. Tutorials and team teaching is just one of the methods that have been explored.

5.0 Summary

In this unit, you have learnt about two teaching methodologies that are useful for matured learners – tutorials and team teaching. Tutorials allow you as learners to interact with concepts, under the guidance of more knowledgeable tutors, in small groups thereby providing more effective guidance in learning. On the other hand, team teaching allows learners to have content delivery by many lecturers thereby promoting some level of expertise and consequently greater understanding on the part of the learners. Different kinds of these two teaching techniques were also considered in this unit. You should note that there is no single method of teaching that can be referred to as the best method. Methods are only good in the context in which they are found useful. A very good method in one context may be found so unhelpful in other contexts.

6.0 Tutor Marked Assignment

Compare and contrast team teaching and tutorials as methods of teaching matured learners

Do you agree with the position that “tutorials allow for greater students’ participation in their learning”? If yes, why; and if not why not?

Sharing contents in between teachers or lecturers in a team teaching is better than differentiated splitting class. Discuss

7.0 References/Further Readings

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UNIT 3: CASE STUDIES, PROJECTS, INVESTIGATIVE METHODS

1.0 Introduction

Medical schools have used the case method of instruction for years. Seasoned physicians have always posed problems to interns, residents, and students as they made their rounds. Not until McMaster University of Canada developed the method for its entire curriculum however, was the full potential of the approach realized. Since then, the method has spread to other medical schools that have been frustrated with the fact-crammed lectures in traditional curricula. Also project and other investigative methods have been used in different fields of sciences especially at the summative evaluation stage of their programmes.

2.0 Objectives

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

- i. Explain Case Studies as an instructional strategy
- ii. Explain how to write cases
- iii. Identify different format of cases studies
- iv. Describe the project method of instruction
- v. Explain the Inquiry method of instruction
- vi. Identify the steps in inquiry methods

3.0 Main Content

3.1 Case Studies as a Teaching Technique

Case studies refer to using real or simulated stories known as cases to teach students about their field. Harvard University has been the leader in developing cases in different subjects (Christensen 1986), and has produced faculty who have carried their enthusiasm for the method to other institutions. Valuable case books in the field have been written about the pedagogy (Erskine et al. 1981). Apart from law, disciplines such as medicine, psychology, and teacher's education have used the method to capture the imagination of students.

In these disciplines, cases are typically written as dilemmas that give a personal history of an individual, institution, or business faced with a problem that must be solved. Background information, charts, graphs, and tables may be integrated into the tale or appended. The teacher's goal is to help the students work through the facts and analysis of the problem and then consider possible solutions and consequences of the actions that might be taken.

Based on these experiences reported, the following qualities accrue to case studies as teaching technique:

1. Case method involves learning by doing, the development of analytical and decision-making skills, the internalization of learning, learning how to grapple with messy real-life problems, the development of skills in oral communications, and often team work. "It's a rehearsal for life."
2. Cases have strong appeal for many students who are turned off by traditional science courses oriented around a lecture format with a concentration on facts and content rather than the development of higher-order thinking skills.
3. The case method of presentation is extraordinarily flexible as a teaching tool
The goal in most of case method teaching is not so much to teach the content (although that does clearly happens) but to teach how the process works and to develop higher-order skills of learning.

3.1.2 How to Write a Case

There are two basic questions that face anyone interested in using the case method. The first is, how am I going to write the case? The second is, how am I going to teach the case? The two questions are clearly related, for the case often will be written differently for different teaching formats.

How much work is required in writing the case varies enormously depending upon the materials you decide to provide the students.

At the other extreme, cases may take elaborate preparation requiring dozens of pages of text and extensive research. Business cases may require over a year of information gathering and interviews along with thousands of hours of investment to develop a case that may extend over several class sessions.

Pre-existing Materials - Case materials can be found prepackaged almost anywhere: in newspapers, magazines, novels, cartoons, videos, and television dramas.

These need not be dressed up with extensive writing to work as case material.

Many teachers may find these intimidating but the cases need not be used intact. They can be edited to suit the occasion. In fact, some of the most interesting cases can be developed by taking one or two graphs and tables from any scientific article and asking the students to interpret the graphs or plot the data, postulate the methods, and speculate on the conclusions of the author.

Another technique is to simply collect a series of articles focused around a single topic. These articles are put on library reserve, or copied with permission from the journal involved and then given to the students. If accompanied by a short series of questions to guide their reading, an outstanding case can be developed.

Pre-existing materials are cheap and easy to find. They come from familiar sources and are recognizable as authentic parts of the student's world. There is immediacy in their use; one can see an article in the press in the evening and be using it in the classroom the next day.

Writing Cases - Many cases are best developed from scratch. This is the process used for most business cases and although it requires considerable time, it has the advantage that only essential material is included in the writing. The case may be customized exactly to meet the teacher's goals. Reynolds (1980) has classified cases into three basic types:

1. Decision or dilemma cases present problems or decisions that need to be made by a central character in a drama. The case usually consists of a short introductory paragraph setting up the problem to be considered and may introduce the decision-maker at the moment of crisis. A background section fills in the historical information necessary to understand the situation. A narrative section then presents the recent developments leading up to the crisis that our protagonist faces. Exhibits (appendices) follow including tables, graphs, letters, or documents that help lay the foundation for a possible solution to the problem.
2. Appraisal cases ("issue cases") are used to teach students the skills of analysis. The material is focused around answering questions like "What is going on here?" This type of case frequently lacks a central character in the drama and generally stops short of demanding that the students make a decision.
3. Case histories are largely finished stories and are generally less exciting than decision or appraisal cases. They can serve as illustrative models of science in action and they provide plenty of opportunities for Monday-morning quarterbacking

3.1.3 How to Teach a Case

Eighty years of using the case method of teaching at Harvard and other institutions have led to dozens of articles and books on the topic. Virtually all of these publications center their attention on the discussion mode of teaching cases. There are other alternatives that are suitable to many scientific cases. However, in almost all methods there is a common approach. The instructor must have his objectives clearly in mind, must structure the presentation to develop the analytical skills of the students, and must be sure that student participation is maximized.

Discussion Format - The discussion technique is the one classically used by business and law schools to deal with cases. Students are usually presented with decision or appraisal cases. The instructor's job is to identify, with the student's help, the various issues and problems, possible solutions, and consequences of action. On the surface of it, the method is simple: the instructor asks probing questions and the students analyze the problem depicted in the story with clarity and brilliance.

Case discussion instructors vary enormously in their classroom manner. On the one hand, you have the strong intimidating approach. This strong directive questioning approach is often called the Socratic Method. The "all-knowing" instructor (acting as inquisitor, judge, and jury) tries to extract wisdom from his student victim. In its worst form, the questioning can be a version of "I've got a secret, and you have to guess it." In its best form, it can bring about an intellectual awakening as insights emerge from a complex case.

On the other hand, you can have an almost nondirective class discussion. The instructor can practically stay on the sidelines while the students take over the analysis. The instructor may start the discussion with a minimum of fuss saying, "Well, what do you think about the case?" From that moment on, the instructor may merely act as a facilitator, or "traffic cop," being sure that some semblance of order is kept and students get to voice their views. Finally, the class may end without any resolution of the issue or summation. The virtues of this nondirective approach vs. the directive Socratic approach may be debated, but most practitioners of the discussion method prefer a middle ground. William(1989), writing on the discussion method in *Change* magazine, argues for such an approach with proper introduction, directive but not dominating questioning, good blackboard work to highlight the essential issues, and an appropriate summary.

Many experts argue that the best class size for discussion is perhaps 20 to 60 students. When class size is too small there is not enough diversity of opinion. When it is too large, the chances that a given student can participate even once a semester becomes small. There is little incentive to prepare adequately.

Debate Format - Debates used to be common in the American educational system, and many an aspiring politician and lawyer got his start in debating clubs and societies.

A good format for the debate is to follow the procedure of moot court competition. Two teams of students each prepare written briefs on both sides of the issue and are prepared to argue either side. Just before the actual debate, they draw lots or flip a coin to see which side they must argue. The debate itself starts with the pro side presenting for five minutes. Then a member of the con side speaks five minutes. There is a five-minute rebuttal by a second speaker on the pro side, followed by a five-minute rebuttal on the con side. This is then followed by three-minute summaries by each side. In a classroom setting where some members of the class are not

participating in this particular debate, it is valuable to permit questions from the audience and to ask them to evaluate the content and presentation of the debate.

The team sizes can vary, with three individuals per side being logical. However, there can easily be larger numbers. These "extras" can be used in several ways. One possibility is to use the two or three extras to help prepare the teams for the debate, help write the briefs, and be on hand to answer questions or to give rapid advice during the debate itself.

Public Hearing Format - Public hearings are part of many procedures in the United States. They are used by the Congress and by public agencies and regulatory bodies. They are an ideal format to allow a variety of people to speak and different views to be expressed. Their use in case studies has similar strengths and has the added virtue of mimicking real-world events.

Public hearings are structured so that a student panel, role-playing as a hearing board, listens to presentations by different student groups. Typically, the hearing board (for example, Environmental Protection Agency, Food & Drug Administration) establishes the rules of the hearing at the outset (for example, time to speak, order of presenters, rules of conduct, regulations and criteria governing their decision-making). This is followed by individuals or groups role-playing particular positions. Members of the panel often ask follow-up questions of the presenters. After all of the presentations are completed, the panel makes its decision or recommendation.

Teachers using this method may find that the public hearing approach works most effectively over more than one class period. This permits students the maximum chance to see the entire procedure play out and the preparations to be extensive.

Trial Format - Trials have inherent fascination because of their tension and drama. In the trial format, there are two opposing sides each represented by an attorney, with witnesses and cross-examination. .

There were two methods to get student involvement. First, prior to the trial, we asked that students work in teams to develop two position papers, one favoring the extreme environmental stand and the other the extreme logging interest stand. These were to be short (two-page) outlines listing the key arguments on each side. These papers were turned in at the time of the trial. Second, at the end of the trial, all students were asked to write two-minute reaction papers. They were to respond to two questions: Which plan did they prefer to resolve the issue and why. These papers were then collected as the students left class.

Problem Based Learning Format -

Problem based learning is faculty-intensive, for it uses one tutor for every four or five students. They stay together for the entire term, working through a series of cases. The cases are typically linked by some common area of study or progressive shift in complexity.

A typical case passes through several stages. In their first meeting, the instructor presents a short written account of the patient with some symptoms and background. The faculty and students together try to identify the points they think they understand and determine those terms, tests, procedures, symptoms, etc., for which they need more information. At the end of this meeting, students agree on how each will divide up the responsibilities to search for the needed information in the libraries.

In the second meeting, students discuss their findings and share opinions. Their search for the correct diagnosis narrows down. By the end of the class meeting, the students have determined what new information they need to uncover and go their separate ways to find it.

At the third meeting, students share their thoughts, data, and understanding. They try to reach closure on the diagnosis and treatment. This is the last step in the process and generally students will not find out the "real" answer to the problem. The knowledge and understanding of the case comes from the search for answers, not from "the answer" to a particular case. The power of this method is its interactive approach between thinking, discussion, and searching for more information. Consequently, it mimics the approach we usually use in real life.

3.1.4 Pluses and Minuses of the Case Method

The case method is ideal to develop higher-order reasoning skills, which every science teacher claims they strive for. When cases are used occasionally within a course, they spice up the semester and show students how their esoteric learning impacts on the world and is dependent on political and social currents. However, when used only occasionally, neither teachers nor students become comfortable with the method.

When cases become the predominate method of instruction this problem is avoided, but the question of information coverage becomes an issue. Traditionalists argue they can't cover the same amount of information using cases. This is true. Also, they warn that when social issues are involved in a science debate, it is always tempting for ill-prepared students to concentrate on the opinion issues. Naturally, teachers must be alert to keep the discussion on the science, evidence, and analysis side. Faculty must develop teaching skills many do not now possess.

Cases are stories with a message. They are not simply narratives for entertainment. They are stories to educate. Humans are story-telling animals. Consequently, the use of cases gives a teacher an immediate advantage; he has the attention of the audience.

3.2 Project in the Classroom

Projects provide a flexible framework for engaging students in exploring curricular topics and developing important 21st century skills, such as communication, teamwork, and technology skills. In addition, students are motivated by the fun and creative format and the opportunity to make new friends around the world. For teachers, a school portal enables quick and easy management of student accounts and review of project work.

Project Method

The project method is the outcome of the pragmatic educational philosophy of Dewey, the well known American philosopher-cum-educationist. It was developed and perfected by Dr. William Head Kilpatrick of the University of Columbia.

Project is a unit of educative work in which the most prominent feature is some form of positive and concrete achievements. Hence, A it is a problematic act carried to completion in its natural setting.

Main Principles of the Project Method

1. ***The Principle of Purpose:*** Knowledge of purpose is a great stimulus which motivates the child to realize his goal. The child must have an ideal. 'Why is he doing certain things?' Purpose motivates learning. Interest cannot be aroused by aimless and meaningless activities.

1. ***The Principle of Activity:*** Opportunities should be provided to students that make them active and learn things by doing. Physical as well as mental activities are to be provided to them. They are to be allowed to 'do' and to 'live through doing'.
2. ***The Principle of Experience:*** Experience is the best teacher. What is learnt must be experienced. The children learn new facts and information through experience/
3. ***The Principle of Social Experience:*** The child is a social being and we have to prepare the student for social life. Training for a corporate life must be given to him. In the project method, the students work in groups.
4. ***The Principle of Reality:*** Life is real and education to be meaningful must be real.

The project method is a method of education the child and therefore, it must also be real. Real life situations should be presented in the life of the school.
5. ***The Principle of Freedom:*** The desire for an activity must be spontaneous and not forced by the teacher. The student should be free from imposition, restrictions or obstructions so that he may express himself fully and freely. He must be given the freedom to choose an activity, to do an activity according to his interests, needs and capacities.
6. ***The Principle of Utility:*** Knowledge will be worthwhile only when it is useful and practical. This method develops various attitudes and values which are of great significance from the practical point of view.

Various Steps in a Project

1. Providing a situation
2. Choosing and Purposing
3. Planning
4. Executing the Plan
5. Judging
6. Recording

Essentials of a Good Project

- Timely
- Usefulness
- Interesting
- Challenging
- Economical
- Rich in experiences
- Co-operativeness

Merits of the Project Method

- Based on the law of learning- (Readiness, exercise and effect)
- Related with life
- Correlation with all the subjects
- Training for a democratic way of life
- Training in citizenship
- Upholding dignity of labour
- Stressing problem-solving
- A source of happiness for the backward
- Providing freedom
- Solving the problem of indiscipline

Demerits of the Project Method

- Neglecting intellectual work
- Haphazard and unconnected teaching
- Upsetting of the time-table
- Neglect of drill work
- Difficulty in getting suitable text-books
- Artificial correlation
- Unsuitable for the shirkers and shy
- Too much reliance on young children
- Lack of competent teachers
- Unsuitable for transfers

3.3 Inquiry (Investigative methods)

Inquiry can be considered a philosophical approach to teaching any number of subjects, not just science or can be considered a mere method

As a philosophy, a teacher who believes in inquiry believes that knowledge is a tentative and a social construction. As such, that teacher will want students to be actively engaged in their own learning, and will have the students carrying out investigations to construct their understandings. In science, knowledge is constructed with information from the natural world. Thus, the collection of empirical evidence will always be important to the construction of science knowledge. The teacher will also have the students discussing their findings with the teacher and with their peers, and checking what they have learned with what scientists believe. This is because science knowledge is communally constructed. The teacher will use as little direct instruction as possible.

Direct instruction comprises a number of different methods; what all direct instruction methods have in common is that the teacher has nearly complete control of what and how a topic is learned.

The questions that scientists ask and the ways in which they interpret and analyze the data all come from the scientists' "principles of enquiry" This means that science knowledge always comes from a point of view. Scientists seek to affirm their point of view. They are watchful of affirmation to the point sometimes of attempting to disprove their point of view. Nonetheless, they only ask questions from within their point of view.

If you are a teacher who has inquiry as a philosophy, you will value the different perspectives that your students bring to a question. You might set out a topic worthy of exploration, but you will leave much else up to your students. You can even leave the topic open if you encourage your students to do independent research projects beyond the curricular material being covered in class.

3.2.2 Inquiry: The Teaching Method

Inquiry as a teaching method was invented by social studies teachers. Students were given data from different countries, and asked to analyze the data to make generalizations and predictions about the people of the countries. Inquiry is a term used broadly to refer to everything from pseudo-experiments where the teacher has the students verify already taught concepts to one in which students have virtually total control.

The parts of a lesson should match the different components of a "laboratory report". Usually, the first part written (or discussed in class) is the problem or question. Often, the problem or question is such that a hypothesis can be written. **Ensure that your students justify their hypotheses.** If your students are making random guesses for their hypotheses, they are demonstrating the activity will be meaningless to them. They won't know why they are going through the steps of the procedure. Hypotheses are written as the effect of one variable on another. For example, what is the sunlight on the height of a plant? There are particular materials that are used, there is a method (or procedure) designed for answering the question (or testing the hypothesis), there are data collected or observations made, the data are analyzed or the observations discussed, and there is a conclusion.

How much control do you need to have over your learners? Which components of the inquiry do you leave to your learners?

Before deciding how much control to give to your students, consider the pedagogical purpose for doing the experiment, the nature of the materials they will be using, the size of the space they have to work in, the nature of the students you are working with. These factors are discussed as follows:

Pedagogical purpose of the experiment:

If you have just explained a concept to the students, and want them to see the concept at work, you will not use an experiment; rather you use what could more accurately be called a pseudo-experiment. You will choose an activity that is unlikely to go wrong; the students will follow a procedure in recipe-like fashion, all doing the same thing. These kinds of activities are unlikely to change students' preconceptions. Students know the activities are contrived, and they know that they are expected to come up with a particular right answer. There are no surprises for them or for you. Pseudo-experiments are like demonstrations, but the students carry them out themselves. It is certainly better for the students to carry out these pseudo-experiments than to observe a demonstration, and it is better to observe a demonstration than just to hear a lecture.

If however, there are many possible answers to the problem, or if the particular answers do not matter, then you will give more control to your students. If you want your students to learn that there are different explanations for the same problem, or if the problem is complex, you will give more control to your students.

Safety: This is the single most important reason for giving guidance to students. The major hint about safety is that; writing the safety considerations into a procedure does not mean that students will read, believe, and remember. You really have to demonstrate what they have to pay attention to. And even then, you need to have them tell you what they plan to do.

Space: The smaller the space, the less you want your students moving around. Thus, if you have 30 students in a regular sized classroom, you can have them planning much of what they do. But if you have more students, or a smaller classroom, you will want tighter control over what they do so they are not banging into one another. You can still have them carrying out their own activities; you just have to be more organized and ensure that the materials they need are at their station.

Nature of your students: I leave this to you decide. However, I would like to point out that sometimes students act inappropriately because they want more control over their learning. Thus, it is sometimes the students you would least trust to plan their own experiments who will most benefit from it. Try it with some relatively safe activities to see how they do, before making up your mind about whether they can or cannot be trusted out of their desks.

Steps of Inquiry Lessons:

The steps of inquiry lessons are:

Purpose: The teacher tells the students what they will be learning about and tells them of the interesting implications of the lesson

Hypothesis: In those activities where there will be a hypothesis, the students should always be expected to make their own hypotheses. This should be done in small groups (pairs), then in whole class discussion. Students should state their hypotheses in terms of the effect of one variable on another, and you must encourage them to justify their hypotheses.

Procedure: Once students have a clear idea of the purpose of the experiment or study, they should have some idea of how to find the answer. Often, the discussion of different hypotheses will give them ideas for how to test their own hypothesis. Just because they have shown that their hypothesis might be true does not mean they have proved it! The alternative might still be a possibility. They have to rule on the other hypothesis as well as showing that their hypothesis works.

Materials: Once students know what they plan to do, they can make a list of the materials they will need. Sometimes it helps to tell them what materials are available before they design their procedure (one small way you can retain control!) However, often the materials they need can be brought from home. If students are testing different kinds of food for starch and fat, you would encourage them to bring some from home.

Encourage your students to write what they plan to do and to write a list of what materials they need. For those who prefer to draw, encourage them to do both.

Data: Before students begin the experiment, remind them of all safety precautions. If they are working with chemicals, they should be wearing safety glasses. If they are

working with Bunsen burners, they should have their hair tied back. Etc. Then they are to carry out their experiment. Since they designed the procedure, they should know what data to collect. They should have a plan to record their data.

Analysis: Again, students should know what they are trying to find. They might need assistance in steering away from their affirmation bias, however.

Conclusion: When your students have finished their study or experiment, they must discuss their results with one another. They must find out who had the same results, which had different results, why the results might have been different. They must interpret the results according to their original question. What do the results mean? The results will almost certainly lead to another question, and the process begins again.

Notice that the class discussion of the conclusion is the debrief of the lesson. This is when the meaning of the lesson can be put into the context of the unit as a whole.

A big advantage of inquiry where students have most of the control over the activity is that students of different cultural backgrounds have different principles of inquiry.

4.0 Conclusions

The three strategies presented in this unit have records of being used in several fields for many years. They have also been found to move the emphasis in instruction towards the learner while the teacher creates the enabling environment for learners to learn through investigation.

5.0 Summary

Investigative strategies expose the ingenuity in learners, help them build on true life experiences in solving classroom problems and provide them the necessary self development for tackling problems as they may arise in their fields of endeavour and during the course of their day to day activities.

6.0 Tutor Marked Assignment

- i.** Give 5 advantages of using case studies for instruction
- ii.** Give examples of sources of information for writing cases in your subject area
- iii.** Prepare case studies assignment for a specified class at senior secondary school level
- iv.** Using typical examples, describe the principles behind use of project method for instruction.
- v.** What are the advantages and disadvantages of the project method to the learner?
- vi.** Give an example of a project assignment for a specified class of learners at the secondary school level
- vii.** What is inquiry?
- viii.** Inquiry goes beyond experimentation, Discuss.

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MODULE 5: NEW DEVELOPMENTS IN INSTRUCTIONAL STRATEGIES

UNIT 1 STRATEGIES IN SCIENCE EDUCATION

1.0 INTRODUCTION

Modern Learning theory advocates a radical departure from the traditional teacher – dominated instructional strategy to a learner – dominated one. From your studies on learning theories, you would have observed that the theories encourage an instructional strategy in which learners will actively participate in the instructional process. Instructional strategies in science emphasize those ones in which the natural curiosity of the learners will be enhanced through inquiry/ discovery. Such strategies incorporate hands-on investigation, promote critical thinking, infuse problem solving skills and challenge learners to obtain knowledge from varied sources- peers, parents, teachers and experts outside the school community.

Contemporary strategies in science education have redefined a role for the science teacher – the science teacher is no longer regarded as a repertoire of knowledge but now seen as a facilitator, a guide, a coach and a coordinator of experience. The science teacher is now forced to rethink on his/her traditional approach to science teaching. Strategies which emphasize rote and repetition are fast becoming obsolete.

Apart from the instructional strategies you have been exposed to in earlier units, an over-view of learner-centered instructional strategies for science education will be described in this unit. The various strategies for increasing reading comprehension in the science classroom will also be emphasized.

2.0 OBJECTIVES

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

- Describe three learner centered strategies in science instruction.
- Describe 5 strategies for increasing reading comprehension in the science classroom.

3.0 MAIN CONTENT

3.1 An Overview of Strategies in Science Education

In science education, there is no single instructional strategy that is all embracing. Rather, a variety of instructional strategies is advocated. Most importantly, strategies to be utilized must:

- Promote hands on investigation such that learners are actually able to perform science as they construct meaning and acquire understanding of science and technology. Learners should relate this to their immediate environment and the society as a whole.
- Encourage critical thinking such that students will be challenged to question and seek answers that will increase their knowledge.
- Embrace problem solving skills which incorporates authentic real-life questions and issues in a form that will encourage collaborative effort and dialogue with informed experts.
- Provide opportunities for kinesthetic, auditory and visual learning.

- Enable learners have a strong foundation in science and its concepts which will ultimately encourage them to pursue/maintain a continued study of science even after leaving school.
- Be learner-centered.

Self Assessment Exercise 1

Identify 5 attributes of an instructional strategy for science education.

3.2 Constructivism

- (1) This is an instructional approach that is making “waves” in Science education. It ensures active participation of learners in the instructional process. It is based on the belief that learning occurs as learners are actively involved in a process of meaning and knowledge construction rather than passively receive information (Brooks 2004). Constructivism encourages learners to seek new knowledge and understanding with intensive use of technology.

A constructivist science classroom has characteristics which include:

- Process approach to learning.
- Learner-centered.
- Interactive and democratic.

A teacher adopting a constructivist approach is a facilitator and guide as he/she asks questions, initiate situations/scenario in which problems will be solved. The teacher challenges learners to be involved in inquiry, problem solving and collaborative learning.

Further information on constructivism can be seen in Module1, unit 4- Contemporary instructional strategies and in your study of Learning theories in Module1, unit 6- conceptualization of instructional strategies.

Self Assessment Exercise 2

- (1) Explain constructivism as an instructional strategy in science education
- (2) State 3 characteristics of a constructivist classroom.

3.3 Inquiry Approach to Teaching Science

This is a powerful approach to teaching and learning science as it meets the needs of a wide range of learners and strengthens their understanding of science. Dettrick (n.d) explained that inquiry approach enables science teachers design situations so that learners engage procedures research scientists use to solve problems. Such procedures include:

- Recognizing a problem.
- Asking questions.
- Applying investigational procedures.
- Providing consistent descriptions, predictions and explanations which are compatible with shared experiences of the physical world.

Inquiry approach involves an on going and open ended investigation in science. This strategy encourages the development of positive attitudes, promotes active learning, increases creativity and curiosity in learners. It enables learners relate scientific concepts to their immediate environment. It removes the abstractness of science teaching and learning.

3.4 Differentiated Instruction

Differentiated instruction is based on the theory that not all students are alike and as such learning is not the same. This strategy considers individual differences of learners. It is an approach to teaching and learning that gives learners multiple options for taking information in and making sense of ideas (Hall, Strangman & Mayer, 2003).It emphasizes flexibility by teachers during instruction. Differentiated instruction indicates that science teachers can provide multiple ways for learners to acquire information, understand concepts and demonstrate what they have learnt. Strategies for a successful implementation of differentiated instruction in the science classroom as identified by Teaching Today (n.d) include:

- Using a variety of instructional strategies such as infusing traditional lecture with demonstrations, small group discussions, on-site and off-site field trips, audio-visual presentations, problem solving activities among others.
- Incorporating group work into class activities as this ensures interaction and collaboration among learners and their peers. Groups can be made dynamic through frequent regrouping and consideration of learners' ability, interest and preference.
- Ensuring that learners have access to varied instructional materials, resources and texts which are graphically illustrated so as to involve all learners irrespective of literacy level.
- Avoiding monotony through the varying of extent of complexity of laboratory investigations. Variation can be based on individual differences of learners.
- Allowing learners freedom of choosing activities/ tasks and projects. This will encourage independent study of activities by learners and also facilitate active learning of authentic materials/situations.
- Using varying assessment methods as this may not necessarily be based on rigid/ standardized methods. Learners can be assessed on laboratory practical, verbal presentations, multimedia projects and so on.

SELF ASSESSMENT EXERCISE 3

1. Write a short note on differentiated instruction?
2. Briefly describe how you can successfully use differentiated instruction as a strategy in your science classroom.

3.5 Strategy/Implicit Instruction

This is a learner centered instructional strategy which The Access Centre(n.d)describes as one which teaches students how to learn information and how such information can be retrieved when needed. It emphasizes more on the global skills needed to learn the required scientific concepts.

Swanson (2001) as cited by The Access Centre describes the components of this strategy as:

- Presence of advanced organizers which serve as mental scaffolding on which new knowledge is built.
- Organization which enables learners access their knowledge on regular basis.
- Elaboration which implies the connection of new materials to information already learnt.
- Generative learning which enables learners make sense of new information by summarizing.
- General study strategies which include strategies used by learners during studying such as outlining, questioning and discussions with peers.
- Teaching learners to evaluate and control their thinking process and to evaluate the effects of a strategy.

In utilizing this strategy, efforts should be made by the science teacher to:

- Ensure elaborate explanation of concepts to learners. This should be done systematically and in a logical sequence.
- Provide Prompts step wisely to learners.
- Interaction between teacher and learners; learners and peers should be encouraged.
- Teacher should ask questions frequently and provide only necessary assistance.

It is important that the science teacher should note that this strategy is a sequential one which involves:

- The stating of an instructional objective by the teacher
- Review of the skills needed for the new information
- Presentation of the new information
- Questioning of learners on new information by the teacher.
- Creating time for group instruction and independent study.
- Giving performance assessment. (Swanson,2001).

Strategy/implicit instruction teaches students to use higher order thinking skills, solve problems and to use techniques they can generalize into other areas.

3.6 Improving Reading Comprehension in Science

Do you recollect the first time you started your study of science subjects? Most times the “big” words contained in the science texts were confusing and challenging especially for learners with low literacy! The problem still lingers as many learners find it challenging comprehending science texts. Comprehension of science concepts and principles by learners is influenced by individual factors such as reading ability, competency in mathematics, extent of foundation knowledge present and proficiency in English language (Teaching Today, n.d).

Herr (2007) and Teaching Today (2005) suggested the following as means of increasing reading comprehension and helping learners make sense of complicated science concepts:

- Focus on vocabulary prior to reading by linking new words to an experiment, diagram, demonstration, piece of equipment or prior learning experience.
- Encourage learners to use dictionaries during reading and make effort to check for unknown words.
- Have learners create “science signs” or flash cards for new vocabularies. The front of the card contains the new word while the definition and accompanying explanation or diagram which links this word to prior learning stays at the back.
- Give guidelines on specific areas of focus and goals for reading. A preview of the text structure can be done with learners.
- Break reading of long sequences into smaller manageable chunks and pause for discussion and questions.
- Teach learners to use text clues to identify critical information such as titles, subheadings, paragraphs, graphic and summary as these can help learners manage their readings.
- Increase learner’s interaction with the reading through group discussion, problem solving and hands-on activities.
- Encourage questions and hypothesis formation during reading by telling learners to jot down questions or ideas which occur to them while reading.
- Frequent evaluation of learners’ comprehension should be done throughout a series of reading assignment using varied assessment methods.

Above all, provide a positive and supportive climate as these impact significantly on learner’ comfort level, participation and success.

4.0 Conclusion

Science is complex and learners often find it challenging. The goal of teaching by Science teachers is to help learners enjoy the process of learning science so that life- long learning can be achieved. Science students should be able to apply scientific principles and concepts in solving immediate environmental/societal problems. These can only be achieved if science teachers involve learners in tasks that ensure problem solving, promote curiosity and creativity among others. Such can be ensured when learner-centered strategies are employed in the science classroom.

5.0 Summary

In this unit, you have learnt about the following learner-centered strategies for teaching science: constructivism, inquiry approach, differentiated instruction and strategy/implicit instruction. The strategies for increasing reading comprehension of science students were emphasized.

6.0 Tutor Marked Assessment

1. Briefly discuss the means of improving reading comprehension of learners in the science classroom.
2. Explain briefly the following instructional strategies for teaching science : implicit /strategy instruction, Inquiry approach and differentiated instruction.

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UNIT 2: COMPUTER BASED INSTRUCTION

1.0 Introduction

By using an assortment of different multimedia modules, computer software can help teach students pieces of curriculum material. Students start to learn through the use of **tutorials**, continue to learn through **guided practice**, add to their understanding by watching **animations** or running **simulations**, enjoy applying the learned material by playing **games**, and finally, show that they have learned the material by taking **tests**. One name given to this type of software is **computer based learning** or **CBI**.

2.0 Objectives

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

- i. Explain different ways of conducting instruction using the computer technology
- ii. Differentiate between different modes of Computer Assisted Instruction
- iii. Discuss the advantages of CBI.
- iv. Identify some specific use of computer technology in the classroom
- v. Identify the inherent difficulties in using computer technology in a developing country like Nigeria.

3.0 Main Content

3.1 Computer Based Instruction (CBI)

The traditional teaching problem lies in the management of large classes, comprised of many individual differences and the lack of any one workable teaching method that specially individualized instructions to meet all needs, even if instructional methods are adopted to suit smaller groups of students with similar ability profiles, the teacher is humanly unable to actively monitor the progress being made by each student and to provide immediate feedback to each learner during the process of learning. The one-on-one correspondence provided between the computers and the student on computer-assisted instruction overcomes some of the limitations of instructional materials. The use of computer in teaching learning could embody the best available professional judgment regarding diagnosis and the prescription in the subject matter areas, thus providing the teacher with a highly competent assistant to make routine instructional decisions.

Computer based learning or computer based instruction are the general terms which are often used to refer to any computerized system of education. It stands as terms used to describe an educational environment, which is characterized, by the use of computerized technology to provide effective and efficient learning process. The Computer Based Instruction (CBI) therefore includes all forms of the application of computer in education. They include:

- Computer Assisted Instruction (CAI)
- Computer Managed Instruction (CMI)
- Computer Based Instruction Situation (CBIS)
- Problem Solving.

3.1.1 Computer Assisted Instruction (CAI)

Computer Assisted Instruction (CAI) as the term implies; refers to instruction that is assisted or aided through the use of computer. It is an automated instructional technique in which a computer is used to present an instructional programme to the learner through an interactive process on computer.

Good CAI will not only present information and ask questions, but incorrect answers lead to instant feedback followed by the same questions being displayed again. Clues to correct answers may also be provided in the event of several incorrect answers. There are two forms of CAI programs namely:

Adjunct CAI: This consists of relatively small segments of supplementary instructions rather than complete courses.

Primary CAI: This consists of entire courses and replaces traditional delivery by a teacher.

The wise use of CAI programs holds out the potential for releasing teachers from many of the traditional chores associated with teaching. This will enable them to attend to a broader spectrum of individual needs of their students than was possible in the traditional classroom setting.

There are four modes of interaction in Computer Assisted Instruction, they are:

- Drill and practice
- Tutorial work
- Problem solving
- Simulation and Games

Drill and Practice: - This is the most common type of CAI program. It consists of exercises that take students through materials to which they have already been introduced until they reach the point where proficiency has reached a satisfactory level.

They are designed to assist the learner to review, reinforce and learn a skill. It also includes feedback to remedial errors that students may have made long the way, they can help to maintain, improve and automates basic skills.

Roblyer (2000) explained that in drill and practice, students are led through a series of practice exercises designed to increase fluency in newly learned skill or to refresh an existing one.

Examples are:

- The computer displays the names of the chemical elements while the students give their symbols.
- The computer provides data for particular events in history.
- Computer provides formula drills in mathematics

One of the benefits of drill and practice is that students may work independently and at their own pace. They may also repeat any or all of the instruction as often as possible.

Tutorial Work:

A **tutorial** is one method of transferring knowledge and may be used as a part of learning. More interactive and specific than a book or a lecture; a tutorial seeks to teach by example and supply the information to complete a certain task.

Depending on the context a tutorial can take one of many forms, ranging from a set of instructions to complete a task to an interactive problem solving session (usually in academia).

A tutorial work in CAI presents the concept and the rule of the subject matter, evaluates the student comprehension and provides practice through branching in the specific skills and concept taught. The subject matter is literally taught by computer programme, explanations are given through computer. The characteristics of the tutorial approach include text presentation on small steps, active learner participation in the learning process, frequent feedback and reinforcement.

Tutorial CAI programs stimulate learning and offer the possibility of students pursuing special subject matter at their own pace in ways that are not possible in the traditional classroom. The teacher is also freed to enable him serve as an individual counselor to students who need special assistance.

Problem Solving: Problem solving CAI involves the students becoming both “developer and problem solver” in order to develop skills for solving problems outside the classroom. In problem solving mode, the student combines previous learned rules into a new rule that will in turn solve a problem solving and use the same to solve problems.

Computer problem solving programs can be modified for each attempt to become a variation of the original problem and not a repetition.

Many problem solving programs are written as logical games while others are written as adventures that occur in imaginary worlds or present situations that must be mastered.

Roblyer (2000) explained that problem solving is based on scientific method of inquiry which involves definition of problems, formulation of hypothesis, collection of data, analysis data, derive conclusion of solution. Therefore, in order to solve problems, students must follow the scientific method of inquiry while the teacher can encourage students to discuss what they observe and develop generalizations that will be useful for solving other problems of a similar kind.

Simulation and Games: - Simulation programs in CAI initiate a real situation and the model underlying characteristics of real situation. They are effective in helping students learn such concepts as driving a car, schooling, human circulatory system, physical changes that occur under the conditions of heat and pressure, economic variables affecting society, demographic changes, etc. Here the learners are able to experience and manipulate things which might otherwise be too voluminous, time consuming, costly, risky and impractical on the ordinary classroom situation or laboratory settings. Learner’s attention is focused on then simulated experience in which they can freely manipulate through the computer.

Games often requires the students to use and or develop problem solving skills, programs on games usually include some scores or have competition built in to the operations. One or more students could play such games. When used for instruction, simulation and games mode of instruction in CAI allows a teacher to come up with a

model of some real or idealized real life event action or situation in form of games. When concepts, facts and ideas are presented in this form, learners tend to enjoy it.

The beauty of the CAI is that it permits individualization of instruction, encourages interactive learning and relieves the teacher of his traditional method since the instructional materials is entirely under the control of the computer.

Compared to the conventional teaching methods such as lecture and discussion, CAI offers the important advantages of begin able to adopt materials to the need of each student as learners need change over the course of a lesson. From the above, one cannot but see CAI as one of the most effective ways of instruction in schools.

3.1.2 Computer Managed Instruction (CMI)

This is where computer is mainly use for record keeping, materials generation and as database. It is also used to provide management assistance for routine clerical and administrative tasks, scoring and retrieval. This does not provide direct instruction to the learner. It helps to assess the learner's present level of knowledge, weakness or gaps on of a specific body of content or skills or instructional objectives and suggest remedial action possible. The computer also communicates to the learner what study assignments to be undertaken to remove the areas of weakness identified in the diagnosis (prescriptive). CMI is thus referred to as diagnostic and prescriptive testing. It is used for educational services such as curricular evaluation and vocational guidance.

For simplicity, the components of CMI are categorized as follows:

- a. **Test and Records** This involves maintaining records of all children enrolled in a school. Such records include, class rosters, and academic histories. Individualized programs teachers need immediate access to information about the tasks that have already been chosen and completed during a particular course. These information give the teacher much clearer understanding of his or her students and their needs, aptitude and intelligence.
- b. **Instructional Guidance** Apart from maintaining adequate records of what transpired during a course, the teacher need some source of information about the choices of assignments that are open to students for the remainder of a course. In some instances, students may have to go back over materials they were supposed to have learned earlier. A CMI program enables a teacher to have access to this kind of information as part of an organizational system serving a course. Guidance information may also be set up in such a way that students could call in for a list of the options that are open at any point in the course.
- c. **Resource Availability**: Managing instruction requires that an instructor or a student be informed about the availability and location of the material needed for a particular activity or the entire course. A CMI has this kind of information on file, so that a teacher knows where an item is stored and whether it is available for use. Instructional resources can be indexed with lesson materials and with lesson information itself.

3.1.3 Computer Based Instructional Simulation (CBIS)

Computer based instructional simulation is the most powerful application of computer on instruction as it provides realistic substitutes for real life experiences that might be otherwise impractical, time-consuming or even dangerous.

It also creates a model situation, which imitates some aspect of reality, and the stimulation model may be static or dynamic in which conditions are changed as a result of feedback of students' actions and responses.

There are varieties of activities in the instructional setting which computer can be put used. Some of them are conceptual thinking, problem solving, projects activities, group oriented activities and traditional or transmission oriented practices.

For pattern of classroom instruction, computer can be used for conceptual thinking, which for example is used in reflective writing where learners evaluate their own work, explain their reasoning and relate their own experience to class content. The problem-solving and project activities, which like the thinking activities discussed above, generally involved students doing challenging cognitive work. Computer is used as group oriented activities where students have the opportunity to learn from interaction with their peers. It also used as traditional or transmission oriented practices such as teachers-led class, discussion and skill practice through seat-work.

However, there are various ways in which computers can be used in educational viz. computer in education administrator for obtaining, keeping and maintaining records of; staff and students; materials, and managing payroll etc.

3.2 Types of Computer Technology

Computers as a technology have been described as used in three ways as a tutor, tool, or a tutee (Taylor, 1980).

1. **Tutorial software** assists students as a "tutor" to help them learn specific objectives.
2. **Software "tools"** help students present their work for example by using word-processing, database, or spreadsheet programs.
3. **"Tutee"**, has been described as a situation where the students teach the computer for example by using programming software. Reeves and Jonassen (1996) reported that when using the "computer-as-tutee" approach, students develop higher-order thinking skills and creativity by teaching the computer to perform tasks.

3.2.1 Use of Computer Technology in the Classroom

Increased accountability has put more pressure on teachers to meet curriculum outcomes and to ensure student performance (Marshall and Hillman, 2000). Tutorial and drill-and-practice software can be very helpful in this regard to help students master basic skills and is based on behaviorist theory. Tutorials present a new concept and provide step by step instructions on how to complete a certain objective, for example a tutorial in a new software program. Drill-and-practice software reinforces basic skills for example spelling words, development of reading vocabulary, or typing programs. Spelling, vocabulary, and typing are important skills that would enhance student performance when composing independent written work. Wepner, Valmont, and Thurlow (2000) say that the majority of experts agree that typing instruction should occur around grade five and that primary students should become familiar with letter keys, the return key, the space bar, and the home row. There is also a wide

variety of drill-and-practice software available for improving letter recognition and for developing phonics skills (Wepner et al., 2000). Enhancing student's letter knowledge and phonological awareness skills is a priority goal for kindergarten students and is a key to success in learning to read (National Research Council, 1998).

Lowe (2001) defines computer-based education as the process or management of instruction that uses a microcomputer as the medium. Lowe (2001) says that:

- The demands of World War II helped accelerate the development of the computer and computer-based education came about as a means of providing cost efficient training to the military during the Vietnam War.
- Behavioral theories of learning influenced early computer-based education but as computer technology became more sophisticated, software changed from focusing on behavioral theories to cognitive theories.
- Computer-based education provides an alternative way for learners to reach their goals independently in self-directed and self-paced learning experience.
- Computer-based education positively affects student achievement when compared to traditional classroom instruction although it should only be used to supplement traditional instruction and not replace it.

Schery and O'Connor (1997) discuss the use of computer based intervention to teach language and communication skills to students with disabilities. They found that the students attained the most rapid vocabulary gains during the time of additional computerized instruction. The authors recommend technology because computers are:

- non-judgmental
- provide attention to the student at the student's own pace
- provide immediate reinforcement
- very motivational because of the animation and colour graphics used in the software
- synthesized speech has also been found extremely useful for non-verbal students because it provides a means for verbal output
- computerized instruction using groups of two students also helped develop social skills, turn taking, and listening skills.

Clements (as cited in Loveless and Dore, 2002) noted that education was at a crossroads trying to decide which path to take in the use of computers in schools. The drill-and-practice, self paced, one-on one approach to reinforce basic skills had limited uses and outcomes in terms of educational criteria.

Drill-and-practice was intended for the use of computers as an add-on to traditional classroom instruction. It was not learning by doing and Loveless and Dore (2002) say there is a need to use computer technology in new and dynamic ways.

- Drill-and-practice did have some merit in the past in that it motivated students to finish their work but then only the best students got to use the computers. Students who struggle with basic skills are the ones who need to be given the opportunity to use drill-and-practice software.

When using tutorial/drill-and-practice software teachers should ensure that it:

- is developmentally appropriate for the student
- reinforces skills already taught
- is based on the individual student's needs
- meets the curriculum outcomes (Labbo, Leu, Kinzer, Teale, Cammack, Kara-Soteriou, & Sanny, 2003)
- provides a positive learning experience for the student

- provides appropriate stimuli, response required, and reinforcement for the student (Schery & O'Connor, 1997)

Technical Literacy

One other advantage of this type of software is that it is valuable in helping students become technically literate. Labbo et al. (2003) suggest that teachers observe students using computer programs to get a sense of their capabilities with technology.

Teachers can observe how well the students understand and follow the screen directions and whether they are familiar with the computer keyboard. Computer games can also be a useful introduction to computers in this regard. The authors say that by the end of grade two students should be able to independently use educational software.

4.0 Conclusions

In countries around the world, teachers are under increasing pressure to demonstrate they can use computer for teaching and learning as well as for professional development. It becomes imperative for teacher to review their traditional approach to teaching, and acquire knowledge about the educational applications of computers in their various fields.

5.0 Summary

There abound several computer programs that can be employed in the business of education. As a consequences of computers entering the schools, the traditional places of the teacher in the classroom is likely to diminish. Teachers will have to spend their time guiding, counselling, and learning instructional teams rather than lecturing to a room full of students.

Also, the tradition of the class period is likely to change a instruction as instruction becomes individualized, and as students work more with interactive computer programs as well as variety information sources.

6.0 Tutor Marked Assignment

- i. Discuss the four modes of Computer Assisted Instruction using specific examples in your area of specialization
- ii. What are the benefits of CMI
- iii. Explain the different components of CMI
- iv. What are the roles of a teacher in CAI class?
- v. Explain the concepts of the Computer as “Tutor”, “Tools” and “Tutee”

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UNIT 3: INDIVIDUALIZATION OF INSTRUCTION VS COLLABORATIVE LEARNING

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1.0 Introduction

One major concern of the instructional system is how to ensure effective learning. Although in most cases, concepts are presented to groups of learner in classroom situations. The question is, ‘what strategies would the teacher utilize in ensuring that every student understand the concepts of instruction and can use them effectively?’ Faced with a group of learners in a ‘normal’ classroom, the teacher’s job is chiefly to ensure they understand the concepts personally. At the end of the day, individual student should be confident that he/she can defend the knowledge acquired under any situation. The usual methods of the traditional classroom might not guarantee this expectation. Consequently, in modern instructional systems, efforts are geared towards individualization of instruction and collaborative

learning. In this unit, you will study strategies for achieving these two philosophies of learning and then go on to compare them.

2.0 Objectives

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

- Define individualized learning and collaborative learning
- Discuss characteristics of both types of learning
- Explain the theories that support both types of learning
- Discuss strategies for implementing both types of learning
- Distinguish between individualized learning and collaborative learning

3.0 Main Content

3.1 Individualization of Instruction

3.1.1 Defining Individualized Instruction

Individualized instruction is a method of instruction in which content, instructional materials, instructional media, and pace of learning are based upon the abilities and interests of each individual learner. I do not want you to equate this definition with an usually conceived ‘one-to-one student/teacher ratio’ or ‘one-to-one tutoring’, as it common with having a teacher take charge in ‘lessons’ with only one child. It goes beyond this to providing for individual learner’s needs within the context of a ‘pool’ of learners. Similarly, Shane (1981) emphasized that individualized instruction is not “self-instruction.” Individualized instruction offers choices in four major areas of teaching and learning: objectives, rate, method, and content. Some popular terms representing the choices in these areas are “independent study” (objectives), “flexible” or “self-paced” (rate), “multimedia” (style or method), and “mini-courses” (content). Having said this much, it will be critical to understand that the main objectives of individualized instruction are to customize the pace of instruction, create an atmosphere of self-regulation, personalize content, and promote a successful learning experience (Answer.com, 2010).

3.1.2 Need for Individualization of Instruction

In a traditional classroom environment, lectures consume approximately 80% of an average teacher's in-class time, to say nothing of the time needed to prepare lessons. Yet lecturing is an inherently inefficient method of conveying information. The average student retains only approximately 10% of what is presented in a lecture, but without substantial reinforcement that figure falls to an abysmal 2%, or less, within 24 hours (Wikipedia, 2010). This makes the much relied upon ‘lecturing method’ by teachers to be in-effective in guaranteeing individualized learning. Consequently, there is need for alternative methods of individualizing instruction. Although placing greater reliance upon well-designed instructional materials such as audio, video, multimedia-Computer-assisted instruction (CAI), or simply a good textbook, can hardly be less efficient than the lecture method, but at least it

yields a huge net benefit by freeing teachers to focus upon the needs and problems of individual students.

3.1.3 Theoretical Background for Individualized Learning

Individualized instruction has points of contact with the constructivism movement in education, started by Swiss biologist Jean Piaget, which states that the student should build his or her learning and knowledge. Individualized Instruction, however, presumes that most students of secondary school age still lack the basic knowledge and skills to direct their own learning, which must be at least partially directed by schools and teachers. **Constructivism** is a theory of knowledge (epistemology) which argues that humans generate knowledge and meaning from their experiences. Piaget's theory of constructivist learning has had wide ranging impact on learning theories and teaching methods in education and is an underlying theme of many education reform movements. You may need to further investigate constructivism.

In a traditional classroom setting, time (in the form of classes, quarters, semesters, school years, etc.) is a constant, and achievement (in the form of grades and student comprehension) is a variable. In a properly Individualized setting, where students study and progress more independently, achievement becomes more uniform and time to achieve that level of achievement is more variable. The coming of computer- and Internet-based education holds the promise of an enormous increase in the use of individualized instruction methodology.

SELF ASSESSMENT EXERCISE

1. Define individualized learning
2. Justify the need for individualization of instruction.
3. How does constructivism support individualization of instruction?

3.2 Approaches to Individualization of Instruction

Although there are a wide variety of approaches, in most cases instruction can be characterized by the following tasks: setting objectives, teaching content based on these objectives, and evaluating performance. This formula is indeed the most common; however, there have been many advocates of alternative approaches. Among the alternative approaches there is a focus on a more individualized approach to instruction, where the traits of the individual learner are given more consideration. Each approach to individualizing instruction is different, but they all seek to manipulate the three following fundamental variables:

- **Pace:** the amount of time given to a student to learn the content
- **Method:** the way that the instruction is structured and managed
- **Content:** the material to be learned

Pace

There are two basic extremes when the pace of instruction is considered. The first is when someone other than student, usually a teacher or instructor, controls the amount of time spent learning the material. In this case specific due dates are defined before instruction begins. This is currently the predominant model in most educational systems. The opposite extreme would be if the learner had exclusive control over the pace of instruction, without a time

limit. Between these two extremes are situations where control of the pace of instruction is shared or negotiated, not necessarily equally, by the teacher and learner.

Method

As theories of learning and instruction develop and mature, more and more consideration is given to the way in which learning occurs. In an attempt to account for the way that students learn, instructors may apply a combination of theories and principles in preparing instruction. This can influence whether instruction is designed for one homogenous group, or is flexible, in anticipation of **individual differences** among learners. In the majority of cases, instruction is designed for the average learner, and is customized ad-hoc by the teacher or instructor as needed once instruction begins. This type of instruction, although it does give some consideration to individual differences among learners during instruction, does not fall into the typically accepted definition of individualized instruction. **For instruction to be considered individualized, the instruction is usually designed to account for specific learner characteristics.** This could include alternative instructional methods for students with different backgrounds and learning styles.

To help clarify this point, the instructional method used can be considered in terms of extremes. In the first extreme, one instructional method is used for everyone. Terms like *inclusion* and *mainstreaming* have been used to describe this first case. In the second extreme, a specific instructional method is used for each individual. Between these extremes lie situations where students are arranged into groups according to their characteristics. These groups can vary in size, and the instructional method is tailored to each group.

Content

Perhaps the least frequently modified component is the actual learning content. However, it is possible to vary the content taught to different learners or groups of learners. Both "tracking" and "enrichment" are examples of customizing instructional content. A renewed movement toward learner-centered principles in education has given this component more consideration in the 1990s. It has become possible to find examples of instructional settings in which students define their own content, and pursue learning based on their own interests. In most cases, however, this opportunity is limited to high-achieving students. In terms of extremes, content can be uniform for everyone, or unique to each individual. Between these extremes lie cases where the content can be varied, but only within a predefined range. The range of activities available to the learner is an indicator of how individualized the content is in an instructional setting.

Examples of Individualized Instruction

There are many examples of instructional approaches that have modified some or all of these three components. In all of these examples, the goal was to improve the instructional experience for the individual learner. Some of the most historically notable approaches are discussed below. Within each example both the benefits and criticisms of each approach are discussed.

Personalized System of Instruction or the Keller Plan was introduced in 1964 by Fred Keller. It is perhaps one of the first comprehensive systems of individualized instruction. Keller based his system on ten accepted educational principles (McGaw, 1975):

1. Active responding

2. Positive conditions and consequences
3. Specification of objectives
4. Organization of material
5. Mastery before advancement
6. Evaluation/objectives congruence
7. Frequent evaluation
8. Immediate feedback
9. Self-pacing
10. Personalization

None of these ten principles should be considered unique, as they all can be easily found in other more traditional educational settings. Rather, it is the components of the Keller plan - based on these ten principles - that makes the Keller Plan somewhat different: self-pacing; unit mastery; student tutors; optional motivational lectures; and learning from written material. It is the first component, self-pacing, that is the most obvious attempt at individualizing the instruction. From the second component, unit mastery, it can be seen that the content does not vary, as the unit content is fixed. To illustrate the static nature of the content, Naumes (1977) describes the basic design of a course using Keller's personalized system of instruction:

- Breaking the material of the course into several units....
- Dividing the material into units one to two weeks long....
- Each unit of material is covered,
- Specific learning objectives are given to the students.

The last three components indicate that the method of instruction does vary slightly from individual-to-individual. Although all students learn from written material and student tutors, the motivational lectures are optional. Making these lectures optional does constitute some flexibility in terms of instructional method, albeit extremely limited. Fundamentally, it is the self-pacing that more or less stands alone as the individualized component of this instructional system.

Proponents of the Keller Plan cite many benefits, including better retention and increased motivation for further learning. At the same time, there are others with criticisms of the Keller Plan such as the following: limited instructional methods, high dropout rates, and decreased human interaction. The debate over the effectiveness of Keller's Personalized System of Instruction, with its advantages and disadvantages, raises fundamental questions about the nature of self-contained, self-paced learning. There are indeed opportunities for designing instruction that lend themselves to the Personalized System of Instruction approach. This would apply especially to cases where enrollment is high, course material is standardized and stable, and faculty resources are scarce. On the other hand, when there is not a shortage of faculty, or the class size is not large, the course would be better taught with more conventional methods, yet still based on sound educational principles. Where the line is drawn on the continuum between these two extremes is a matter of opinion, and should be based on the context in which the instruction is to take place. It would be inappropriate to claim that one of the extremes is completely right, and the other wrong, given the vast number of studies and evaluations that support either side.

Audio-Tutorial. Audio-Tutorial is a method of individualized instruction developed by Samuel N. Postlethwait in 1961 at Purdue University. His goal was to find an improved method of teaching botany to a larger number of college students and to effectively assist the students who possessed only limited backgrounds in the subject. The development of an

Audio-Tutorial program requires a significant amount of planning and time by the instructor. Although there is some room for modification for each specific program, the general principles remain the same. Students have access to a taped presentation of a specifically designed program that directs their activities one at a time. The basic principles of Audio-Tutorial are; "(1) repetition; (2) concentration; (3) association; (4) unit steps; (5) use of the communication vehicle appropriate to the objective;(6) use of multiplicity of approaches; and (7) use of an integrated experience approach" (Couch, 1983).

The major benefits of Audio-Tutorial are that "students can adopt the study pace to their ability to assimilate the information. Exposure to difficult subjects is repeated as often as necessary for any particular student" (Couch, 1983). In addition to taking more time if they wish, students can also accelerate the pace of their learning. Other benefits are that students feel more responsible for their learning, and more students can be accommodated in less laboratory space and with less staff.

The primary criticism concerns the claim of responsibility. It seems that some students respond to the responsibility placed upon them, while others do not. There was a problem with the initial dropout rate, which seemed to be explained by the lack of willingness of some students to take on the amount of responsibility that was required in order to complete the course. Snortland advised that "since many freshmen students are not ready for additional self-discipline required of them in the A-T format, the choice of either a structured approach or an individualized approach should always remain open" (Couch, 1983). Many other criticisms of Audio-Tutorial courses are concerned with teacher control. The instructor dictates all of the material including the learning and feedback procedures. The criticism is that this is a severe form of teacher control over the student.

Like the Keller Plan, Audio-Tutorial allows the individual student to determine his or her own pace, and the content is fixed. Unlike the Keller Plan, however, there are more instructional delivery methods available when designing the course. Yet the locus of control remains with the instructor in the Audio-Tutorial as well.

Computer-Assisted Instruction (CAI). Most proponents of individualized instruction saw the computer as a way to further improve the design and delivery of individualized instruction - now in an electronic environment. With the advent of the computer came the potential to deliver individualized instruction in a more powerful way.

CAI became the forerunner in individualized instruction during the 1980s and early 1990s, as the home computer became more powerful and less expensive. The changes that the computer environment helped to make were predominantly a change in the delivery mechanism of individualized instruction, rather than a fundamental change in purpose or method. In a sense, the computer, especially the home computer, offered a convenience that other delivery mechanisms lacked. This convenience was accelerated with the proliferation of the Internet in late 1990s. Starting as an extension of computer-based instruction, online education became increasingly popular and eventually began to supplant CAI as the predominant form of individualized instruction.

Distance education. A surge in the number of non-traditional students attending college in the 1990s, combined with the technological potential of the Internet, has caused a renewed effort to deliver instruction in a non-traditional fashion. Accessibility and convenience - not research - are the primary driving forces in this movement toward instruction in the form on

online education. Whether it is more effective or less effective than traditional education seems less a concern. In many cases, the audience addressed is non-traditional, and they have limited access to traditional education. Additionally, many students who could otherwise attend brick-and-mortar institutions are choosing online education for the convenience. In other words, what was established initially due to necessity has now expanded as students choose this route because of its convenience. The rate of expansion of online education has accelerated to a point where the general feeling among institutions of higher learning is of willing participation. In terms of pace, method, and content, there is a large variety of competing approaches to distance education, and no dominant model has emerged. Like previous iterations of individualized instruction, it is usually the pace of instruction that most often varies. The content is still fixed in most cases, as is the method (predominantly via the Internet).

It is essential that you take note that individualized instruction comes in many forms, all of which seek to improve instruction in some way. As can be seen in the examples above, alternative instructional approaches most often vary the pace and method of instruction, but not the content itself. The content is usually consistent with traditional instruction, although it may be segmented differently.

SELF ASSESSMENT EXERCISE

Critique the major approaches to individualization of instruction.

3.3 Collaborative Learning

3.3.1 Defining Collaborative Learning

Collaborative learning also referred as cooperative learning, is an educational approach to teaching and learning that involves groups of learners working together to solve a problem, complete a task, or create a product. Collaborative learning is based on the idea that learning is a naturally social act in which the participants talk among themselves. It is through the talk that learning occurs (Srinivas, 1991). Cooperative learning groups are characterized by student teams (of 2 - 6) working to master academic goals. Teams are normally comprised of learners of mixed ability, ethnicity, and gender. Rewards systems (grades) are designed for the group as well as individuals.

3.3.2 Theoretical Background for Collaborative (Cooperative) Learning

Cooperative learning is rooted in two theoretical traditions. First, it is based on the progressivism of John Dewey, particularly his idea that the school should mirror the values of the society and that classrooms should be laboratories for learning democratic values and behaviors. Students are prepared for civic and social responsibilities by participating in democratic classrooms and small problem-solving groups. Cooperative learning also has roots in constructivist theory and the perspective that cognitive change takes place as students actively work on problems and discover their own solutions. Particularly important is Lev Vygotsky's theories that students learn through language-based interactions with more capable peers and adults.

3.3.3 Approaches to Collaborative Learning

There are many approaches to collaborative learning:

1. Learning is an active process whereby learners assimilate the information and relate this new knowledge to a framework of prior knowledge.
2. Learning requires a challenge that opens the door for the learner to actively engage his/her peers, and to process and synthesize information rather than simply memorize and regurgitate it.
3. Learners benefit when exposed to diverse viewpoints from people with varied backgrounds.
4. Learning flourishes in a social environment where conversation between learners takes place. During this intellectual gymnastics, the learner creates a framework and meaning to the discourse.
5. In the collaborative learning environment, the learners are challenged both socially and emotionally as they listen to different perspectives, and are required to articulate and defend their ideas. In so doing, the learners begin to create their own unique conceptual frameworks and not rely solely on an expert's or a text's framework.

Collaborative learning covers a broad territory of approaches with wide variability in the amount of in-class or out-of-class time built around group work. Collaborative activities can range from classroom discussions interspersed with short lectures, through entire class periods, to study on research teams that last a whole term or year. The goals and processes of collaborative activities also vary widely. Some teachers design small group work around specific sequential steps, or tightly structured tasks. Others prefer a more spontaneous agenda developing out of student interests or questions. In product; in others, the task is not to produce a product, but rather to participate in a process, an exercise of responding to each other's work or engaging in analysis and meaning-making. Thus, in a collaborative learning setting, learners have the opportunity to converse with peers, present and defend ideas, exchange diverse beliefs, question other conceptual frameworks, and are actively engaged.

Cooperative learning has three distinct goals: academic achievement, acceptance of diversity through interdependent work, and development of cooperative social skills.

There are numerous approaches to cooperative learning and each proceeds in slightly different ways. However, in general, a cooperative learning lesson has six phases. The teacher begins the lesson by presenting the goals of the lesson, motivating students, and connecting the forthcoming lesson to previous learning. Procedures, timelines, roles and rewards are described. Required group processes or social skills may also be taught at the beginning of a cooperative learning lesson.

In phase 2 the teacher facilitates the acquisition of the academic content that is the focus of the lesson. This may be done verbally, graphically, or with text. The teacher during phase 3 explains how the teams are formed and helps students make transitions into their groups. Phase 4 is teamwork. Students work together on cooperative tasks and the teacher assists students and groups, while reminding them of their interdependence.

The final phases of a cooperative learning lesson consists of phase 5 (assessment) and phase 6 (recognition). The teacher tests student knowledge or groups present their work. Individual students and groups are assessed on cooperation as well as academic achievement. The effort of individuals and groups are recognized through displays, newsletters, presentations, or other public forums.

The learning environment for cooperative learning differs markedly from the traditional individualistic classroom environment. Students assume active roles and take responsibility for their own learning. The social atmosphere is collaborative and respectful of differences.

Students learn group processes and problem-solving skills and become increasingly independent in using them. Students construct their own learning through active engagement with materials, problems, and other students. The teacher forms the teams, structures the group work, provides materials, and determines the reward structure, but the students direct their own work and learning.

SELF ASSESSMENT EXERCISE

Outline some approaches to collaborative learning.

3.4 Comparing Individualized Learning and Collaborative Learning

From the forgone considerations, you would have observed that both types of learning are geared towards effective learning by students. They are both based on constructivism in education. Most importantly, they are both expected to be antidotes to the shortcomings of the traditional teaching and learning process. They both change the focus of instruction from large group teaching to management of instruction through adequate preparation and supervision of learning experiences.

SELF ASSESSMENT EXERCISE

In what ways are individualized learning and collaborative learning complementary methods of instruction?

4.0 CONCLUSION

Individualized instruction has the potential to improve instruction by varying the pace of instruction, the instructional method, and the content. Most approaches allow for self-pacing, yet variation in method and content is rare, and when it does occur, is usually very limited. As of the early twenty-first century, there are no indications that this trend will change in the immediate future, although as the research base in this area increases, major improvements are certain to come. Similarly, collaborative learning promises to great value to making learning social and effective if properly utilized by teachers and learners respectively. These fields are diverse. You will need to carry out further studies on them

5.0 SUMMARY

In this unit, you learnt how to individualize instruction, and collaborative learning. Their definitions and theoretical backgrounds were discussed. Varying strategies for using these two methods of learning were discussed.

6.0 TUTOR MARKED ASSIGNMENT

1. Define individualized learning and Collaborative learning.

2. Justify the need for individualization of instruction.
3. How does constructivism support individualization of instruction and Collaborative Learning?
4. Critique the major approaches to individualization of instruction.
5. Outline some approaches to collaborative learning.
6. In what ways are individualized learning and collaborative learning complementary methods of instruction?

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